# City of Spruce Grove:
# Stormwater Utility Funding Review

**Version 2 (FINAL)**
**June 10th, 2019**

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June 10th, 2019

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**RE: City of Spruce Grove Stormwater Utility Funding Review**

Mark:

Enclosed is our report for the Stormwater Utility Funding Review. If you have any questions do not hesitate to contact me.

Yours truly,

Greg Weiss
President

# 1 DOCUMENT INFORMATION

| Version Number | Revision Date | Status |
|---|---|---|
| 1.0 | May 22nd, 2019 | Draft report |
| 2.0 | June 10th, 2019 | Final report |

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# 3 EXECUTIVE SUMMARY

**Challenge**. Urbanization has increased the total area of hard surfaces contributing stormwater runoff, which has led to increased volumes of polluted waters reaching rivers, creeks and lakes. In addition, the incorporation of stormwater retention ponds, natural wetlands and dry ponds into the urban landscape has created new stormwater management burdens. Finally, changing weather patterns have increased the frequency of extreme storm events, sometimes overwhelming the capacity of existing stormwater infrastructure and putting people and property at risk. Yet despite these imperatives, most municipalities lack dedicated and sustainable funding mechanisms for their stormwater management programs.

**Objective**. The City of Spruce Grove ("the City") currently provides municipal stormwater services to residents, businesses, and other organizations within its boundaries. However, costs are recovered from general (property) taxation rather than a dedicated stormwater utility charge. The City's stormwater network is aging and, combined with competing pressures for funding and increased regulatory requirements, means the City needs to look for new ways to fund this service beyond the general (property) tax levy. If the City continues to fund is stormwater management program via general (property) taxation, it is estimated that an infrastructure deficit of approximately $40 million will be created over the next 10 years.

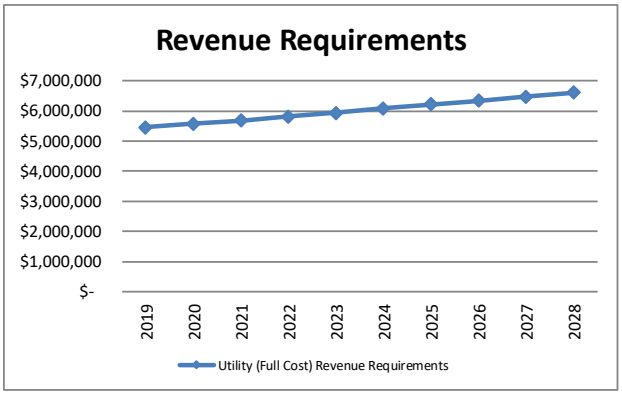
**Funding Options**. The following mechanisms represent the most common forms employed by Canadian municipalities: general (property) tax levies, dedicated tax levies, debt financing, developer contributions and levies, grants, service fees, connection fees, and user fees.

**Best Funding Option**. There are significant benefits offered by user fees, particularly in comparison to other funding mechanisms such as general (property) tax levies. Accordingly, the user fee concept has quickly become the preferred funding mechanism for municipalities. The adoption of user fees as a leading practice funding mechanism is generally referred to as (and implemented as) a "stormwater utility" approach because it provides user fee funding and also incorporates accounting and management practices similar to those of other municipal utilities like water, sewer, and solid waste.

**Rate Approaches**. The 9 approaches for establishing a stormwater user fee are: (1) Flat Fee, (2) Tiered Flat Fee, (3) Runoff Coefficient, (4) Intensity of Development Factor (IDF), (5) Equivalent Residential Unit (ERU), (6) Single Family Unit (SFU), (7) Tiered Residential Rate, (8) Level-of-Service/Geography Base, and (9) Impervious Area Measurement.

