



 **Watson  
& Associates**  
ECONOMISTS LTD.

# Water and Wastewater Rate Study

Town of Grand Valley

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# Chapter 1

## Introduction



# 1. Introduction

## 1.1 Background

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The Town of Grand Valley (Town) retained Watson & Associates Economists Ltd. (Watson) to prepare a water and wastewater rate study and a financial plan in accordance with Ontario Regulation (O.Reg.) 453/07. This study is an update to the Town's 2015 Water and Wastewater Rate Study.

The Town's municipal water customers pay a flat rate of \$20 per month, as well as a consumptive rate (\$ per cubic meter (m<sup>3</sup>)) which is applied to their metered water consumption. The Town utilizes an increasing block rate structure, where the consumptive rate increases when monthly consumption exceeds a defined threshold, i.e. 15 m<sup>3</sup> per month. This rate structure is employed to promote water conservation efforts by rationalizing the amount of water consumed.

Residential customers connected to the municipal sewage (wastewater) service pay an annual domestic flat rate of \$525. Non-residential wastewater customers are charged multiples of the domestic flat rate depending on the customer classification. These multiples were determined based on the underlying difference in service demands by customer type.

These current water and wastewater rates and consumer classifications are summarized in Table 1-1.

## 1.2 Study Process

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The objectives of the study and the steps involved in carrying out this assignment are summarized below:

- Update water and wastewater service demand assumptions based on analysis of historical consumption and recent trends;
- Estimate future consumption levels by applying revised demand assumptions to forecast growth identified in the Town's 2019 Development Charges (D.C.) Background Study report and adjusted to reflect the actual historical growth experienced in recent years;



Table 1  
Town of Grand Valley  
Current Water and Wastewater Rates (effective January 1, 2019)

**Water**

Description	Rate
Flat rate for all customers of water supplied	\$20.00/month
PLUS Per Cubic Meter of Water Used (up to 15 m <sup>3</sup> per billing month)	\$0.75/m <sup>3</sup>
PLUS Per Cubic Meter of Water Used over 15 m <sup>3</sup> per billing month	\$0.95/m <sup>3</sup>

**Wastewater (Sewer)**

Consumer Classification	Base Unit Multiple	Annual Rate
Single Family Dwelling Apartment Units Motels & Hotels (2 rooms = 1 domestic unit) Stores, Mills, and Small Offices Post Office Gas Bar & Public Garages (No Car Wash) Churches with Kitchens	1 Base Unit Each	\$ 525.00
Churches without Kitchens	½ Base Unit Each	\$ 262.50
Restaurants, not listed Barber & Beauty Shops Car Wash (1 Bay = 2 Base Units)	2 Base Units Each	\$ 1,050.00
Medical Centre & Large Office Buildings	3 Base Units Each	\$ 1,575.00
Laundromat (up to 5 washers) Licensed Lounges & Facilities	4 Base Units Each	\$ 2,100.00
Nursing/Retirement/Rest Homes	5 Base Units Each	\$ 2,625.00
Schools	6 Base Units Each	\$ 3,150.00

- Identify all current and future water and wastewater system capital needs to assess the immediate and longer-term implications;
- Build a capital program that blends lifecycle needs and specific needs identified by staff;
- Identify potential methods of cost recovery from the capital needs listing. These recovery methods may include other statutory authorities (e.g. *Development Charges Act, 1997* (D.C.A.), *Municipal Act*, etc.) as an offset to recovery through the water and wastewater rates;
- Forecast annual operating costs and rate-based funding requirements;
- Provide and impact assessment on the rate payers;
- Develop a long-term water and wastewater rate forecast;
- Present findings to staff and Council for their consideration; and
- Prepare a water financial plan that satisfies the requirements of O.Reg. 453/07.



In approaching this study, the following analysis is provided:

- Chapter 2 – Forecast Growth and Service Demands
- Chapter 3 – Capital Infrastructure Needs
- Chapter 4 – Capital Cost Financing Options
- Chapter 5 – Operating Expenditure Forecast
- Chapter 6 – Forecast Water and Wastewater Rates

## 1.3 Legislative Context

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Resulting from the water crisis in Walkerton, significant regulatory changes have been made in Ontario. These changes arose as a result of the Walkerton Commission and the 93 recommendations made by the Walkerton Inquiry Part II report. Areas of recommendation included:

- watershed management and source protection;
- quality management;
- preventative maintenance;
- research and development;
- new performance standards;
- sustainable asset management; and
- lifecycle costing.

The following sections describe significant applicable regulatory areas.

### 1.3.1 *Sustainable Water and Sewage Systems Act*

The *Sustainable Water and Sewage Systems Act* was passed on December 13, 2002. The intent of the Act was to introduce the requirement for municipalities to undertake an assessment of the “full cost” of providing their water and the wastewater services. In total, there were 40 areas within the Act to which the Minister may make Regulations, however regulations were never issued. On December 31, 2012, the *Sustainable Water and Sewage Systems Act* was repealed.



### **1.3.2 Safe Drinking Water Act**

The *Safe Drinking Water Act* was passed in December 2002. The *Safe Drinking Water Act* provides for 50 of the 93 Walkerton Part II recommendations. It focuses on the administrative and operational aspects of the provision of water.

The purposes of the *Safe Drinking Water Act* are to “recognize that the people of Ontario are entitled to expect their drinking water to be safe and to provide for the protection of human health and the prevention of drinking water health hazards through the control and regulation of drinking water systems and drinking water testing. 2002, c. 32, s. 1.”

The following is a brief summary of the key elements included in the *Safe Drinking Water Act*:

- Mandatory licensing and accreditation of testing laboratories;
- New standards for treatment, distribution quality and testing;
- Mandatory operator training and certification;
- Mandatory licensing of municipal water providers;
- Stronger enforcement and compliance provisions; and
- “Standard of care” requirements for municipalities.

This legislation impacts the costs of operating a water system with the need for higher skilled operators including increased training costs, increased reporting protocols and requirements, continuing enhancements to quality standards and the costs to licence each water system.

### **1.3.3 Financial Plans Regulation**

On August 16, 2007, the Ministry of Environment introduced O.Reg. 453/07 which requires the preparation of financial plans for water systems (and municipalities are encouraged to prepare plans for wastewater systems). The Ministry of Environment has also provided a Financial Plan Guideline to assist municipalities with preparing the plans. A brief summary of the key elements of the regulation is provided below:

- The financial plan will represent one of the key elements to obtain a Drinking Water License.





- The plan is to be completed, approved by Council Resolution, and submitted to the Ministry of Municipal Affairs and Housing and Housing as part of the application for receiving approval of a water license.
- The financial plans shall be for a period of at least six years but longer planning horizons are encouraged.
- As the regulation is under the *Safe Drinking Water Act*, the preparation of the plan is mandatory for water services and encouraged for wastewater services.
- The plan is considered a living document (i.e. can be updated if there are significant changes to budgets) but will need to be undertaken at a minimum every five years.
- The plans generally require the forecasting of capital, operating and reserve fund positions, and providing detailed capital inventories. In addition, Public Sector Accounting Board full accrual information on the system must be provided for each year of the forecast (i.e. total non-financial assets, tangible capital asset acquisitions, tangible capital asset construction, betterments, write-downs, disposals, total liabilities, net debt, etc.).
- The financial plans must be made available to the public (at no charge) upon request and be available on the municipality's web site. The availability of this information must also be advertised.

In general, the financial principles of this regulation follow the intent of the *Sustainable Water and Sewage Systems Act*, 2002 to move municipalities towards financial sustainability for water services. However, many of the prescriptive requirements have been removed (e.g. preparation of two separate documents for provincial approval, auditor opinions, engineer certifications, etc.).

A guideline ("Towards Financially Sustainable Drinking-Water and Wastewater Systems") has been developed to assist municipalities in understanding the Province's direction and provides a detailed discussion on possible approaches to sustainability. The Province's Principles of Financially Sustainable Water and Wastewater Services are provided below:

Principle #1: Ongoing public engagement and transparency can build support for, and confidence in, financial plans and the system(s) to which they relate.



Principle #2: An integrated approach to planning among water, wastewater, and storm water systems is desirable given the inherent relationship among these services.

Principle #3: Revenues collected for the provision of water and wastewater services should ultimately be used to meet the needs of those services.

Principle #4: Lifecycle planning with mid-course corrections is preferable to planning over the short-term, or not planning at all.

Principle #5: An asset management plan is a key input to the development of a financial plan.

Principle #6: A sustainable level of revenue allows for reliable service that meets or exceeds environmental protection standards, while providing sufficient resources for future rehabilitation and replacement needs.

Principle #7: Ensuring users pay for the services they are provided leads to equitable outcomes and can improve conservation. In general, metering and the use of rates can help ensure users pay for services received.

Principle #8: Financial Plans are “living” documents that require continuous improvement. Comparing the accuracy of financial projections with actual results can lead to improved planning in the future.

Principle #9: Financial plans benefit from the close collaboration of various groups, including engineers, accountants, auditors, utility staff, and municipal council.

### **1.3.4 Water Opportunities Act**

The *Water Opportunities Act* received Royal Assent on November 29, 2010. The Act provides for the following elements:

- Foster innovative water, wastewater and stormwater technologies, services and practices in the private and public sectors;
- Prepare water conservation plans to achieve water conservation targets established by the regulations; and



- Prepare sustainability plans for municipal water services, municipal wastewater services and municipal stormwater services.

With regard to the sustainability plans:

- The Bill extends from the water financial plan and requires a more detailed review of the water financial plan and requires a full plan for wastewater and stormwater services; and
- Regulations (when issued) will provide performance targets for each service – these targets may vary based on the jurisdiction of the regulated entity or the class of entity.

The Financial Plan shall include:

- An asset management plan for the physical infrastructure;
- Financial Plan;
- For water, a water conservation plan;
- Assessment of risks that may interfere with the future delivery of the municipal service, including, if required by the regulations, the risks posed by climate change and a plan to deal with those risks; and
- Strategies for maintaining and improving the municipal service, including strategies to ensure the municipal service can satisfy future demand, consider technologies, services and practices that promote the efficient use of water and reduce negative impacts on Ontario's water resources, and increase co-operation with other municipal service providers.

Performance indicators will be established by service:

- May relate to the financing, operation or maintenance of a municipal service or to any other matter in respect of which information may be required to be included in a plan; and
- May be different for different municipal service providers or for municipal services in different areas of the Province.

Regulations will prescribe:

- Timing;

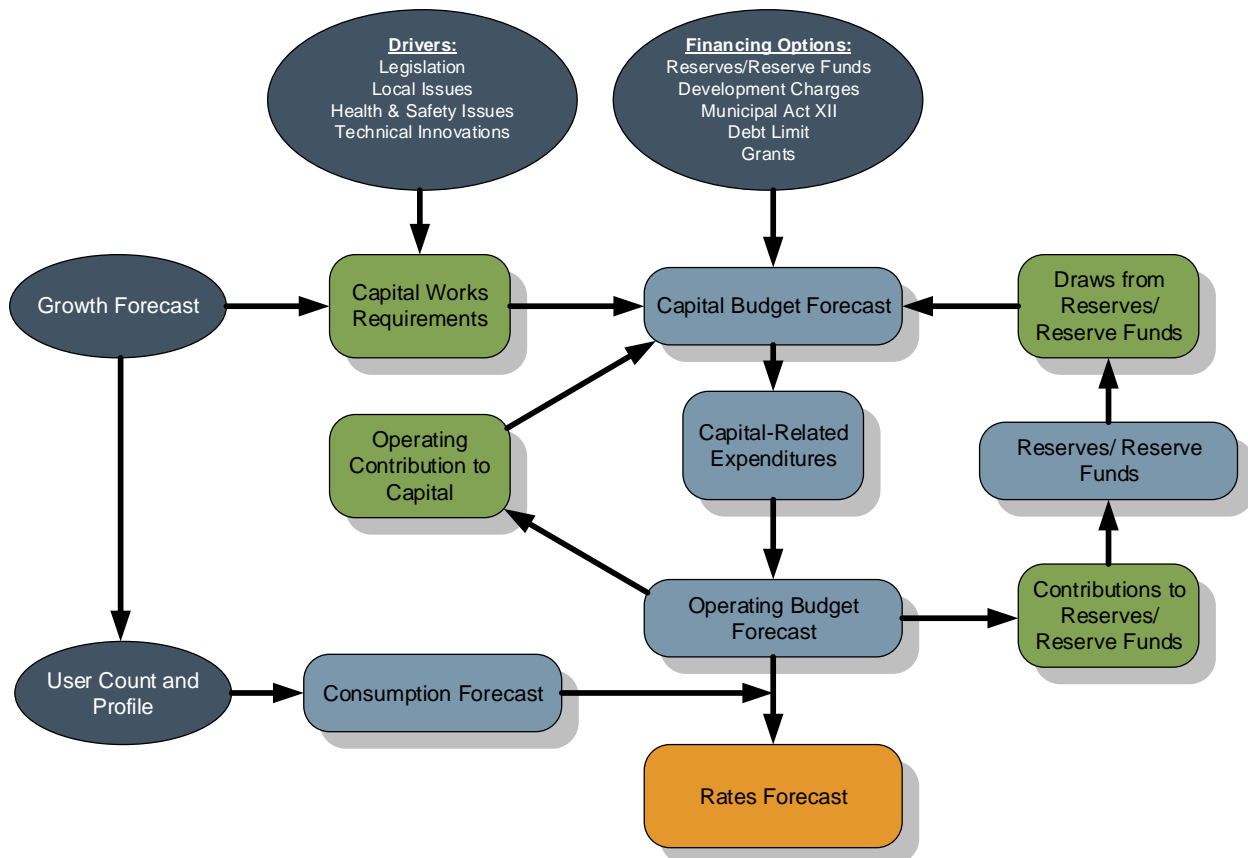


- Contents of the plans;
- Identifying what portions of the plan will require certification;
- Public consultation process; and
- Limitations, updates, refinements, etc.

## 1.4 Water and Wastewater Rate Calculation Methodology

Figure 1-1 illustrates the general methodology used in determining the full cost recovery water and wastewater rate forecast.

Figure 1-1  
Water and Wastewater Rate Calculation Methodology





The methodology employed generally consists of 5 major elements:

### **1.4.1 Customer Demands and Consumption Forecast**

As noted in Section 1.1, the Town employs a water rate structure consisting of a monthly base charge and a consumptive rate. The consumptive rate is imposed at an increasing block rate based on consumption.

This first step in the analysis is important as it produces the current base revenue by source and assumptions for forecasting purposes. The base charge revenues are forecast with customer growth. The customer profile forecast is modeled based on the Town's D.C. growth forecast, modified for historical growth witnessed from 2015-2019.

The water consumption forecast is prepared by applying average annual consumption estimates to future development. The forecast may adjust the base consumption levels for anticipated water conservation based on historic trends and industry witnessed practices. Consumption estimates are based on average consumption levels drawn from municipal billing records.

Town wastewater rates are imposed on an annual flat rate basis, with multiples of the domestic flat rate applied to non-residential customer types. The wastewater customer forecast projects the number of residential equivalent customers based on the same water base charge customer assumptions.

### **1.4.2 Capital Needs Forecast**

The capital needs forecast is developed to measure program/service level adjustments, lifecycle requirements and growth-related needs. The Town's asset management plan, lifecycle analysis of tangible capital assets, and specific needs identified by Town staff and system operators provided the base capital forecast. Included in the capital forecast are the growth-related needs forecast based on the Town's 2019 D.C. Background Study, with project timing modified to reflect the pace of the underlying water and wastewater customer growth forecast assumptions. Capital expenditures are forecast with inflationary adjustments based on Statistics Canada capital costs indices.



### **1.4.3 Capital Funding Plan**

The capital funding plan considers the potential funding sources available to address the capital needs forecast. The sources of capital funding include rate-based support, reserves/reserve funds and debt. Growth-related sources of funding include D.C.s and debt. It should be noted that where forecast D.C. revenues are insufficient to meet annual D.C. reserve fund commitments, interim financing from rate-based or other financing sources have been considered.

The use of rate-based funding is measured against the water and wastewater rate revenue projections and affordability considerations. The reserve/reserve fund demands over the forecast period are measured against the sustainability of these funds, relative to lifecycle capital demands and rate revenue projections. Debt financing is considered for significant capital expenditures, where funding is required beyond annual long-term lifecycle funding requirements or to facilitate rate transition policies. Debt financing is measured in against the Town's debt policies and annual repayment limits to ensure a practical and sustainable funding mix.

### **1.4.4 Operating Budget Forecast**

The operating budget forecast considers adjustments to the Town's base budget reflecting program/service level changes, operating fund impacts associated with infrastructure and financing for capital needs, as discussed with Town staff and system operators. The operating expenditures are forecast with inflationary adjustments and growth in service demand, based on fixed and variable cost characteristics. The operating budget forecast ties the capital funding plan and reserve/reserve fund continuity forecast to the rate-based revenue projections. This ensures sufficient funding for both the ongoing annual operation and maintenance of water and wastewater services, as well as the capital cost requirements to ensure service sustainability. Operating revenues are projected to identify the base charge and consumptive rate components net of anticipated operating revenues, such as connection fees, inspection fees, and other miscellaneous revenues.

### **1.4.5 Rate Forecast and Structure**

The rate forecast component of the analysis projects water and wastewater rate schedules for the 10-year forecast period to achieve the rate-based revenues from the



projected customer demands. At this stage in the analysis the full costs of service are measured against the customer growth and consumption demands to determine full cost recovery rates. The analysis may consider alternative structures for base charge and consumptive components of the rates, consistent with municipal policies/strategies, industry practice and customer affordability. Providing context to the rate forecast, the results are quantified to measure the impacts on a range of customer types and in relation to other municipalities.



# Chapter 2

## Service Demand Forecast





## 2. Service Demand Forecast

The Town provided Watson with historical water consumption records for the period 2015-2019. Moreover, the Town’s 2019 D.C. Background Study was consulted to determine anticipated development on the municipal water and wastewater systems over the forecast period. This information was analyzed to develop a forecast of Town water and wastewater customers, and associated water demands for the period 2020-2030.

Total water consumption by the Town’s 1,047 customers was 154,623 m<sup>3</sup> in 2019. This equates to approximately 150 m<sup>3</sup> per customer annually. In total, water system customers are anticipated to increase by 735 residential customers over the forecast period to 2030. This results in an increase from 1,047 customers in 2019 to 1,782 in 2030 for the municipal water system. The growth forecast estimates are based on historical growth on the water system witnessed between 2015-2019, with consideration of the Town’s 2019 D.C. Background Study.

It is anticipated that all new water customers will also have municipal wastewater services. As a result, the number of wastewater customers will increase from 990 residential equivalent users (i.e. domestic flat rate customers) in 2019 to 1,725 by 2030. Table 2-1 provides the Town water and wastewater customer growth forecast for the period 2020-2030.

Table 2-1  
Town of Grand Valley  
Water and Wastewater Customer Forecast (2020-2030)

Water Customer Forecast	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047	1,047
New - Growth	35	105	175	245	315	385	455	525	595	665	735
<b>Total</b>	<b>1,082</b>	<b>1,152</b>	<b>1,222</b>	<b>1,292</b>	<b>1,362</b>	<b>1,432</b>	<b>1,502</b>	<b>1,572</b>	<b>1,642</b>	<b>1,712</b>	<b>1,782</b>

Wastewater Customer Forecast (Domestic Flat Rate Equivalents)	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Existing	990	990	990	990	990	990	990	990	990	990	990
New - Growth	35	105	175	245	315	385	455	525	595	665	735
<b>Total</b>	<b>1,025</b>	<b>1,095</b>	<b>1,165</b>	<b>1,235</b>	<b>1,305</b>	<b>1,375</b>	<b>1,445</b>	<b>1,515</b>	<b>1,585</b>	<b>1,655</b>	<b>1,725</b>

It is assumed that annual water consumption per customer will remain constant at 150m<sup>3</sup> over the forecast period. The historical average annual consumption per customer was applied to the growth projections to forecast future service demands. At



an average annual consumption of 150m<sup>3</sup> per customer, all incremental water consumption is forecast to be within the first consumption block (i.e. up to 15m<sup>3</sup> per month). Total water demand for the system is estimated to increase from 154,623 m<sup>3</sup> in 2019 to 264,853 m<sup>3</sup> in 2030, as presented in Table 2-2.

Table 2-2  
Town of Grand Valley  
Annual Metered Water Consumption Forecast by Consumption Block (2020-2030)

Water Consumption Forecast (m <sup>3</sup> )	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Block 1 (up to 15 m<sup>3</sup>/month)</b>											
Existing	103,030	103,030	103,030	103,030	103,030	103,030	103,030	103,030	103,030	103,030	103,030
New	5,249	15,747	26,245	36,744	47,242	57,740	68,238	78,736	89,234	99,732	110,231
<b>Subtotal Block 1</b>	<b>108,279</b>	<b>118,778</b>	<b>129,276</b>	<b>139,774</b>	<b>150,272</b>	<b>160,770</b>	<b>171,268</b>	<b>181,766</b>	<b>192,265</b>	<b>202,763</b>	<b>213,261</b>
<b>Block 2 (beyond 15 m<sup>3</sup>/month)</b>											
Existing	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592
New	-	-	-	-	-	-	-	-	-	-	-
<b>Subtotal Block 2</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>	<b>51,592</b>
<b>Total</b>	<b>159,872</b>	<b>170,370</b>	<b>180,868</b>	<b>191,366</b>	<b>201,864</b>	<b>212,363</b>	<b>222,861</b>	<b>233,359</b>	<b>243,857</b>	<b>254,355</b>	<b>264,853</b>



# Chapter 3

## Capital Infrastructure Needs



## 3. Capital Infrastructure Needs

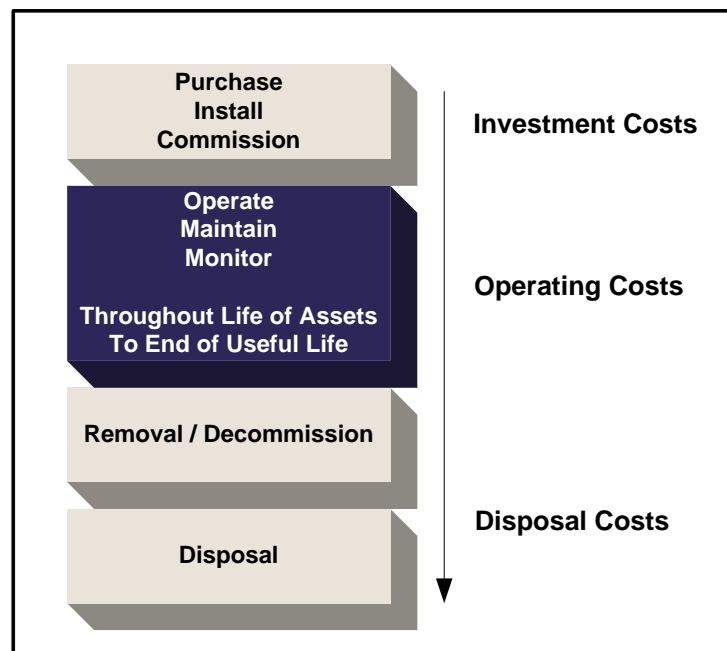
### 3.1 Overview of Lifecycle Costing

#### 3.1.1 Definition

For many years, lifecycle costing has been used in the field of maintenance engineering and to evaluate the advantages of using alternative materials in construction or production design. The method has gained wider acceptance and use in the areas of industrial decision-making and the management of physical assets.

Lifecycle costs are all the costs which are incurred during the lifecycle of a physical asset, from the time its acquisition is first considered, to the time it is taken out of service for disposal or redeployment. The stages which the asset goes through in its lifecycle are specification, design, manufacture (or build), installation, commissioning, operation, maintenance and disposal. Figure 3-1 depicts these stages in a schematic form.

Figure 3-1  
Lifecycle Costing





### **3.1.2 Financing Costs**

This section will focus on financing mechanisms in place to fund the costs incurred throughout the asset's life.

In a municipal context, services are provided to benefit tax/rate payers. Acquisition of assets is normally timed in relation to direct needs within the community. At times, economies of scale or technical efficiencies will lead to oversizing an asset to accommodate future growth within the municipality. Over the past few decades, new financing techniques such as D.C.s have been employed based on the underlying principle of having tax/rate payers who benefit directly from the service paying for that service. Operating costs which reflect the cost of the service for that year are charged directly to all existing tax/rate payers who have received the benefit. Operating costs are normally charged through the tax base or user rates.

Capital expenditures are recouped through several methods, the most common being operating budget contributions, D.C.s, reserves, developer contributions and debentures.

New construction related to growth could produce development charges and developer contributions (e.g. works internal to a subdivision which are the responsibility of the developer to construct) to fund a significant portion of projects, where new assets are being acquired to allow growth within the municipality to continue. As well, debentures could be used to fund such works, with the debt charge carrying costs recouped from taxpayers in the future.

However, capital construction to replace existing infrastructure is largely not growth-related and will therefore not yield D.C.s or developer contributions to assist in financing these works. Hence, a municipality will be dependent upon debentures, reserves and contributions from the operating budget to fund these works.

Figure 3-2 depicts the costs of an asset from its initial conception through to replacement and then continues to follow the associated costs through to the next replacement.

As referred to earlier, growth-related financing methods such as D.C.s and developer contributions could be utilized to finance the growth-related component of the new asset. These revenues are collected (indirectly) from the new homeowner who benefits



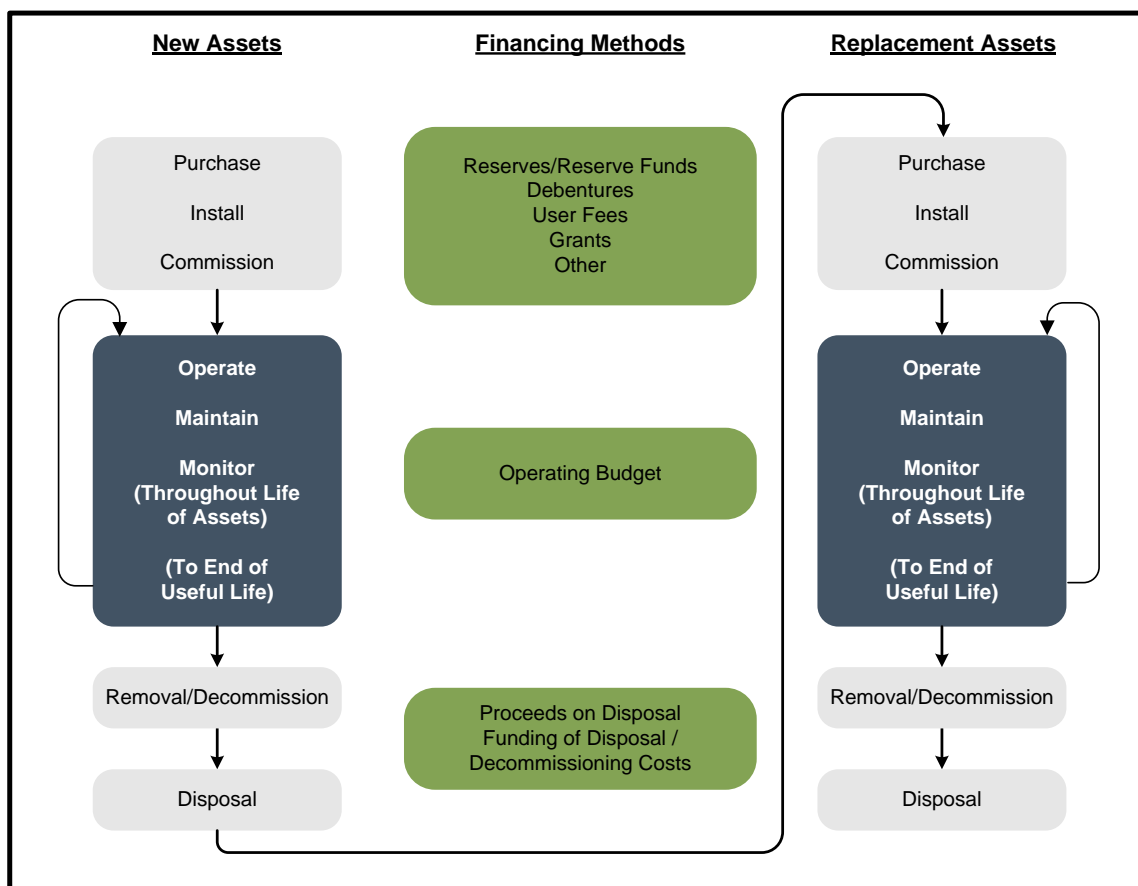
directly from the installation of this asset. Other financing methods may be used as well to finance the non-growth related component of this project; reserves which have been collected from past tax/rate payers, operating budget contributions which are collected from existing tax/rate payers and debenturing which will be carried by future tax/rate payers. Ongoing costs for monitoring, operating and maintaining the asset will be charged annually to the existing tax/rate payer.

When the asset requires replacement, the sources of financing will be limited to reserves, debentures and contributions from the operating budget. At this point, the question is raised; "If the cost of replacement is to be assessed against the tax/rate payer who benefits from the replacement of the asset, should the past tax/rate payer pay for this cost or should future rate payers assume this cost?" If the position is taken that the past user has used up the asset, hence he should pay for the cost of replacement, then a charge should be assessed annually, through the life of the asset to have funds available to replace it when the time comes. If the position is taken that the future tax/rate payer should assume this cost, then debenturing and, possibly, a contribution from the operating budget should be used to fund this work.

Charging for the cost of using up of an asset is the fundamental concept behind amortization methods utilized by the private sector. This concept allows for expending the asset as it is used up in the production process. The tracking of these costs forms part of the product's selling price and hence end users are charged for the asset's amortization. The same concept can be applied in a municipal setting to charge existing users for the asset's use and set those funds aside in a reserve to finance the cost of replacing the asset in the future.