These 9 rate approaches are generally listed in increasing order of accuracy with respect to allocating charges to properties based on relative contribution of stormwater runoff. The first four approaches are the easiest to set up and administer, however other rate approaches provide more accurate indicators of a property's contribution to stormwater runoff. The final five approaches are based on some form of measured impervious area (sample and/or actual). However, as the rate calculation becomes more complex, the cost to administer and manage the stormwater rate increases. The final three rate approaches often feature prohibitively high administration costs.

**Best Rate Approaches**. Rate approaches 3: Runoff Efficient and 4: IDF, or a hybrid of approaches 5:ERU or 6: SFU, where sample measurements are utilized rather than individual measurements, offer the best alignment with the circumstances in the City of Spruce Grove. These approaches offer relatively low set-up and administration costs, while achieving fair and equitable rates. These rate approaches also align well with the City's existing Diamond Utility Billing System, and do not require integration with external systems.




**Utility Revenue requirements**. This review was underpinned by a 10-year review period from 2019 to 2028. It was determined that the City of Spruce Grove stormwater utility revenue requirements under the *utility (full cost) approach*[1] increases from approximately $5.45 million in Year 1 to approximately $6.61 million in Year 10.

**Recommendations**. Over the long-term, rates and revenues need to satisfy the *utility (full cost)* revenue requirements for the utility to be fully self-sustaining. However, transition to full cost rates immediately would require a very high rate initially. Rather, the ideal rate strategy would commence at a "revenue neutral" start point that at least covers cash needs (i.e., it would generate revenues equivalent to the City's current draw on the tax levy) and then gradually transition toward full cost rates over the long-term.

To leverage existing data and conditions in the City of Spruce Grove without adding undue administrative costs or billing complexities, it is recommended that 2 stormwater user fees be established: (1) Small customer charge: for utility customers with a water service <1"

[1] Revenue requirements are comprised of (1) net O&M costs, (2) depreciation, and (3) return on assets.

(i.e., predominantly residential customers), and (2) Large customer charge: for utility customers with a water service >=1" (i.e., predominantly non-residential customers) at 4X the small customer rate.

The stormwater charge for small customers was established based on average lot size and an estimate of impervious area for the customer class. The large customer charge was based on the tax levy differential between residential and non-residential tax rates. Essentially, this rate approach is a hybrid of Approach 5: ERU described above. This approach is ideal for the City of Spruce Grove because:

- It is relatively easy and low cost to set-up and administer.
- It does not require the integration of any 3rd party systems.
- It can be set-up and administered via existing functionality in the City's Diamond utility billing module.
- It can be set-up and administered by existing staff resources.
- It delivers a relatively high degree of equity and fairness in terms of allocation of stormwater costs to users/rate payers.

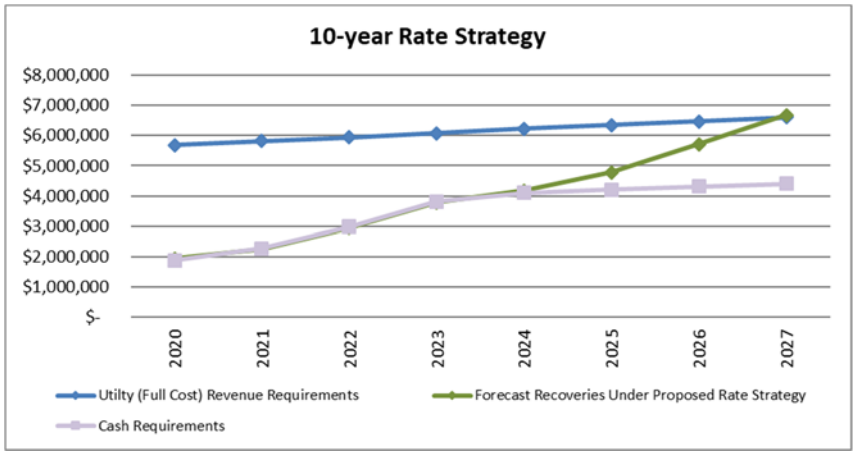
| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Small Customers (<1") | $ - | $ 9.30 | $ 11.50 | $ 13.00 | $ 16.50 |
| Large Customers (>=1") | $ - | $ 37.20 | $ 46.00 | $ 52.00 | $ 66.00 |