Figure 3-2  
Financing Lifecycle Costs



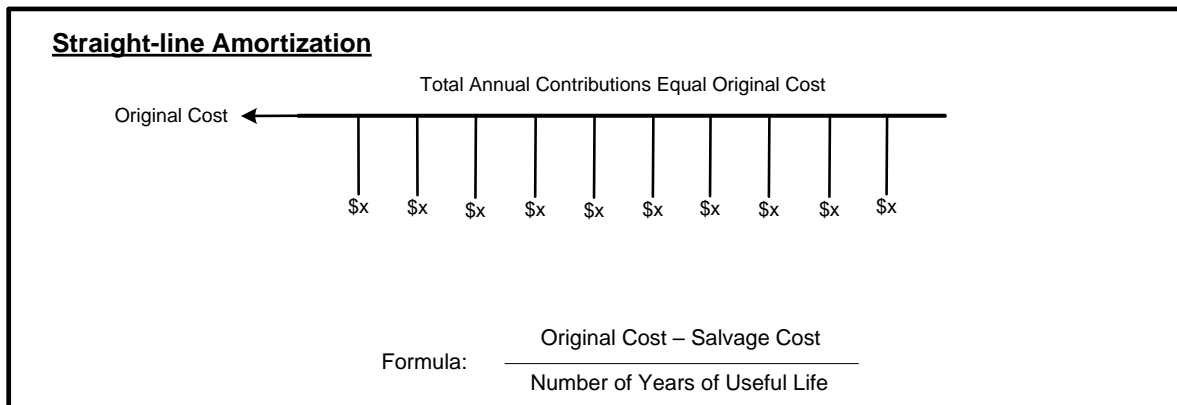
### 3.1.3 Costing Methods

There are two fundamental methods of calculating the cost of the usage of an asset and for the provision of the revenue required when the time comes to retire and replace it. The first method is the Amortization Method. This method recognizes the reduction in the value of the asset through wear and tear, and aging. There are two commonly used forms of amortization: the straight-line method and the reducing balance method.

The straight-line method is calculated by taking the original cost of the asset, subtracting its estimated salvage value (estimated value of the asset at the time it is disposed of) and dividing this by the estimated number of years of useful life. The reducing balance method is calculated by utilizing a fixed percentage rate and this rate is applied annually to the undepreciated balance of the asset value.

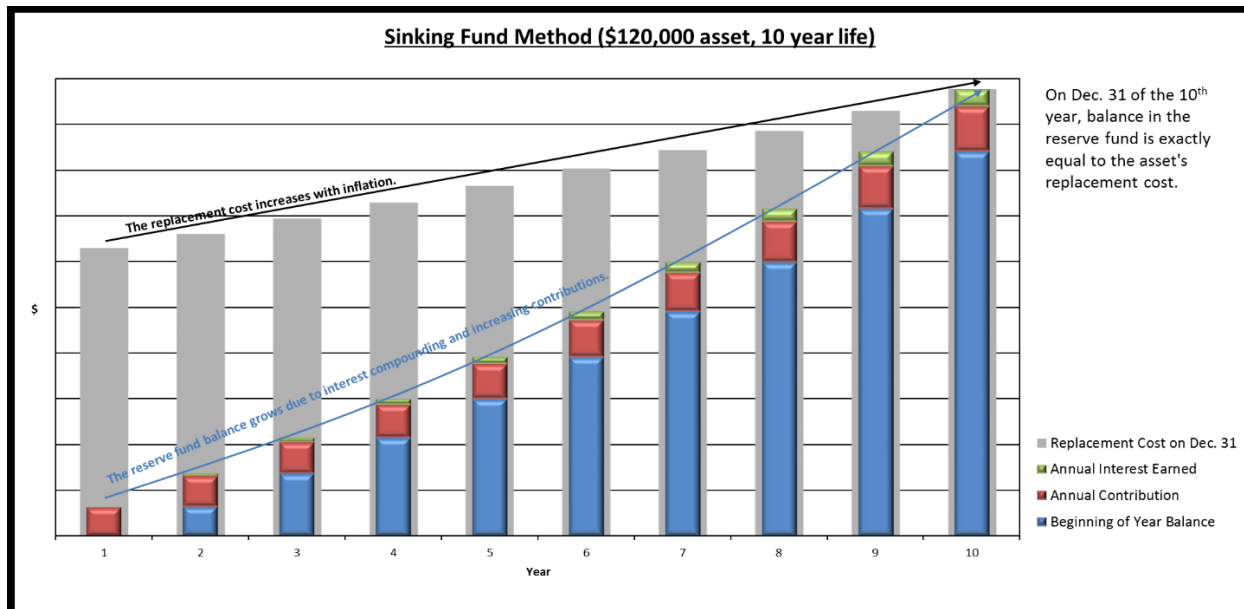


Figure 3-3  
Straight-line Amortization Method



The second method of lifecycle costing is the sinking fund method. This method first estimates the future value of the asset at the time of replacement. This is done by inflating the original cost of the asset at an assumed annual inflation rate. A calculation is then performed to determine annual contributions (equal or otherwise) which, when invested, will grow with interest to equal the future replacement cost.

Figure 3-4  
Sinking Fund Method



The preferred method used herein is the sinking fund method of lifecycle costing.





### **3.1.4 Asset Inventory**

Detailed water and wastewater capital asset inventory information was obtained from the Town's Asset Management Plan. The information from the Asset Management Plan, specific needs identified by staff and system operators, 2020 Capital Budget and Forecast (2021-2029 for water services and 2021-2025 for wastewater services), and the 2019 D.C. Background Study were used to develop the ten-year capital forecast.

Lifecycle "sinking fund" contribution amounts for each piece of infrastructure have also been calculated. These calculations determine the level of capital investment to be included in the full cost assessment and rate forecast. Table 3-1 summarizes the current asset replacement value and long-term annual lifecycle replacement needs (2020\$).

These figures indicate that for water and wastewater rates to achieve lifecycle sustainability, the capital-related funding requirements for water services should provide \$283,800 annually and wastewater services \$753,000 annually (in 2020\$). To achieve these results, the capital funding plan seeks to achieve this target by the end of the forecast period 2030 (inflated \$). This allows for increases in capital funding to be transitioned into the rate base gradually over time. This transition can be achieved gradually where annual capital spending is below long-term lifecycle funding targets, or where sufficient debt capacity exists to soften the annual funding obligations where annual spending is higher than average long-term lifecycle funding targets. Where municipalities have annual capital spending requirements over the 10-year forecast period greater than long-term lifecycle funding targets, or where municipalities may have limited debt capacity to mitigate funding requirements associated with higher annual capital spending levels, rate increases in the near term may be more considerable.

## **3.2 Capital Needs Forecast and Funding Plan**

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### **3.2.1 Water Services Capital Needs**

The Town's projected 2020-2030 capital needs for water services total approximately \$8.1 million. These projects include lifecycle capital needs, major maintenance, and growth-related/expansion projects.



Table 3-1  
Town of Grand Valley  
Summary of Water and Wastewater Infrastructure (2020\$)

**Water**

Description	Replacement Cost (\$)	Annual Lifecycle Contribution (\$)
Water Tower	846,650	19,039
Pumping Station - Cooper St	1,007,628	45,624
Pumping Station - Melody Lane	647,080	24,255
Equipment	707,017	52,165
Water - Well	365,797	16,882
Water - Hydrant	1,371,739	36,951
Water - Pressurized Main	3,971,888	64,902
Water - System Valve	1,002,513	24,025
<b>Total</b>	<b>9,920,313</b>	<b>283,842</b>

**Wastewater**

Description	Replacement Cost (\$)	Annual Lifecycle Contribution (\$)
WWTP Site Works and Other Assets	1,736,279	30,312
WWTP Admin/Maintenance/UV Building	2,781,201	101,095
Blower-Sludge Pumping Building	6,656,365	229,157
Headworks Building	3,349,330	134,856
Bio Solids Tank	571,558	23,006
WWTP On Site Pumping Station	794,466	22,934
Emma St. Pumping Station	2,522,857	66,379
Air Release Chamber	232,053	4,100
Amaranth St. Pumping Station	765,888	18,018
Gravity Main	4,439,553	72,872
Pressurized WW Main	959,303	15,675
Wastewater Manhole	2,114,765	34,556
<b>Total</b>	<b>26,923,616</b>	<b>752,960</b>

The capital program includes costs for the following growth-related capital works, which were identified in the Town's 2019 D.C. Background Study:

- Pumphouse storage upgrades (2018-2024)
- Production wells (2024);
- Water Treatment Pumphouse (2019-2020); and
- Elevated Water Storage (2027)

These capital projects are 100% D.C. recoverable, i.e. they will be funded entirely from D.C. revenues through the Town's Water Services D.C. Reserve Fund. The total cost of these capital projects is \$6.9 million (2020\$).



The lifecycle capital spending related to the replacement, rehabilitation, and optimization of existing water infrastructure totals \$1.4 million (2020\$) over the forecast period. This equates to annual lifecycle capital spending of approximately \$125,000, as compared to the long-term annual lifecycle funding target of \$283,800. This indicates that future lifecycle spending beyond 2030 will on average be greater than capital expenditures of the study forecast period. As noted above, the rate forecast is developed to achieve the long-term annual lifecycle funding target by the end of the forecast period.

The detailed listing of water capital needs is presented in Table 3-2. For rate determination purposes, the capital needs forecast is indexed by 2% annually to produce rates reflect of anticipated costs. This indexing is reflective of the historical annual capital cost inflation witnessed in the Statistics Canada Price Index in recent years.

### **3.2.2 Wastewater Services Capital Needs**

For wastewater services, the Town's projected 2020-2030 capital needs total approximately \$18.8 million. These projects include lifecycle capital needs, major maintenance, and growth-related/expansion projects. The capital program includes costs for the following growth-related capital works, which were identified in the Town's 2019 D.C. Background Study:

- Complete Schedule C EA for WPCP Expansion to Design, Tender, and Build (2029)
- Upgrade Emma St. SPS (2025)
- SPS in Southeast Quadrant (2021)
- Upgrade Sewer Trunk North Bielby St to Emma St. SPS (2025)

In total, these growth-related capital projects amount to \$17.6 million. These projects are 98% (\$17.3 million) D.C. eligible for funding from the Wastewater D.C. Reserve Fund. The remaining \$0.3 million in funding reflects the benefit to existing development determined for these projects and includes replacements of existing assets or tangible improvements to the level of service for existing customers.

The lifecycle replacement i.e. non-growth-related works total \$1.1 million (2020\$) or approximately \$100,000 annually. These capital spending compares with a long-term lifecycle funding target of \$753,000 annually. This indicates that future lifecycle spending beyond 2030 will on average be significantly greater than capital expenditures



of the study forecast period. As noted above, the rate forecast is developed to achieve the long-term annual lifecycle funding target by the end of the forecast period.

The detailed listing of wastewater capital needs is presented in Table 3-3. Similar to water services, the capital needs forecast will be indexed by 2% annually for rate determination purposes. Indexing is reflective of the historical annual capital cost inflation witnessed in the Statistics Canada Price Index.



**Table 3-2  
Water Capital Budget Forecast (Uninflated \$)**

Description	Total	Budget	Forecast									
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Capital Expenditures</b>												
<u>Well One</u>												
Cameral Inspection of Well Casing	10,000		5,000						5,000			
Rehab Well	10,000		10,000									
Submersible Pump Replacement	30,000					30,000						
Transmission Main Repairs	-											
Monitoring Well 1 (Crozier St)	11,431							11,431				
<u>Well Two</u>												
Cameral Inspection of Well Casing	10,000	5,000				5,000						
Rehab Well	15,000	15,000										
Submersible Pump Replacement	20,000	20,000										
Transmission Main Repairs	-											
<u>Well Three</u>												
Cameral Inspection of Well Casing	10,000	5,000						5,000				
Rehab Well	-											
Submersible Pump Replacement	10,000					10,000						
Transmission Main Repairs	2,500					2,500						
Monitoring Well 3 (Arena)	11,431		11,431									
<u>Pumphouse Raw Water Piping</u>												
Replace pressure gauges	2,500										2,500	
Service Flow Control Valves	10,000			5,000							5,000	
Service Pressure Relief Valve	5,000					5,000						
Process Piping Repairs	5,000			2,500							2,500	
Replace Raw Water Meters	10,000					10,000						
<u>Pumphouse Treatment Equipment</u>												
Chemical Metering Pumps	10,000	5,000						5,000				
Discharge Piping	10,000			5,000							5,000	
Centreline Injectors	13,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500		
<u>Instrumentation and SCADA</u>												
Replace Free Chlorine Analyzer	15,000					15,000						
Replace Desktop	6,000			3,000							3,000	
Replace Datalogger	5,000										5,000	
Replace Transducers	6,000					3,000					3,000	
Wireless Link	2,500										2,500	
<u>Building Services</u>												
Electrical	27,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	
Heating	7,500	1,500		1,500		1,500		1,500		1,500		1,500
Lighting	1,500			500		500						500
Doors	-											
Generator Service	11,500	1,500		1,500		1,500		4,000	1,500		1,500	



Table 3-2 (continued)  
Water Capital Budget Forecast (Uninflated \$)

Description	Total	Budget	Forecast											
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
<b>Capital Expenditures</b>														
<u>Treated Water Distribution</u>														
Distribution Mains Leak Repairs	43,000	5,000	5,000	5,000	5,000	5,000	3,000	5,000	5,000	5,000				
Valve Repair	13,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500	1,500				
Hydrant Repair	12,500	2,500		2,500		2,500		2,500		2,500				
Service Repairs	15,000	1,500	1,500	1,500	1,500	3,000	1,500	1,500	1,500	1,500				
Stock Pipe and Repair Fittings	18,000			6,000				6,000						
Restock Check and PRVS	27,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000				
Restock Water Meters	27,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000				
Water Tower Inspect and Maintain	25,000		5,000		10,000		5,000			5,000				
<u>Water Tower</u>														
Driveway - Grand Valley Water Tower	16,004				16,004									
Water Tower - Vent	9,145						9,145							
<u>Cooper Street Pumping Station</u>														
Driveway - Cooper Street Pumping Station	1,715				1,715									
<u>Melody Lane Pumphouse</u>														
Driveway - Melody Lane Pumphouse	5,920		5,920											
Electrical Heating - Melody Lane Pumphouse	11,431		11,431											
Process Piping - Melody Lane Pumphouse	114,312		114,312											
Ventilation - Melody Lane Pumphouse	28,578		28,578											
<u>Other</u>														
Water Meters	571,558		57,156	57,156	57,156	57,156	57,156	57,156	57,156	57,156	57,156	57,156	57,156	57,156
Lifecycle Provision	145,617												72,808	72,808
<b>Growth Related</b>														
Pumphouse Storage Upgrades	122,250	24,450	24,450	24,450	24,450	24,450								
Production Wells	688,600					688,600								
Water Treatment Pumphouse	2,448,000		2,448,000											
Elevated Water Storage	3,661,800									3,661,800				
<b>Total Capital Expenditures</b>	<b>8,294,291</b>	<b>98,450</b>	<b>2,739,778</b>	<b>127,606</b>	<b>127,824</b>	<b>876,706</b>	<b>119,232</b>	<b>86,156</b>	<b>3,742,456</b>	<b>116,156</b>	<b>129,964</b>	<b>129,964</b>	<b>129,964</b>	<b>129,964</b>