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Small Customers (<1") | $ 20.50 | $ 22.00 | $ 24.50 | $ 28.50 | $ 32.50 |
| Large Customers (>=1") | $ 82.00 | $ 88.00 | $ 98.00 | $ 114.00 | $ 130.00 |

It is assumed the implementation of a stormwater utility would occur in 2020, hence the $0 rate in 2019[2]. The small customer rate commences at $9.30 per month, which is $1 more per month then the 2019 effective rate via the general tax levy. The small customer rate grows gradually over the 10-year period to $32.50 per month in 2028. The large customer rate commences at $37.20 per month, which is 4X the small customer rate. The large customer rate grows gradually over the 10-year period to $130.00 per month in 2028.

[2] It is assumed the City will prepare for implementation of the stormwater utility in the second half of 2019 (including a significant public engagement exercise) and make the switch to user fees in 2020. In the meantime, the City will continue to fund its stormwater management program via the general (property) tax levy in 2019.

The rates in Year 1 will meet the cash requirements of the City's stormwater utility, but they are below full cost. Accordingly, it is recommended that rates gradually increase over the 10-year period, in order to reach the full cost requirement in Year 10 ("green" line). Implementation of the proposed rate strategy also eliminates the need for future draws on taxes—reducing the tax burden by approximately $29.47 million from 2020 to 2028. Accordingly, as discussed in Section 13, reduction of equivalent property taxes should accompany implementation of a stormwater user fee in 2020 (i.e., implementation of a stormwater user fee should result in revenue neutrality in 2020). Beyond 2020, stormwater user fees should gradually increase until the full cost revenue requirement is achieved.



# 4 INTRODUCTION

The City of Spruce Grove ("the City") currently provides municipal drainage services to residents, businesses, and other organizations within its boundaries. However, costs are recovered from general (property) taxation rather than a dedicated stormwater user fee. The City's stormwater network is aging and, combined with competing pressures for funding and increased regulatory requirements, means the City needs to look for new ways to fund this service beyond the general (property) tax levy.

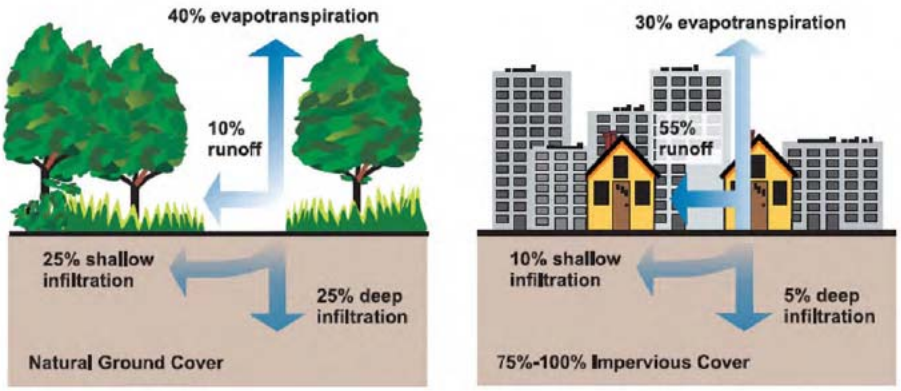
The City wishes to establish a dedicated stormwater utility similar to its water and sewer utilities. The City recognizes that overall financial sustainability of this new utility will stem (in part) from choices pertaining to rate structure/funding options. Getting it "right" will ensure a self-funded stormwater network embraced and paid for by users rather than taxpayers.

This report outlines the methodology and information used to examine and select a recommended stormwater utility funding mechanism.