**Table 3-3  
Wastewater Capital Budget Forecast (Uninflated \$)**

Description	Total	Budget 2020	Forecast									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Capital Expenditures</b>												
<u>Emma St. Pumping Station</u>												
Bi-annual SPS Clean-Out	24,000	4,000	4,000	4,000	4,000	4,000	4,000					
Climate Control Unit	4,500	4,500										
Jockey Pump Impeller Replacement and Inspection	10,000		10,000									
Sewage Pump #1 Inspection and Impeller Replacement	10,000				10,000							
Flushing and Wet Well Cleanout	24,000	8,000		8,000		8,000						
Pump Inspection/Maintenance Program	15,000	2,500	2,500	2,500	2,500	2,500	2,500					
<u>Grand Valley Collection System</u>												
Flush and Remove Debris from Collection System	75,000	12,500	12,500	12,500	12,500	12,500	12,500					
<u>Amaranth St. Pumping Station</u>												
Spare Float	4,500	1,500		1,500		1,500						
SPS Raw #2 Pull for Rebuild	5,000		5,000									
SPS Clean Out	15,000	2,500	2,500	2,500	2,500	2,500	2,500					
Replace Backflow Prevention Valves	1,000				1,000							
<u>Grand Valley Plant Head Works System</u>												
Modification to Vortex System	2,500	2,500										
Escalator Screen Chain Replacement	7,500	7,500										
Solenoid Valve Replacement to Stainless Steel	15,000	5,000		5,000		5,000						
Septage Tank Clean Out Annual	6,000	1,000	1,000	1,000	1,000	1,000	1,000					
<u>Grand Valley Waste Plant UV and Filter Room</u>												
Parkson Filter Inspection and Media Analysis	15,000	5,000				5,000	5,000					
Air Compressor Aftercooler	750	750										
UV Module Relay Board	5,000	5,000										
UV Lamp Replacement	9,500	2,500	2,000	1,000	2,000	1,000	1,000					
UV Sleeve Replacement and Board Kits	7,500	2,500	1,000	1,000	1,000	1,000	1,000					
New Air Compressor - Air Lifts	10,000	10,000										



Table 3-3 (continued)  
Wastewater Capital Budget Forecast (Uninflated \$)

Description	Total	Budget 2020	Forecast									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Capital Expenditures</b>												
<b>Grand Valley Waste Plant</b>												
Annual SCADA Backup	1,000	1,000										
Replacement of UPS Batteries	1,500	1,500										
MCC Panel Inspection plus electrical inspection large pumps	12,000	2,000	2,000	2,000	2,000	2,000	2,000					
Lifting Device and Davit Inspections/fall arrest confined space equipment inspection including portable gas meter	12,000	2,000	2,000	2,000	2,000	2,000	2,000					
Portable DO meter for aeration system	6,000	1,500		1,500		1,500	1,500					
Fire Inspection and sprinkler system inspection	9,000	1,500	1,500	1,500	1,500	1,500	1,500					
Mixing pump repairs	15,000	7,500	7,500									
Smoke Detector Replacement	4,500	1,500	1,500	1,500								
Replace outside lighting with LED lights	20,000	10,000	10,000									
<b>Grand Valley Out Buildings</b>												
Bio-Solids Tank and Cathodic Protection Inspection	4,000				4,000							
Aeration Tank Clean Out and Inspection of Diffusers	15,000	5,000				5,000	5,000					
Digester Tank Inspection	2,500				2,500							
Clarifier Inspection and Skimmer Arm Wiper/Material Replacement	2,000			2,000								
General Lifecycle Provision	739,500		35,000	50,500	51,500	44,000	58,500	100,000	100,000	100,000	100,000	100,000
<b>Growth Related</b>												
Complete Schedule C EA for WPCP Expansion to Design, Tender, and Build	12,240,000										12,240,000	
Upgrade Emma St. SPS	2,040,000						2,040,000					
SPS in Southeast Quadrant	2,040,000		2,040,000									
Upgrade Sewer Trunk North Bielby St to Emma St. SPS	1,326,000						1,326,000					
<b>Total Capital Expenditures</b>	<b>18,756,750</b>	<b>110,750</b>	<b>2,140,000</b>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>	<b>3,466,000</b>	<b>100,000</b>	<b>100,000</b>	<b>100,000</b>	<b>12,340,000</b>	<b>100,000</b>





# Chapter 4

## Capital Cost Financing Options



## 4. Capital Cost Financing Options

Historically, the powers that municipalities have had to raise alternative revenues to taxation to fund capital services have been restrictive. Over the past number of years, legislative reforms have been introduced. Some of these have expanded municipal powers (e.g. Bill 130 providing for natural person powers for fees and charges by-laws); while others appear to restrict them (Bill 98 in 1997 providing amendments to the *Development Charges Act*).

The most recent *Municipal Act* came into force on January 1, 2003, with significant amendments in 2006 through the *Municipal Statute Law Amendment Act*. Part XII of the Act and Ontario Regulation 584/06 govern a municipality's ability to impose fees and charges. This Act provides municipalities with broadly defined powers and provides the ability to impose fees for both operating and capital purposes. Under s.484 of the *Municipal Act*, 2001, the *Local Improvement Act* was repealed with the in-force date of the *Municipal Act* (January 1, 2003). The municipal powers granted under the Local Improvement Act now fall under the jurisdiction of the *Municipal Act*.

The methods of capital cost recovery available to municipalities are provided as follows:

<b>Recovery Methods</b>	<b>Section Reference</b>
<i>Development Charges Act</i> , 1997	4.2
<i>Municipal Act</i> , 2001	
○ Fees and Charge	4.3
○ Local Improvements	
Grant Funding	4.4
Reserves/Reserve Funds	4.5
Debenture Financing	4.6



## 4.1 Development Charges Act, 1997

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The *Development Charges Act* received royal assent on December 8, 1997, replacing the previous act, which had been in-force since November 23, 1989.

The Province's stated intentions were to "create new construction jobs and make home ownership more affordable" by reducing the charges and to "make municipal Council decisions more accountable and more cost effective." The basis for this Act is to allow municipalities to recover the growth-related capital cost of infrastructure necessary to accommodate new growth within the municipality. The *Development Charges Act, 1997* as amended (D.C.A.) provides for limitations and ceilings on services that can be included in the charges.

The Town imposes D.C.s on new development and the capital funding plan identifies D.C.s as a source of funding for anticipated capital needs. For water services, \$6.9 million and for wastewater services \$17.3 million have been identified as funded from D.C.s over the forecast period.

## 4.2 Municipal Act

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Part XII of the *Municipal Act* provides municipalities with broad powers to impose fees and charges via passage of a by-law. These powers, as presented in s.391(1), include imposing fees or charges:

- "for services or activities provided or done by or on behalf of it;
- for costs payable by it for services or activities provided or done by or on behalf of any other municipality or local board; and
- for the use of its property including property under its control."

Restrictions are provided to ensure that the form of the charge is not akin to a poll tax. Any charges not paid under this authority may be added to the tax roll and collected in a like manner. The fees and charges imposed under this part are not appealable to the Local Planning Appeals Tribunal (L.P.A.T.), formerly Ontario Municipal Board.

s 391(2) of the *Municipal Act* permits municipalities to impose charges to recover capital costs, by by-law, from owners or occupants of land who receive an immediate benefit or a benefit at some later point in time. For a by-law imposed under this section of the Act:



- A variety of different means could be used to establish the rate, and recovery of the costs could be imposed by a number of methods at the discretion of Council (i.e. lot size, frontage, number of benefiting properties, etc.);
- Rates could be imposed in respect to costs of major capital works, even though an immediate benefit is not enjoyed;
- Non-abutting owners could be charged;
- Recovery could be authorized against existing works, where new infrastructure was added to such works, "notwithstanding that the capital costs of existing works has in whole or in part been paid";
- Charges on individual parcels could be deferred;
- Exemptions could be established; and
- Ontario Municipal Board approval is not required.

Under the previous *Local Improvement Act*:

- A variety of different types of works could be undertaken, such as watermain, storm and sanitary sewer projects, supply of electrical light or power, bridge construction, sidewalks, road widening and paving;
- Council could pass a by-law for undertaking such work on petition of a majority of benefiting taxpayers, on a 2/3 vote of Council and on sanitary grounds, based on the recommendation of the Minister of Health. The by-law was required to go to the L.P.A.T., which might hold hearings and alter the by-law, particularly if there were objections;
- The entire cost of a work was assessed only upon the lots abutting directly on the work, according to the extent of their respective frontages, using an equal special rate per metre of frontage; and
- As noted, this Act was repealed as of April 1, 2003; however, Ontario Regulation 119/03 was enacted on April 19, 2003 which restores many of the previous Local Improvement Act provisions; however, the authority is now provided under the Municipal Act.

### **4.3 Grant Funding Availability**

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In August 2012, the Province of Ontario initiated the Municipal Infrastructure Investment Initiative. In supporting the efforts of communities to restore and revitalize their public infrastructure, this initiative provides one-time provincial funding to improve asset

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management planning in small municipalities and local service boards. In addition, funding will be made available for municipal infrastructure projects under this initiative. Any municipality or local service board seeking capital funding in the future must demonstrate how its proposed project fits within a detailed asset management plan. To assist in defining the components of an asset management plan, the Province produced a document entitled, “Building Together: Guide for Municipal Asset Management Plans.” This guide documents the components, information and analysis that are required to be included in a municipality’s asset management plan under this initiative.

No grants have been identified over the forecast period. To the extent that the Town is successful in achieving additional grant funding for future infrastructure needs and the financial impacts are material, the rate forecast may be revisited.

## 4.4 Existing Reserves/Reserve Funds

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The Town has established reserves and reserve funds for water and wastewater capital costs. These reserves have been used in the capital funding forecast for rate-based needs. D.C. reserve funds for water and wastewater have been utilized for growth-related capital purposes.

The following table summarizes the water and wastewater reserves/reserve funds utilized in this analysis and the respective December 31, 2019 closing balances.

Table 4-1  
Water and Wastewater Projected Reserve/Reserve Fund Balances

Reserve/Reserve Fund	Balance
<b>Water</b>	
Capital Reserve	100,238
Development Charges Reserve Fund	442,332
Lifecycle Reserve Fund	
<b>Wastewater</b>	
Capital Reserve	-
Development Charges Reserve Fund	(5,402)
Sewage Treatment Plant Reserve	1,405,341



## 4.5 Debenture Financing

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Although it is not a direct method of minimizing the overall cost to the ratepayer, debentures are used by municipalities to assist in cash flowing large capital expenditures.

The Ministry of Municipal Affairs and Housing regulates the level of debt incurred by Ontario municipalities, through its powers established under the Municipal Act. Ontario Regulations 403/02 provides the current rules respecting municipal debt and financial obligations. Through the rules established under these regulations, a municipality's debt capacity is capped at a level where no more than 25% of the municipality's own purpose revenue may be allotted for servicing the debt (i.e. debt charges).

The Town has outstanding external debt for wastewater services relating to the Wastewater Treatment Plant. The debt was issued in 2012 for a 25-year term to 2037 and is recovered from D.C.s.

Based on the current Water Services D.C. Reserve Fund balances, forecast D.C. revenues associated with the customer growth projections, and timing of the capital projects, approximately \$1.5 million will be available for funding from the Water D.C. Reserve Fund over the forecast period. The remainder \$6.1 million will be debenture financed with annual debt financing coming from the Water D.C. Reserve Fund to meet these obligations. Based on the Water D.C. Reserve Fund continuity projections, there will be sufficient revenues within the reserve fund to meet these annual debt payments until 2028. For the period 2029-2030, interim financing of \$636,200 will be required. The funding plan assumes that this interim financing will come from non-water rate sources, i.e. other D.C. reserve funds, upfront contributions or D.C. prepayments from developers, tax base sources. These interim financing sources will be repaid from future D.C. revenues.

For Wastewater Services, the D.C. Reserve Fund will provide \$6.9 million in funding of capital costs over the forecast period. Approximately \$13.2 million in D.C. capital will be debenture financed, with annual debt servicing being funded from the Wastewater D.C. Reserve Fund over the period, with on interim financing required.



## 4.6 Recommended Approach

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The following table summarizes the recommended capital funding plan by funding sources supporting the capital needs forecast, for consideration by the Town:

Table 4-2  
Town of Grand Valley  
2020-2030 Water and Wastewater Capital Funding Program (inflated \$)

Description	Water	Wastewater
Provincial/Federal Grants	-	-
Development Charges Reserve Fund	1,517,879	6,866,219
Non-Growth Related Debenture Requirements	-	-
Growth Related Debenture Requirements	6,056,571	13,187,181
Operating Contributions	-	-
Lifecycle Reserve Fund	-	-
Water Reserve	1,524,000	1,607,350
<b>Total</b>	<b>9,098,450</b>	<b>21,660,750</b>

Tables 4-3 and 4-4 provide for the full capital expenditure and funding program by year for water and wastewater services respectively. These capital funding plans are provided in inflated dollars.



**Table 4-3  
Water Service Capital Budget Forecast – Inflated\$**

Description	Total	Budget 2020	Forecast											
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
<b>Capital Expenditures</b>														
<u>Well One</u>														
Cameral Inspection of Well Casing	11,000		5,000						6,000					
Rehab Well	10,000		10,000											
Submersible Pump Replacement	32,000					32,000								
Transmission Main Repairs	-													
Monitoring Well 1 (Crozier St)	13,000							13,000						
<u>Well Two</u>														
Cameral Inspection of Well Casing	10,000	5,000				5,000								
Rehab Well	15,000	15,000												
Submersible Pump Replacement	20,000	20,000												
Transmission Main Repairs	-													
<u>Well Three</u>														
Cameral Inspection of Well Casing	11,000	5,000						6,000						
Rehab Well	-													
Submersible Pump Replacement	11,000						11,000							
Transmission Main Repairs	3,000						3,000							
Monitoring Well 3 (Arena)	12,000		12,000											
<u>Pumphouse Raw Water Piping</u>														
Replace pressure gauges	3,000										3,000			
Service Flow Control Valves	11,000			5,000							6,000			
Service Pressure Relief Valve	5,000						5,000							
Process Piping Repairs	6,000			3,000							3,000			
Replace Raw Water Meters	11,000						11,000							
<u>Pumphouse Treatment Equipment</u>														
Chemical Metering Pumps	11,000	5,000						6,000						
Discharge Piping	11,000			5,000							6,000			
Centreline Injectors	17,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000			
<u>Instrumentation and SCADA</u>														
Replace Free Chlorine Analyzer	16,000						16,000							
Replace Desktop	7,000			3,000							4,000			
Replace Datalogger	6,000										6,000			
Replace Transducers	7,000						3,000				4,000			
Wireless Link	3,000										3,000			
<u>Building Services</u>														
Electrical	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000			
Heating	9,500	1,500		2,000			2,000		2,000		2,000			
Lighting	3,000			1,000			1,000				1,000			
Doors	-													
Generator Service	13,500	1,500		2,000			2,000	4,000	2,000		2,000			





Table 4-3 (continued)  
Water Service Capital Budget Forecast – Inflated\$

Description	Total	Budget 2020	Forecast										
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Capital Expenditures</b>													
<u>Treated Water Distribution</u>													
Distribution Mains Leak Repairs	46,000	5,000	5,000	5,000	5,000	5,000	5,000	3,000	6,000	6,000	6,000		
Valve Repair	17,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000		
Hydrant Repair	14,500	2,500		3,000			3,000		3,000		3,000		
Service Repairs	18,500	1,500	2,000	2,000	2,000	3,000		2,000	2,000	2,000	2,000		
Stock Pipe and Repair Fittings	20,000			6,000				7,000			7,000		
Restock Check and PRVS	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000		
Restock Water Meters	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000		
Water Tower Inspect and Maintain	28,000		5,000		11,000			6,000		6,000			
<u>Water Tower</u>													
Driveway - Grand Valley Water Tower	17,000				17,000								
Water Tower - Vent	10,000						10,000						
<u>Cooper Street Pumping Station</u>													
Driveway - Cooper Street Pumping Station	2,000				2,000								
<u>Melody Lane Pumphouse</u>													
Driveway - Melody Lane Pumphouse	6,000		6,000										
Electrical Heating - Melody Lane Pumphouse	12,000		12,000										
Process Piping - Melody Lane Pumphouse	117,000		117,000										
Ventilation - Melody Lane Pumphouse	29,000		29,000										
<u>Other</u>													
Water Meters	638,000		58,000	59,000	61,000	62,000	63,000	64,000	66,000	67,000	68,000	70,000	
Lifecycle Provision	176,000										87,000	89,000	
<b>Growth Related</b>													
Pumphouse Storage Upgrades	126,450	24,450	25,000	25,000	26,000	26,000							
Production Wells	745,000					745,000							
Water Treatment Pumphouse	2,497,000		2,497,000										
Elevated Water Storage	4,206,000								4,206,000				
<b>Total Capital Expenditures</b>	<b>9,098,450</b>	<b>98,450</b>	<b>2,796,000</b>	<b>134,000</b>	<b>137,000</b>	<b>948,000</b>	<b>133,000</b>	<b>98,000</b>	<b>4,299,000</b>	<b>141,000</b>	<b>155,000</b>	<b>159,000</b>	
<b>Capital Financing</b>													
Provincial/Federal Grants	-												
Development Charges Reserve Fund	1,517,879	24,450	727,000	25,000	26,000	715,429	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	6,056,571	-	1,795,000	-	-	55,571	-	-	4,206,000	-	-	-	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Reserve	1,524,000	74,000	274,000	109,000	111,000	177,000	133,000	98,000	93,000	141,000	155,000	159,000	
<b>Total Capital Financing</b>	<b>9,098,450</b>	<b>98,450</b>	<b>2,796,000</b>	<b>134,000</b>	<b>137,000</b>	<b>948,000</b>	<b>133,000</b>	<b>98,000</b>	<b>4,299,000</b>	<b>141,000</b>	<b>155,000</b>	<b>159,000</b>	



**Table 4-4  
Wastewater Service Capital Budget Forecast (Inflated\$)**

Description	Total	Budget 2020	Forecast											
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030		
<b>Capital Expenditures</b>														
<u>Emma St. Pumping Station</u>														
Bi-annual SPS Clean-Out	24,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000						
Climate Control Unit	4,500	4,500												
Jockey Pump Impeller Replacement and Inspection	10,000		10,000											
Sewage Pump #1 Inspection and Impeller Replacement	11,000				11,000									
Flushing and Wet Well Cleanout	25,000	8,000		8,000		9,000								
Pump Inspection/Maintenance Program	17,500	2,500	3,000	3,000	3,000	3,000	3,000	3,000						
<u>Grand Valley Collection System</u>														
Flush and Remove Debris from Collection System	79,500	12,500	13,000	13,000	13,000	14,000	14,000							
<u>Amaranth St. Pumping Station</u>														
Spare Float	5,500	1,500		2,000		2,000								
SPS Raw #2 Pull for Rebuild	5,000		5,000											
SPS Clean Out	17,500	2,500	3,000	3,000	3,000	3,000	3,000							
Replace Backflow Prevention Valves	1,000				1,000									
<u>Grand Valley Plant Head Works System</u>														
Modification to Vortex System	2,500	2,500												
Escalator Screen Chain Replacement	7,500	7,500												
Solenoid Valve Replacement to Stainless Steel	15,000	5,000		5,000		5,000								
Septage Tank Clean Out Annual	6,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000						
<u>Grand Valley Waste Plant UV and Filter Room</u>														
Parkson Filter Inspection and Media Analysis	16,000	5,000				5,000	6,000							
Air Compressor Aftercooler	750	750												
UV Module Relay Board	5,000	5,000												
UV Lamp Replacement	9,500	2,500	2,000	1,000	2,000	1,000	1,000							
UV Sleeve Replacement and Board Kits	7,500	2,500	1,000	1,000	1,000	1,000	1,000							
New Air Compressor - Air Lifts	10,000	10,000												
<u>Grand Valley Waste Plant</u>														
Annual SCADA Backup	1,000	1,000												
Replacement of UPS Batteries	1,500	1,500												
MCC Panel Inspection plus electrical inspection large pumps	12,000	2,000	2,000	2,000	2,000	2,000	2,000							
Lifting Device and Davit Inspections/fall arrest confined space equipment inspection including portable gas meter	12,000	2,000	2,000	2,000	2,000	2,000	2,000							
Portable DO meter for aeration system	7,500	1,500		2,000		2,000	2,000							
Fire Inspection and sprinkler system inspection	11,500	1,500	2,000	2,000	2,000	2,000	2,000							
Mixing pump repairs	15,500	7,500	8,000											
Smoke Detector Replacement	5,500	1,500	2,000	2,000										
Replace outside lighting with LED lights	20,000	10,000	10,000											



Table 4-4 (continued)  
Wastewater Service Capital Budget Forecast (Inflated\$)

Description	Total	Budget 2020	Forecast										
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Capital Expenditures</b>													
<u>Grand Valley Out Buildings</u>													
Bio-Solids Tank and Cathodic Protection Inspection	4,000			4,000									
Aeration Tank Clean Out and Inspection of Diffusers	16,000	5,000				5,000	6,000						
Digester Tank Inspection	3,000				3,000								
Clarifier Inspection and Skimmer Arm Wiper/Material Replacement	2,000			2,000									
General Lifecycle Provision	844,000		36,000	53,000	55,000	48,000	65,000	113,000	115,000	117,000	120,000	122,000	
<b>Growth Related</b>													
Complete Schedule C EA for WPCP Expansion to Design, Tender, and Build	14,628,000											14,628,000	
Upgrade Emma St. SPS	2,252,000						2,252,000						
SPS in Southeast Quadrant	2,081,000		2,081,000										
Upgrade Sewer Trunk North Bielby St to Emma St. SPS	1,464,000						1,464,000						
<b>Total Capital Expenditures</b>	<b>21,660,750</b>	<b>110,750</b>	<b>2,185,000</b>	<b>106,000</b>	<b>107,000</b>	<b>109,000</b>	<b>3,828,000</b>	<b>113,000</b>	<b>115,000</b>	<b>117,000</b>	<b>14,748,000</b>	<b>122,000</b>	
<b>Capital Financing</b>													
Provincial/Federal Grants	-												
Development Charges Reserve Fund	6,866,219	-	1,483,122	-	-	-	2,983,096	-	-	-	-	2,400,000	-
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	13,187,181	-	597,878	-	-	-	361,304	-	-	-	-	12,228,000	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-
Wastewater Reserve	1,607,350	110,750	104,000	106,000	107,000	109,000	483,600	113,000	115,000	117,000	120,000	122,000	
<b>Total Capital Financing</b>	<b>21,660,750</b>	<b>110,750</b>	<b>2,185,000</b>	<b>106,000</b>	<b>107,000</b>	<b>109,000</b>	<b>3,828,000</b>	<b>113,000</b>	<b>115,000</b>	<b>117,000</b>	<b>14,748,000</b>	<b>122,000</b>	



# Chapter 5

## Net Operating Expenditure Forecast



## 5. Net Operating Expenditure Forecast

### 5.1 Operating Expenditures

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The operating budget forecast generally includes two components – the operating expenditures and capital-related expenditures. The former is based on the Town’s projected annual spending for ongoing operations and maintenance, while the latter is based on the capital funding plan decisions (i.e. transfers to reserve funds, debt repayment and capital fund transfers) presented earlier.

Capital-related annual expenditures in the forecast include annual debt repayments and contributions to reserves and reserve funds to support the forecast and future needs. While operating aspects identified above generally increase with inflation over the period (i.e. 2% annually), the capital-related aspects tend to increase more specifically with the increase in capital funding requirements.

The Town provided its 2019 Operating Budget which formed the basis for the water and wastewater services net operating expenditure forecast. Generally, the 2019 operating expenditure estimates were inflated at 2% annually, reflecting historical changes in the Consumer Price Index (CPI), as well as adjustments provided by the system operators. Expenditures for contracted services were indexed at 6% in line with historical trends.

In addition, estimated increases in the operating costs as a result of emplacing the growth-related infrastructure were included in the forecast. The new water tower and pumphouse infrastructure will add approximately \$50,000 annually in operating expenditures. A similar amount has been added to the wastewater annual operating budget to reflect the incremental operating and maintenance of capital assets.

In total, gross operating expenditures for water services are anticipated to increase from \$388,000 in 2019 to \$1.5 million by 2030. Similarly, annual gross operating expenditures for wastewater services are forecast to increase from \$774,000 to \$3.5 million by 2030.

### 5.2 Operating Revenues

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The Town has operating revenue sources including inspection fees and connection permit fees that offset some of the annual operating costs. Moreover, these operating

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revenues include transfers from D.C. reserve funds to service the annual debenture payments identified in the earlier chapter. These operating revenues have been forecast over the period with growth demands.

A significant source of revenue is secured from the monthly base charge rate for water services. Water base charge revenues have been forecast based on the underlying system growth assumptions. The monthly base charge rate of \$20 is forecast to remain constant over the 2020-2030 period. Maintaining the base charge at current levels allows the Town to recover the long-term lifecycle capital funding from base charge revenue component of the water rate revenues. Although the base charge will remain constant, total base charge revenue will increase as a result of the growth in customers.

The annual operating revenues for water services are forecast to increase from \$261,000 in 2019 to \$1.2 million by 2030. The consumptive rate recovery component of the water revenue is anticipated to increase from \$126,000 in 2019 to \$270,000 in 2030.

For wastewater services, annual operating revenues are forecast to increase from \$254,000 in 2019 to \$1.9 million in 2030, reflective of transfers from the D.C. reserve fund to meet annual debt servicing requirements. The wastewater rate recovery is anticipated to increase from \$520,000 in 2019 to \$1.6 million in 2030.

Tables 5-1 to 5-2 provide the water and wastewater operating budget forecasts. The forecast operating budgets are provided in inflated dollars.



**Table 5-1  
Water Service Operating Budget Forecast – Inflated\$**

Description	Actual	Forecast											
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Operating Expenditures</b>													
<i>Water Delivery System</i>													
Materials/Supplies	1,860	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Monitoring Program for Mun Wells	9,709	9,900	10,100	10,300	10,500	10,700	10,900	11,100	11,300	11,500	11,700	11,900	11,900
Repairs & Maintenance	1,963	15,000	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100	18,100
Equipment Charges	2,648	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,700
Contracts	62,655	66,400	70,400	74,600	79,100	83,800	88,800	94,100	99,700	105,700	112,000	118,700	118,700
Water Meter Replacement	145	100	100	100	100	100	100	100	100	100	100	100	100
Minor Capital	45,024	17,000	17,300	17,600	18,000	18,400	18,800	19,200	19,600	20,000	20,400	20,800	20,800
<i>Water Treatment Plant</i>													
Materials/Supplies	8,325	8,500	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500	10,500
Hydro	24,791	25,300	25,800	26,300	26,800	27,300	27,800	28,400	29,000	29,600	30,200	30,800	30,800
Telephone	3,952	4,000	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,000
Repairs & Maintenance	2,826	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900	3,900
Contracts	62,655	66,400	70,400	74,600	79,100	83,800	88,800	94,100	99,700	105,700	112,000	118,700	118,700
Insurance	10,183	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,200	12,400	12,400
Levies-Taxes	6,300	6,400	6,500	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400	7,400
New Tower and Pumphouse			51,000	44,900	52,500	44,900	52,500	44,900	52,500	44,900	52,500	44,900	44,900
<b>Sub Total Operating</b>	<b>243,036</b>	<b>236,900</b>	<b>247,000</b>	<b>257,500</b>	<b>268,700</b>	<b>280,300</b>	<b>292,500</b>	<b>305,400</b>	<b>318,900</b>	<b>333,200</b>	<b>348,100</b>	<b>363,900</b>	<b>363,900</b>
<i>Capital-Related</i>													
Existing Debt (Principal) - Growth Related													
Existing Debt (Interest) - Growth Related													
New Growth Related Debt (Principal)			-	149,507	155,488	161,707	172,804	179,716	186,905	544,703	566,491	589,150	589,150
New Growth Related Debt (Interest)			-	71,800	65,820	59,600	55,355	48,443	41,254	202,018	180,230	157,570	157,570
Existing Debt (Principal) - Non-Growth Related													
Existing Debt (Interest) - Non-Growth Related													
New Non-Growth Related Debt (Principal)			-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)			-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital		-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	144,530	166,082	184,385	202,752	220,900	273,918	257,302	275,290	293,225	310,927	328,612	346,002	346,002
<b>Sub Total Capital Related</b>	<b>144,530</b>	<b>166,082</b>	<b>184,385</b>	<b>424,060</b>	<b>442,208</b>	<b>495,226</b>	<b>485,461</b>	<b>503,449</b>	<b>521,384</b>	<b>1,057,647</b>	<b>1,075,333</b>	<b>1,092,722</b>	<b>1,092,722</b>
<b>Total Expenditures</b>	<b>387,566</b>	<b>402,982</b>	<b>431,385</b>	<b>681,560</b>	<b>710,908</b>	<b>775,526</b>	<b>777,961</b>	<b>808,849</b>	<b>840,284</b>	<b>1,390,847</b>	<b>1,423,433</b>	<b>1,456,622</b>	<b>1,456,622</b>
<b>Revenues</b>													
Monthly Base Charge Revenues	251,280	259,680	276,480	293,280	310,080	326,880	343,680	360,480	377,280	394,080	410,880	427,680	427,680
Water Service Inspection Fees	6,000	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900	7,000	7,000
Water Connection Permit Fees	4,000	4,000	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,000
Contributions from Development Charges Reserve	-	-	-	221,307	221,307	221,307	228,159	228,159	228,159	746,720	746,720	746,720	746,720
Contributions from Reserves / Reserve Funds	-	-	-	-	-	34,774	-	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>261,280</b>	<b>269,680</b>	<b>286,680</b>	<b>524,987</b>	<b>541,987</b>	<b>593,761</b>	<b>582,839</b>	<b>599,839</b>	<b>616,839</b>	<b>1,152,400</b>	<b>1,169,400</b>	<b>1,186,400</b>	<b>1,186,400</b>
<b>Water Consumptive Billing Recovery</b>	<b>126,286</b>	<b>133,302</b>	<b>144,705</b>	<b>156,572</b>	<b>168,920</b>	<b>181,765</b>	<b>195,122</b>	<b>209,010</b>	<b>223,445</b>	<b>238,447</b>	<b>254,032</b>	<b>270,222</b>	<b>270,222</b>



**Table 5-2  
Wastewater Service Operating Budget Forecast – Inflated\$**

Description	Actual	Forecast										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Expenditures</b>												
<u>Operating Costs</u>												
<u>Sewage Treatment Plant</u>												
MP EA Engineering Fees	34,831	35,500	36,200	36,900	37,600	38,400	39,200	40,000	40,800	41,600	42,400	43,200
Heating Fuel	4,803	4,900	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900
Hydro	96,134	98,100	100,100	102,100	104,100	106,200	108,300	110,500	112,700	115,000	117,300	119,600
Telephone	4,377	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200	5,300	5,400	5,500
Repairs & Maintenance	42,195	43,000	43,900	44,800	45,700	46,600	47,500	48,500	49,500	50,500	51,500	52,500
Contracts-OCWA	264,607	270,598	276,000	281,500	287,100	292,800	310,400	316,600	322,900	329,400	336,000	342,700
Insurance	4,132	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200
Levies-Taxes	5,648	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800
Minor Capital	11,500	13,600	13,900	14,200	14,500	14,800	15,100	15,400	15,700	16,000	16,300	16,600
<u>Surge Tank</u>												
Engineering Fees	2,748	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800
<u>Infiltration Sewers</u>												
Wages	246	300	300	300	300	300	300	300	300	300	300	300
Benefits	59	100	100	100	100	100	100	100	100	100	100	100
Contracts	8,344	8,500	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
Minor Capital	2,028	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Incremental Operating Costs	-	-	48,750	49,700	50,700	51,700	52,700	53,800	54,900	56,000	57,100	58,200
<b>Sub Total Operating</b>	<b>481,652</b>	<b>494,298</b>	<b>553,050</b>	<b>564,100</b>	<b>575,300</b>	<b>586,800</b>	<b>610,200</b>	<b>622,500</b>	<b>634,900</b>	<b>647,600</b>	<b>660,400</b>	<b>673,300</b>
<u>Capital-Related</u>												
Existing Debt (Principal) - Growth Related	122,084	126,745	132,325	137,771	143,441	149,043	155,479	161,878	168,540	175,248	182,689	190,208
Existing Debt (Interest) - Growth Related	132,356	127,695	122,115	116,669	110,998	105,397	98,961	92,562	85,900	79,192	71,750	64,232
New Growth Related Debt (Principal)	-	-	-	49,798	51,790	53,861	56,016	88,350	91,884	95,559	99,381	1,121,838
New Growth Related Debt (Interest)	-	-	-	23,915	21,923	19,852	17,697	29,909	26,375	22,699	18,877	504,022
Existing Debt (Principal) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	-
Existing Debt (Interest) - Non-Growth Related	-	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Principal)	-	-	-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital	-	-	-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	38,098	72,117	83,857	149,145	220,550	298,369	371,479	463,390	563,445	672,023	789,940	917,854
<b>Sub Total Capital Related</b>	<b>292,537</b>	<b>326,556</b>	<b>338,296</b>	<b>477,298</b>	<b>548,702</b>	<b>626,521</b>	<b>699,631</b>	<b>836,088</b>	<b>936,143</b>	<b>1,044,721</b>	<b>1,162,638</b>	<b>2,798,153</b>
<b>Total Expenditures</b>	<b>774,189</b>	<b>820,854</b>	<b>891,346</b>	<b>1,041,398</b>	<b>1,124,002</b>	<b>1,213,321</b>	<b>1,309,831</b>	<b>1,458,588</b>	<b>1,571,043</b>	<b>1,692,321</b>	<b>1,823,038</b>	<b>3,471,453</b>
<b>Revenues</b>												
Contributions from Development Charges Reserve	254,439	254,439	254,439	328,152	328,152	328,152	328,152	372,698	372,698	372,698	372,698	1,880,300
Contributions from Reserves / Reserve Funds	-	-	-	-	-	-	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>254,439</b>	<b>254,439</b>	<b>254,439</b>	<b>328,152</b>	<b>328,152</b>	<b>328,152</b>	<b>328,152</b>	<b>372,698</b>	<b>372,698</b>	<b>372,698</b>	<b>372,698</b>	<b>1,880,300</b>
<b>Wastewater Billing Recovery - Operating</b>	<b>519,750</b>	<b>566,415</b>	<b>636,907</b>	<b>713,245</b>	<b>795,850</b>	<b>885,169</b>	<b>981,679</b>	<b>1,085,890</b>	<b>1,198,345</b>	<b>1,319,623</b>	<b>1,450,340</b>	<b>1,591,154</b>





# Chapter 6

## Forecast Water and Wastewater Rates



## 6. Forecast Water and Wastewater Rates

To summarize the analysis undertaken thus far, Chapter 3 reviewed capital-related needs for water and wastewater services including the lifecycle needs of the Town. Chapter 4 provided a review of capital financing options of which internal sources (i.e. reserve fund transfers) and external sources (i.e. debt) will be the predominant basis for financing future capital needs. Chapter 5 established the 10-year operating forecast of expenditures for the Town's water and wastewater systems. This chapter presents the calculated rates over the next 10-year period. These calculations will be based on the net operating expenditures provided in Chapter 5, divided by the volumes and growth forecasts provided in Chapter 2.

The forecast water and wastewater rates are discussed in Section 6.2 and 6.3.

### 6.1 Water Rates

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The recommended rate forecasts are provided to address full costs of the municipal systems, including annual operating and capital expenditures from both a lifecycle and growth-related perspective.

To achieve full cost recovery identified above, no increases in the water monthly base charge rates are proposed. The consumptive rate would increase at a rate of 2% per year over the forecast period. The resultant rate forecast is presented in Table 6-1 below. The detailed financial forecast and rate calculations for water services are provided in Appendix A to this report.

### 6.2 Wastewater Rates

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To achieve full cost recovery identified in the report, the wastewater charge would need to be increased by 5% annually throughout the forecast period. These increases would allow the Town to increase its annual capital funding levels to the annual lifecycle contribution amount by the end of the forecast.

The resultant rate forecast is presented in Table 6-2 below. The detailed financial forecast and rate calculations for wastewater services are provided in Appendix B to this report.



Table 6-1  
Water Rate Forecast

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Water Consumptive Billing Recovery	126,286	133,302	144,705	156,572	168,920	181,765	195,122	209,010	223,445	238,447	254,032	270,222
Total Water Consumption (m <sup>3</sup> )	154,623	159,872	170,370	180,868	191,366	201,864	212,363	222,861	233,359	243,857	254,355	264,853
<b><i>Water Consumption Forecast By Block (m<sup>3</sup>)</i></b>												
Block 1 Consumption (up to 15m <sup>3</sup> /month)	103,030	108,279	118,778	129,276	139,774	150,272	160,770	171,268	181,766	192,265	202,763	213,261
Block 2 Consumption (over 15m <sup>3</sup> /month)	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592
<b>Total Consumption (m<sup>3</sup>)</b>	<b>154,623</b>	<b>159,872</b>	<b>170,370</b>	<b>180,868</b>	<b>191,366</b>	<b>201,864</b>	<b>212,363</b>	<b>222,861</b>	<b>233,359</b>	<b>243,857</b>	<b>254,355</b>	<b>264,853</b>
<b><i>Increasing Block Rates (\$/m<sup>3</sup>)</i></b>												
<b>Block 1 (up to 15m<sup>3</sup>/month)</b>	<b>0.75</b>	<b>0.77</b>	<b>0.79</b>	<b>0.80</b>	<b>0.82</b>	<b>0.84</b>	<b>0.86</b>	<b>0.88</b>	<b>0.90</b>	<b>0.93</b>	<b>0.95</b>	<b>0.97</b>
<b>Block 2 (over 15m<sup>3</sup>/month)</b>	<b>0.95</b>	<b>0.97</b>	<b>1.00</b>	<b>1.02</b>	<b>1.04</b>	<b>1.07</b>	<b>1.09</b>	<b>1.12</b>	<b>1.15</b>	<b>1.17</b>	<b>1.20</b>	<b>1.23</b>

Table 6-2  
Wastewater Rate Forecast

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Wastewater Service Revenue	519,750	566,415	636,907	713,245	795,850	885,169	981,679	1,085,890	1,198,345	1,319,623	1,450,340	1,591,154
Wastewater Customers (Residential Equivalents)	990	1,025	1,095	1,165	1,235	1,305	1,375	1,445	1,515	1,585	1,655	1,725
<b>Annual Charge (per Residential Equivalent)</b>	<b>525</b>	<b>553</b>	<b>582</b>	<b>612</b>	<b>644</b>	<b>678</b>	<b>714</b>	<b>751</b>	<b>791</b>	<b>833</b>	<b>876</b>	<b>922</b>



## 6.3 Forecast Water and Wastewater Rate Impacts

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Table 6-3 summarizes the impacts of the recommended rates on a typical residential water and wastewater customer consuming 150 m<sup>3</sup> per year. In 2019 the annual water and wastewater bill for this customer totalled approximately \$878 (i.e. \$353 for water and \$525 for wastewater). With the proposed monthly base charge and consumptive rates, the 2020 annual bill would be approximately \$908 (i.e. \$355 for water and \$553 for wastewater). This represents a \$30 annual increase in the total water and wastewater bill, or a 3.4% increase from the 2019 annual bill. Over the remainder of the forecast period the annual water and wastewater bill increases average level approximately 3.7% per year, or roughly 1.7% higher than annual rates of inflation.

## 6.4 Recommendations

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Based upon the analysis in this report, the following recommendations are provided for Council's consideration:

1. That Council provide for the recovery of water and wastewater costs through full cost recovery rates and maintain reserve funds for water and wastewater services;
2. That Council approve the 2020 water and wastewater rates as shown in Chapter 6, and direct staff to review the Water and Wastewater Rate Study in five years; and
3. That Council approve the Water and Wastewater Rate Study and direct staff to prepare the Water Financial Plan in the format required under O.Reg. 453/07 and submit the plan to the Province to maintain the Town's Municipal Drinking Water License.



**Table 6-3  
Annual Water and Wastewater Bill Impact**

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Monthly Base Charge (\$/customer)	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00	\$20.00
Block 1 \$/m <sup>3</sup> (up to 15m <sup>3</sup> /month)	\$0.75	\$0.77	\$0.79	\$0.80	\$0.82	\$0.84	\$0.86	\$0.88	\$0.90	\$0.93	\$0.95	\$0.97
Block 2 \$/m <sup>3</sup> (over 15m <sup>3</sup> /month)	\$0.95	\$0.97	\$1.00	\$1.02	\$1.04	\$1.07	\$1.09	\$1.12	\$1.15	\$1.17	\$1.20	\$1.23
<b>Annual Base Charge Portion of Bill</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>	<b>\$240</b>
Block 1 Consumption (m <sup>3</sup> )	150	150	150	150	150	150	150	150	150	150	150	150
Block 2 Consumption (m <sup>3</sup> )	-	-	-	-	-	-	-	-	-	-	-	-
Total Annual Consumption (m <sup>3</sup> )	150	150	150	150	150	150	150	150	150	150	150	150
<b>Annual Consumptive Portion of Bill</b>	<b>\$113</b>	<b>\$115</b>	<b>\$118</b>	<b>\$121</b>	<b>\$124</b>	<b>\$126</b>	<b>\$129</b>	<b>\$132</b>	<b>\$136</b>	<b>\$139</b>	<b>\$142</b>	<b>\$145</b>
<b>Total Annual Water Bill</b>	<b>\$353</b>	<b>\$355</b>	<b>\$358</b>	<b>\$361</b>	<b>\$364</b>	<b>\$366</b>	<b>\$369</b>	<b>\$372</b>	<b>\$376</b>	<b>\$379</b>	<b>\$382</b>	<b>\$385</b>
<b>\$ Increase - Total Annual Bill</b>		\$2.66	\$2.72	\$2.79	\$2.85	\$2.92	\$2.99	\$3.06	\$3.13	\$3.21	\$3.28	\$3.36
<b>% Increase - Total Annual Bill</b>		0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.8%	0.9%	0.9%	0.9%

**Annual Customer Wastewater Bill**

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Monthly Flat Rate	\$43.75	\$46.05	\$48.47	\$51.02	\$53.70	\$56.52	\$59.50	\$62.62	\$65.92	\$69.38	\$73.03	\$76.87
<b>Total Annual Wastewater Bill</b>	<b>\$525</b>	<b>\$553</b>	<b>\$582</b>	<b>\$612</b>	<b>\$644</b>	<b>\$678</b>	<b>\$714</b>	<b>\$751</b>	<b>\$791</b>	<b>\$833</b>	<b>\$876</b>	<b>\$922</b>
<b>\$ Increase - Total Annual Bill</b>		\$27.60	\$29.05	\$30.58	\$32.19	\$33.88	\$35.66	\$37.53	\$39.51	\$41.58	\$43.77	\$46.07
<b>% Increase - Total Annual Bill</b>		5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%	5.3%

**Total Annual Water and Wastewater Bill**

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Total Annual Water and Wastewater Bill</b>	<b>\$878</b>	<b>\$908</b>	<b>\$940</b>	<b>\$973</b>	<b>\$1,008</b>	<b>\$1,045</b>	<b>\$1,083</b>	<b>\$1,124</b>	<b>\$1,167</b>	<b>\$1,211</b>	<b>\$1,258</b>	<b>\$1,308</b>
<b>\$ Increase - Total Annual Bill</b>		\$30.26	\$31.77	\$33.37	\$35.04	\$36.80	\$38.65	\$40.59	\$42.64	\$44.79	\$47.05	\$49.43
<b>% Increase - Total Annual Bill</b>		3.4%	3.5%	3.6%	3.6%	3.7%	3.7%	3.7%	3.8%	3.8%	3.9%	3.9%



# Appendices



# Appendix A

## Water Rate Forecast Calculations



**Table 1**  
**Town of Grand Valley**  
**Water Service**  
**Capital Budget Forecast**  
 Inflated \$

Description	Total	Budget 2020	Forecast										
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Capital Expenditures</b>													
<u>Well One</u>													
Cameral Inspection of Well Casing	11,000		5,000						6,000				
Rehab Well	10,000		10,000										
Submersible Pump Replacement	32,000					32,000							
Transmission Main Repairs	-												
Monitoring Well 1 (Crozier St)	13,000							13,000					
<u>Well Two</u>													
Cameral Inspection of Well Casing	10,000	5,000				5,000							
Rehab Well	15,000	15,000											
Submersible Pump Replacement	20,000	20,000											
Transmission Main Repairs	-												
<u>Well Three</u>													
Cameral Inspection of Well Casing	11,000	5,000						6,000					
Rehab Well	-												
Submersible Pump Replacement	11,000					11,000							
Transmission Main Repairs	3,000					3,000							
Monitoring Well 3 (Arena)	12,000		12,000										
<u>Pumphouse Raw Water Piping</u>													
Replace pressure gauges	3,000										3,000		
Service Flow Control Valves	11,000			5,000							6,000		
Service Pressure Relief Valve	5,000					5,000							
Process Piping Repairs	6,000			3,000							3,000		
Replace Raw Water Meters	11,000					11,000							
<u>Pumphouse Treatment Equipment</u>													
Chemical Metering Pumps	11,000	5,000						6,000					
Discharge Piping	11,000			5,000							6,000		
Centreline Injectors	17,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000		
<u>Instrumentation and SCADA</u>													
Replace Free Chlorine Analyzer	16,000						16,000						
Replace Desktop	7,000			3,000							4,000		
Replace Datalogger	6,000										6,000		
Replace Transducers	7,000						3,000				4,000		
Wireless Link	3,000										3,000		
<u>Building Services</u>													
Electrical	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000		
Heating	9,500	1,500		2,000			2,000		2,000		2,000		
Lighting	3,000			1,000			1,000				1,000		
Doors	-												
Generator Service	13,500	1,500		2,000			2,000	4,000	2,000		2,000		





**Table 1 (cont'd)**  
**Town of Grand Valley**  
**Water Service**  
**Capital Budget Forecast**  
 Inflated \$

Description	Total	Budget 2020	Forecast										
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b>Capital Expenditures</b>													
<u>Treated Water Distribution</u>													
Distribution Mains Leak Repairs	46,000	5,000	5,000	5,000	5,000	5,000	5,000	3,000	6,000	6,000	6,000		
Valve Repair	17,500	1,500	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000	2,000		
Hydrant Repair	14,500	2,500		3,000			3,000			3,000		3,000	
Service Repairs	18,500	1,500	2,000	2,000	2,000	3,000	2,000	2,000	2,000	2,000	2,000		
Stock Pipe and Repair Fittings	20,000			6,000				7,000			7,000		
Restock Check and PRVS	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000		
Restock Water Meters	28,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	3,000	4,000		
Water Tower Inspect and Maintain	28,000		5,000		11,000			6,000		6,000			
<u>Water Tower</u>													
Driveway - Grand Valley Water Tower	17,000				17,000								
Water Tower - Vent	10,000							10,000					
<u>Cooper Street Pumping Station</u>													
Driveway - Cooper Street Pumping Station	2,000				2,000								
<u>Melody Lane Pumphouse</u>													
Driveway - Melody Lane Pumphouse	6,000		6,000										
Electrical Heating - Melody Lane Pumphouse	12,000		12,000										
Process Piping - Melody Lane Pumphouse	117,000		117,000										
Ventilation - Melody Lane Pumphouse	29,000		29,000										
<u>Other</u>													
Water Meters	638,000		58,000	59,000	61,000	62,000	63,000	64,000	66,000	67,000	68,000	70,000	
Lifecycle Provision	176,000										87,000	89,000	
<b>Growth Related</b>													
Pumphouse Storage Upgrades	126,450	24,450	25,000	25,000	26,000	26,000							
Production Wells	745,000					745,000							
Water Treatment Pumphouse	2,497,000		2,497,000										
Elevated Water Storage	4,206,000								4,206,000				
<b>Total Capital Expenditures</b>	<b>9,098,450</b>	<b>98,450</b>	<b>2,796,000</b>	<b>134,000</b>	<b>137,000</b>	<b>948,000</b>	<b>133,000</b>	<b>98,000</b>	<b>4,299,000</b>	<b>141,000</b>	<b>155,000</b>	<b>159,000</b>	
<b>Capital Financing</b>													
Provincial/Federal Grants	-												
Development Charges Reserve Fund	1,517,879	24,450	727,000	25,000	26,000	715,429	-	-	-	-	-	-	-
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-	-
Growth Related Debenture Requirements	6,056,571	-	1,795,000	-	-	55,571	-	-	4,206,000	-	-	-	-
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-	-
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	-
Water Reserve	1,524,000	74,000	274,000	109,000	111,000	177,000	133,000	98,000	93,000	141,000	155,000	159,000	
<b>Total Capital Financing</b>	<b>9,098,450</b>	<b>98,450</b>	<b>2,796,000</b>	<b>134,000</b>	<b>137,000</b>	<b>948,000</b>	<b>133,000</b>	<b>98,000</b>	<b>4,299,000</b>	<b>141,000</b>	<b>155,000</b>	<b>159,000</b>	



**Table 2**  
**Town of Grand Valley**  
**Water Service**  
**Schedule of Non-Growth Related Debenture Repayments**  
 Inflated \$

Debenture Year	Principal (Inflated)	Forecast									
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-		-	-	-	-	-	-	-	-	-
2022	-			-							
2023	-				-						
2024	-					-					
2025	-						-				
2026	-							-			
2027	-								-		
2028	-									-	
2029	-										-
2030	-										
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-

**Table 3**  
**Town of Grand Valley**  
**Water Service**  
**Schedule of Growth Related Debenture Repayments**  
 Inflated \$

Debenture Year	Principal (Inflated)	Forecast									
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	1,795,000		221,307	221,307	221,307	221,307	221,307	221,307	221,307	221,307	221,307
2022	-			-	-	-	-	-	-	-	-
2023	-				-						
2024	55,571					6,851	6,851	6,851	6,851	6,851	6,851
2025	-						-				
2026	-							-			
2027	4,206,000								518,562	518,562	518,562
2028	-									-	
2029	-										-
2030	-										
<b>Total Annual Debt Charges</b>	<b>6,056,571</b>	-	221,307	221,307	221,307	228,159	228,159	228,159	746,720	746,720	746,720



**Table 4**  
**Town of Grand Valley**  
**Water Service**  
**Water Reserves/ Reserve Funds Continuity**  
 Inflated \$

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	100,238	156,761	47,942	144,529	319,469	389,246	523,820	715,132	933,665	1,125,663	1,325,261
Transfer from Operating	166,082	184,385	202,752	220,900	273,918	257,302	275,290	293,225	310,927	328,612	346,002
Transfer to Capital	74,000	274,000	109,000	111,000	177,000	133,000	98,000	93,000	141,000	155,000	159,000
Transfer to Operating	-	-	-	-	34,774	-	-	-	-	-	-
Transfer to/(from) Wastewater Reserve	38,633	20,143	-	(58,776)	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>153,687</b>	<b>47,002</b>	<b>141,695</b>	<b>313,205</b>	<b>381,614</b>	<b>513,549</b>	<b>701,110</b>	<b>915,357</b>	<b>1,103,591</b>	<b>1,299,275</b>	<b>1,512,263</b>
Interest	3,074	940	2,834	6,264	7,632	10,271	14,022	18,307	22,072	25,986	30,245

**Table 5**  
**Town of Grand Valley**  
**Water Service**  
**Water Development Charges Reserve Fund Continuity**  
 Inflated \$

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	442,332	758,805	371,636	473,801	583,888	-	134,364	278,784	433,601	70,232	-
Development Charge Proceeds	326,044	332,544	339,182	345,946	352,848	359,888	367,112	374,474	381,974	389,600	397,364
Interim Funding from Non-Rate Revenues	-	-	-	-	-	-	-	-	-	286,889	349,356
Transfer to Capital	24,450	727,000	25,000	26,000	715,429	-	-	-	-	-	-
Transfer to Operating	-	-	221,307	221,307	221,307	228,159	228,159	228,159	746,720	746,720	746,720
<b>Closing Balance</b>	<b>743,926</b>	<b>364,349</b>	<b>464,510</b>	<b>572,439</b>	<b>-</b>	<b>131,729</b>	<b>273,317</b>	<b>425,099</b>	<b>68,855</b>	<b>-</b>	<b>-</b>
Interest	14,879	7,287	9,290	11,449	-	2,635	5,466	8,502	1,377	-	-
Required from Development Charges	24,450	2,522,000	25,000	26,000	771,000	-	-	4,206,000	-	-	-



**Table 6**  
**Town of Grand Valley**  
**Water Services**  
**Operating Budget Forecast**  
 Inflated \$

Description	Actual	Forecast										
	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Operating Expenditures</b>												
<i>Water Delivery System</i>												
Materials/Supplies	1,860	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900	1,900
Monitoring Program for Mun Wells	9,709	9,900	10,100	10,300	10,500	10,700	10,900	11,100	11,300	11,500	11,700	11,900
Repairs & Maintenance	1,963	15,000	15,300	15,600	15,900	16,200	16,500	16,800	17,100	17,400	17,700	18,100
Equipment Charges	2,648	2,700	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700
Contracts	62,655	66,400	70,400	74,600	79,100	83,800	88,800	94,100	99,700	105,700	112,000	118,700
Water Meter Replacement	145	100	100	100	100	100	100	100	100	100	100	100
Minor Capital	45,024	17,000	17,300	17,600	18,000	18,400	18,800	19,200	19,600	20,000	20,400	20,800
<i>Water Treatment Plant</i>												
Materials/Supplies	8,325	8,500	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
Hydro	24,791	25,300	25,800	26,300	26,800	27,300	27,800	28,400	29,000	29,600	30,200	30,800
Telephone	3,952	4,000	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000
Repairs & Maintenance	2,826	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800	3,900
Contracts	62,655	66,400	70,400	74,600	79,100	83,800	88,800	94,100	99,700	105,700	112,000	118,700
Insurance	10,183	10,400	10,600	10,800	11,000	11,200	11,400	11,600	11,800	12,000	12,200	12,400
Levies-Taxes	6,300	6,400	6,500	6,600	6,700	6,800	6,900	7,000	7,100	7,200	7,300	7,400
New Tower and Pumphouse			51,000	44,900	52,500	44,900	52,500	44,900	52,500	44,900	52,500	44,900
<b>Sub Total Operating</b>	<b>243,036</b>	<b>236,900</b>	<b>247,000</b>	<b>257,500</b>	<b>268,700</b>	<b>280,300</b>	<b>292,500</b>	<b>305,400</b>	<b>318,900</b>	<b>333,200</b>	<b>348,100</b>	<b>363,900</b>
<i>Capital-Related</i>												
Existing Debt (Principal) - Growth Related												
Existing Debt (Interest) - Growth Related												
New Growth Related Debt (Principal)			-	149,507	155,488	161,707	172,804	179,716	186,905	544,703	566,491	589,150
New Growth Related Debt (Interest)			-	71,800	65,820	59,600	55,355	48,443	41,254	202,018	180,230	157,570
Existing Debt (Principal) - Non-Growth Related												
Existing Debt (Interest) - Non-Growth Related												
New Non-Growth Related Debt (Principal)			-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)			-	-	-	-	-	-	-	-	-	-
Transfer to Capital			-	-	-	-	-	-	-	-	-	-
Transfer to Capital Reserve	144,530	166,082	184,385	202,752	220,900	273,918	257,302	275,290	293,225	310,927	328,612	346,002
<b>Sub Total Capital Related</b>	<b>144,530</b>	<b>166,082</b>	<b>184,385</b>	<b>424,060</b>	<b>442,208</b>	<b>495,226</b>	<b>485,461</b>	<b>503,449</b>	<b>521,384</b>	<b>1,057,647</b>	<b>1,075,333</b>	<b>1,092,722</b>
<b>Total Expenditures</b>	<b>387,566</b>	<b>402,982</b>	<b>431,385</b>	<b>681,560</b>	<b>710,908</b>	<b>775,526</b>	<b>777,961</b>	<b>808,849</b>	<b>840,284</b>	<b>1,390,847</b>	<b>1,423,433</b>	<b>1,456,622</b>
<b>Revenues</b>												
Monthly Base Charge Revenues	251,280	259,680	276,480	293,280	310,080	326,880	343,680	360,480	377,280	394,080	410,880	427,680
Water Service Inspection Fees	6,000	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800	6,900	7,000
Water Connection Permit Fees	4,000	4,000	4,100	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000
Contributions from Development Charges Reserve Fund	-	-	-	221,307	221,307	221,307	228,159	228,159	228,159	746,720	746,720	746,720
Contributions from Reserves / Reserve Funds	-	-	-	-	-	34,774	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>261,280</b>	<b>269,680</b>	<b>286,680</b>	<b>524,987</b>	<b>541,987</b>	<b>593,761</b>	<b>582,839</b>	<b>599,839</b>	<b>616,839</b>	<b>1,152,400</b>	<b>1,169,400</b>	<b>1,186,400</b>
<b>Water Consumptive Billing Recovery</b>	<b>126,286</b>	<b>133,302</b>	<b>144,705</b>	<b>156,572</b>	<b>168,920</b>	<b>181,765</b>	<b>195,122</b>	<b>209,010</b>	<b>223,445</b>	<b>238,447</b>	<b>254,032</b>	<b>270,222</b>



**Table 7**  
**Town of Grand Valley**  
**Water Services**  
**Water Rate Forecast**  
 Inflated \$

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Water Consumptive Billing Recovery	126,286	133,302	144,705	156,572	168,920	181,765	195,122	209,010	223,445	238,447	254,032	270,222
Total Water Consumption (m <sup>3</sup> )	154,623	159,872	170,370	180,868	191,366	201,864	212,363	222,861	233,359	243,857	254,355	264,853
<b><i>Water Consumption Forecast By Block (m<sup>3</sup>)</i></b>												
Block 1 Consumption (up to 15m <sup>3</sup> /month)	103,030	108,279	118,778	129,276	139,774	150,272	160,770	171,268	181,766	192,265	202,763	213,261
Block 2 Consumption (over 15m <sup>3</sup> /month)	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592	51,592
<b>Total Consumption (m<sup>3</sup>)</b>	<b>154,623</b>	<b>159,872</b>	<b>170,370</b>	<b>180,868</b>	<b>191,366</b>	<b>201,864</b>	<b>212,363</b>	<b>222,861</b>	<b>233,359</b>	<b>243,857</b>	<b>254,355</b>	<b>264,853</b>
<b><i>Increasing Block Rates (\$/m<sup>3</sup>)</i></b>												
<b>Block 1 (up to 15m<sup>3</sup>/month)</b>	<b>0.75</b>	<b>0.77</b>	<b>0.79</b>	<b>0.80</b>	<b>0.82</b>	<b>0.84</b>	<b>0.86</b>	<b>0.88</b>	<b>0.90</b>	<b>0.93</b>	<b>0.95</b>	<b>0.97</b>
<b>Block 2 (over 15m<sup>3</sup>/month)</b>	<b>0.95</b>	<b>0.97</b>	<b>1.00</b>	<b>1.02</b>	<b>1.04</b>	<b>1.07</b>	<b>1.09</b>	<b>1.12</b>	<b>1.15</b>	<b>1.17</b>	<b>1.20</b>	<b>1.23</b>
Check Revenue												
Block 1	77,273	83,130	93,346	103,999	115,104	126,676	138,731	151,285	164,355	177,959	192,114	206,839
Block 2	49,013	50,172	51,358	52,573	53,816	55,089	56,392	57,725	59,090	60,488	61,918	63,383
<b>Check Total Revenue</b>	<b>126,286</b>	<b>133,302</b>	<b>144,705</b>	<b>156,572</b>	<b>168,920</b>	<b>181,765</b>	<b>195,122</b>	<b>209,010</b>	<b>223,445</b>	<b>238,447</b>	<b>254,032</b>	<b>270,222</b>



# Appendix B

## Wastewater Rate Forecast Calculations



**Table 8**  
**Town of Grand Valley**  
**Wastewater Service**  
**Capital Budget Forecast**  
 Inflated \$

Description	Total	Budget 2020	Forecast									
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Capital Expenditures</b>												
<u>Emma St. Pumping Station</u>												
Bi-annual SPS Clean-Out	24,000	4,000	4,000	4,000	4,000	4,000	4,000	4,000				
Climate Control Unit	4,500	4,500										
Jockey Pump Impeller Replacement and Inspection	10,000		10,000									
Sewage Pump #1 Inspection and Impeller Replacement	11,000				11,000							
Flushing and Wet Well Cleanout	25,000	8,000		8,000		9,000						
Pump Inspection/Maintenance Program	17,500	2,500	3,000	3,000	3,000	3,000	3,000					
<u>Grand Valley Collection System</u>												
Flush and Remove Debris from Collection System	79,500	12,500	13,000	13,000	13,000	14,000	14,000					
<u>Amaranth St. Pumping Station</u>												
Spare Float	5,500	1,500		2,000		2,000						
SPS Raw #2 Pull for Rebuild	5,000		5,000									
SPS Clean Out	17,500	2,500	3,000	3,000	3,000	3,000	3,000					
Replace Backflow Prevention Valves	1,000				1,000							
<u>Grand Valley Plant Head Works System</u>												
Modification to Vortex System	2,500	2,500										
Escalator Screen Chain Replacement	7,500	7,500										
Solenoid Valve Replacement to Stainless Steel	15,000	5,000		5,000		5,000						
Septage Tank Clean Out Annual	6,000	1,000	1,000	1,000	1,000	1,000	1,000					
<u>Grand Valley Waste Plant UV and Filter Room</u>												
Parkson Filter Inspection and Media Analysis	16,000	5,000				5,000	6,000					
Air Compressor Aftercooler	750	750										
UV Module Relay Board	5,000	5,000										
UV Lamp Replacement	9,500	2,500	2,000	1,000	2,000	1,000	1,000					
UV Sleeve Replacement and Board Kits	7,500	2,500	1,000	1,000	1,000	1,000	1,000					
New Air Compressor - Air Lifts	10,000	10,000										
<u>Grand Valley Waste Plant</u>												
Annual SCADA Backup	1,000	1,000										
Replacement of UPS Batteries	1,500	1,500										
MCC Panel Inspection plus electrical inspection large pumps	12,000	2,000	2,000	2,000	2,000	2,000	2,000					
Lifting Device and Davit Inspections/fall arrest confined space equipment inspection including portable gas meter	12,000	2,000	2,000	2,000	2,000	2,000	2,000					
Portable DO meter for aeration system	7,500	1,500		2,000		2,000	2,000					
Fire Inspection and sprinkler system inspection	11,500	1,500	2,000	2,000	2,000	2,000	2,000					
Mixing pump repairs	15,500	7,500	8,000									
Smoke Detector Replacement	5,500	1,500	2,000	2,000								
Replace outside lighting with LED lights	20,000	10,000	10,000									



**Table 8 (cont'd)**  
**Town of Grand Valley**  
**Wastewater Service**  
**Capital Budget Forecast**  
 Inflated \$

Description	Total	Budget 2020	Forecast										
			2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	
<b><u>Growth Related</u></b>													
Complete Schedule C EA for WPCP Expansion to Design, Tender, and Build	14,628,000											14,628,000	
Upgrade Emma St. SPS	2,252,000						2,252,000						
SPS in Southeast Quadrant	2,081,000		2,081,000										
Upgrade Sewer Trunk North Bielby St to Emma St. SPS	1,464,000						1,464,000						
<b>Total Capital Expenditures</b>	<b>21,660,750</b>	<b>110,750</b>	<b>2,185,000</b>	<b>106,000</b>	<b>107,000</b>	<b>109,000</b>	<b>3,828,000</b>	<b>113,000</b>	<b>115,000</b>	<b>117,000</b>	<b>14,748,000</b>	<b>122,000</b>	
<b><u>Capital Financing</u></b>													
Provincial/Federal Grants	-												
Development Charges Reserve Fund	6,866,219	-	1,483,122	-	-	-	2,983,096	-	-	-	2,400,000	-	
Non-Growth Related Debenture Requirements	-	-	-	-	-	-	-	-	-	-	-	-	
Growth Related Debenture Requirements	13,187,181	-	597,878	-	-	-	361,304	-	-	-	12,228,000	-	
Operating Contributions	-	-	-	-	-	-	-	-	-	-	-	-	
Lifecycle Reserve Fund	-	-	-	-	-	-	-	-	-	-	-	-	
Wastewater Reserve	1,607,350	110,750	104,000	106,000	107,000	109,000	483,600	113,000	115,000	117,000	120,000	122,000	
<b>Total Capital Financing</b>	<b>21,660,750</b>	<b>110,750</b>	<b>2,185,000</b>	<b>106,000</b>	<b>107,000</b>	<b>109,000</b>	<b>3,828,000</b>	<b>113,000</b>	<b>115,000</b>	<b>117,000</b>	<b>14,748,000</b>	<b>122,000</b>	





**Table 9**  
**Town of Grand Valley**  
**Wastewater Service**  
**Schedule of Non-Growth Related Debenture Repayments**  
 Inflated \$

Debenture Year	Principal (Inflated)	Forecast									
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	-		-	-	-	-	-	-	-	-	-
2022	-			-	-	-	-	-	-	-	-
2023	-				-	-	-	-	-	-	-
2024	-					-	-	-	-	-	-
2025	-						-	-	-	-	-
2026	-							-	-	-	-
2027	-								-	-	-
2028	-									-	-
2029	-										-
2030	-										
<b>Total Annual Debt Charges</b>	-	-	-	-	-	-	-	-	-	-	-

**Table 10**  
**Town of Grand Valley**  
**Wastewater Service**  
**Schedule of Growth Related Debenture Repayments**  
 Inflated \$

Debenture Year	Principal (Inflated)	Forecast									
		2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
2021	597,878		73,713	73,713	73,713	73,713	73,713	73,713	73,713	73,713	73,713
2022	-			-	-	-	-	-	-	-	-
2023	-				-	-	-	-	-	-	-
2024	-					-	-	-	-	-	-
2025	361,304						44,545	44,545	44,545	44,545	44,545
2026	-							-	-	-	-
2027	-								-	-	-
2028	-									-	-
2029	12,228,000										1,507,602
2030	-										
<b>Total Annual Debt Charges</b>	<b>13,187,181</b>	-	73,713	73,713	73,713	73,713	118,258	118,258	118,258	118,258	1,625,860



**Table 11**  
**Town of Grand Valley**  
**Wastewater Service**  
**Wastewater Reserves/ Reserve Funds Continuity**  
 Inflated \$

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	-	-	-	44,008	100,758	295,929	187,483	548,630	1,017,018	1,603,481	2,318,889
Transfer from Operating	72,117	83,857	149,145	220,550	298,369	371,479	463,390	563,445	672,023	789,940	917,854
Transfer to Capital	110,750	104,000	106,000	107,000	109,000	483,600	113,000	115,000	117,000	120,000	122,000
Transfer to Operating	-	-	-	-	-	-	-	-	-	-	-
Transfer to/(from) Water Reserve	(38,633)	(20,143)	-	58,776	-	-	-	-	-	-	-
<b>Closing Balance</b>	<b>-</b>	<b>-</b>	<b>43,145</b>	<b>98,782</b>	<b>290,126</b>	<b>183,807</b>	<b>537,873</b>	<b>997,076</b>	<b>1,572,040</b>	<b>2,273,421</b>	<b>3,114,743</b>
Interest	-	-	863	1,976	5,803	3,676	10,757	19,942	31,441	45,468	62,295

**Table 12**  
**Town of Grand Valley**  
**Wastewater Service**  
**Wastewater Development Charges Reserve Fund Continuity**  
 Inflated \$

Description	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Opening Balance	(5,510)	736,204	-	707,100	1,449,183	2,227,359	-	747,544	1,532,579	2,356,321	772,015
Development Charge Proceeds	981,718	1,001,358	1,021,388	1,041,820	1,062,654	1,083,890	1,105,584	1,127,682	1,150,238	1,173,254	1,196,740
Transfer to Capital	-	1,483,122	-	-	-	2,983,096	-	-	-	2,400,000	-
Transfer to Operating	254,439	254,439	328,152	328,152	328,152	328,152	372,698	372,698	372,698	372,698	1,880,300
<b>Closing Balance</b>	<b>721,768</b>	<b>-</b>	<b>693,236</b>	<b>1,420,768</b>	<b>2,183,685</b>	<b>-</b>	<b>732,886</b>	<b>1,502,528</b>	<b>2,310,119</b>	<b>756,877</b>	<b>88,455</b>
Interest	14,435	-	13,865	28,415	43,674	-	14,658	30,051	46,202	15,138	1,769
Required from Development Charges	-	2,081,000	-	-	-	3,344,400	-	-	-	14,628,000	-



**Table 13**  
**Town of Grand Valley**  
**Wastewater Services**  
**Operating Budget Forecast**  
 Inflated \$

Description	Actual 2019	Forecast										
		2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
<b>Expenditures</b>												
<i>Operating Costs</i>												
<i>Sewage Treatment Plant</i>												
MP EA Engineering Fees	34,831	35,500	36,200	36,900	37,600	38,400	39,200	40,000	40,800	41,600	42,400	43,200
Heating Fuel	4,803	4,900	5,000	5,100	5,200	5,300	5,400	5,500	5,600	5,700	5,800	5,900
Hydro	96,134	98,100	100,100	102,100	104,100	106,200	108,300	110,500	112,700	115,000	117,300	119,600
Telephone	4,377	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200	5,300	5,400	5,500
Repairs & Maintenance	42,195	43,000	43,900	44,800	45,700	46,600	47,500	48,500	49,500	50,500	51,500	52,500
Contracts-OCWA	264,607	270,598	276,000	281,500	287,100	292,800	310,400	316,600	322,900	329,400	336,000	342,700
Insurance	4,132	4,200	4,300	4,400	4,500	4,600	4,700	4,800	4,900	5,000	5,100	5,200
Levies-Taxes	5,648	5,800	5,900	6,000	6,100	6,200	6,300	6,400	6,500	6,600	6,700	6,800
Minor Capital	11,500	13,600	13,900	14,200	14,500	14,800	15,100	15,400	15,700	16,000	16,300	16,600
<i>Surge Tank</i>												
Engineering Fees	2,748	2,800	2,900	3,000	3,100	3,200	3,300	3,400	3,500	3,600	3,700	3,800
<i>Infiltration Sewers</i>												
Wages	246	300	300	300	300	300	300	300	300	300	300	300
Benefits	59	100	100	100	100	100	100	100	100	100	100	100
Contracts	8,344	8,500	8,700	8,900	9,100	9,300	9,500	9,700	9,900	10,100	10,300	10,500
Minor Capital	2,028	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
Incremental Operating Costs	-	-	48,750	49,700	50,700	51,700	52,700	53,800	54,900	56,000	57,100	58,200
<b>Sub Total Operating</b>	<b>481,652</b>	<b>494,298</b>	<b>553,050</b>	<b>564,100</b>	<b>575,300</b>	<b>586,800</b>	<b>610,200</b>	<b>622,500</b>	<b>634,900</b>	<b>647,600</b>	<b>660,400</b>	<b>673,300</b>
<i>Capital-Related</i>												
Existing Debt (Principal) - Growth Related	122,084	126,745	132,325	137,771	143,441	149,043	155,479	161,878	168,540	175,248	182,689	190,208
Existing Debt (Interest) - Growth Related	132,356	127,695	122,115	116,669	110,998	105,397	98,961	92,562	85,900	79,192	71,750	64,232
New Growth Related Debt (Principal)			-	49,798	51,790	53,861	56,016	88,350	91,884	95,559	99,381	1,121,838
New Growth Related Debt (Interest)			-	23,915	21,923	19,852	17,697	29,909	26,375	22,699	18,877	504,022
Existing Debt (Principal) - Non-Growth Related												
Existing Debt (Interest) - Non-Growth Related												
New Non-Growth Related Debt (Principal)			-	-	-	-	-	-	-	-	-	-
New Non-Growth Related Debt (Interest)			-	-	-	-	-	-	-	-	-	-
Transfer to Capital												
Transfer to Capital Reserve	38,098	72,117	83,857	149,145	220,550	298,369	371,479	463,390	563,445	672,023	789,940	917,854
<b>Sub Total Capital Related</b>	<b>292,537</b>	<b>326,556</b>	<b>338,296</b>	<b>477,298</b>	<b>548,702</b>	<b>626,521</b>	<b>699,631</b>	<b>836,088</b>	<b>936,143</b>	<b>1,044,721</b>	<b>1,162,638</b>	<b>2,798,153</b>
<b>Total Expenditures</b>	<b>774,189</b>	<b>820,854</b>	<b>891,346</b>	<b>1,041,398</b>	<b>1,124,002</b>	<b>1,213,321</b>	<b>1,309,831</b>	<b>1,458,588</b>	<b>1,571,043</b>	<b>1,692,321</b>	<b>1,823,038</b>	<b>3,471,453</b>
<b>Revenues</b>												
Contributions from Development Charges Reserve Fund	254,439	254,439	254,439	328,152	328,152	328,152	328,152	372,698	372,698	372,698	372,698	1,880,300
Contributions from Reserves / Reserve Funds		-	-	-	-	-	-	-	-	-	-	-
<b>Total Operating Revenue</b>	<b>254,439</b>	<b>254,439</b>	<b>254,439</b>	<b>328,152</b>	<b>328,152</b>	<b>328,152</b>	<b>328,152</b>	<b>372,698</b>	<b>372,698</b>	<b>372,698</b>	<b>372,698</b>	<b>1,880,300</b>
<b>Wastewater Billing Recovery - Operating</b>	<b>519,750</b>	<b>566,415</b>	<b>636,907</b>	<b>713,245</b>	<b>795,850</b>	<b>885,169</b>	<b>981,679</b>	<b>1,085,890</b>	<b>1,198,345</b>	<b>1,319,623</b>	<b>1,450,340</b>	<b>1,591,154</b>



**Table 14**  
**Town of Grand Valley**  
**Wastewater Services**  
**Wastewater Rate Forecast**  
Inflated \$

Description	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030
Total Wastewater Service Revenue	519,750	566,415	636,907	713,245	795,850	885,169	981,679	1,085,890	1,198,345	1,319,623	1,450,340	1,591,154
Wastewater Customers (Residential Equivalents)	990	1,025	1,095	1,165	1,235	1,305	1,375	1,445	1,515	1,585	1,655	1,725
<b>Annual Charge (per Residential Equivalent)</b>	<b>525</b>	<b>553</b>	<b>582</b>	<b>612</b>	<b>644</b>	<b>678</b>	<b>714</b>	<b>751</b>	<b>791</b>	<b>833</b>	<b>876</b>	<b>922</b>