# 5 URBANIZATION: A BRIEF HISTORY OF STORMWATER MANAGEMENT

For the past century, land in urban environments has steadily been developed from its natural state to hardened impervious surfaces. Accordingly, the water that used to infiltrate into the soil or evaporate through vegetation now needs to be managed. Municipalities have been managing stormwater by building structurally engineered infrastructure, or "grey infrastructure". This grey infrastructure is typically comprised of a system of pipes and culverts to collect the stormwater and convey it to nearby waterbodies. A 2003 study[3] determined that lands in their natural state produce about 10% water runoff after a rain event or snow melt. The remaining 90% of water either evaporates back into the atmosphere or is absorbed into the ground. By comparison, todays urban setting can see up to 55% of water runoff created through hardened urban surfaces with only 45% of the water evaporating or infiltrating into the ground, as shown in Figure 1 below.

Figure 1: Urbanization Impact on Water Runoff[4]




Grey or "traditional" stormwater infrastructure is costly to maintain, upgrade, and replace and these costs fall primarily to municipalities. Furthermore, for many older neighborhoods, future stormwater management runoff challenges were difficult to predict, and the required stormwater infrastructure was either not built or was undersized for the stormwater management issues created in a modern urban environment. For new neighbourhoods, higher density targets (such as those established by the Edmonton Metropolitan Region Board) offer many advantages, but also come with a cost—green space is being reduced resulting in greater runoff issues for metro municipalities to

[3] *Urban Facts*, US Environmental Protection Agency, 2003.

[4] *Urban Facts*, US Environmental Protection Agency, 2003.

manage.

In most municipalities, including the City of Spruce Grove, urban stormwater management infrastructure was constructed and funded through the development process. Developers built and paid for stormwater mains, curbs and gutters and, in newer neighborhoods, stormwater amenities such as dry ponds, retention ponds etc. At the conclusion of subdivision construction, developers turn over ("contribute") these assets to the municipality. Along with the stormwater assets, the obligation and burden of managing and replacing these assets falls to the municipality. The operational and financial burden of these new contributed assets may not to be significant initially. However, over time wear and aging results in a growing infrastructure burden. In many cases the need for rehabilitation and replacement is not apparent until flooding or asset failure besets the community. The advent of more extreme weather events has also made issues of aging infrastructure more acute.

Inadequate funding has created a significant stormwater infrastructure deficit in many municipalities and provinces (e.g., $6.8 billion infrastructure deficit in Ontario[5]). Most municipalities do not have the funding required to do what they know needs to be done to properly manage stormwater. Only about 35% of municipalities that responded to a survey said that they currently recover the full costs associated with managing stormwater. 43% of municipalities that responded to the survey do not even have asset management plans for their stormwater infrastructure[6].

While the traditional stormwater management infrastructure burden is taxing for municipalities, there are also new stormwater management problems to deal with. Pollution is a major issue that is tied directly to the conveyance of stormwater over hardened urban surfaces, as depicted in Figure 2 below. Sediment from construction sites, roads and winter sanding; oil and grease from vehicles, leaks and spills; nutrients (nitrogen and phosphorus) from fertilizers, pet waste and yard waste; pesticides and herbicides from lawns and garden care; viruses and bacteria from pet waste and failing septic systems; road salts from winter road maintenance; metals from roof shingles and vehicles; and heat (increased water temperature) from exposure to air in warm seasons are impacting the quality of watercourses that receive urban runoff and deleteriously impacting aquatic ecosystems[7]. To mitigate this pollution impact, environmental legislation is evolving and stiffening to address everything from erosion control to dredging of stormwater sediment

[5] *Urban Stormwater Fees: How to Pay for What We Need*, Environmental Commissioner of Ontario, 2016.

[6] *Urban Stormwater Fees: How to Pay for What We Need*, Environmental Commissioner of Ontario, 2016.

[7] *Urban Stormwater Fees: How to Pay for What We Need*, Environmental Commissioner of Ontario, 2016.

to containment and in some cases treatment of stormwater discharges particularly where urban runoff impacts a drinking water supply.

Figure 2: Stormwater Pollution


Unlike the City of Spruce Grove whose stormwater and sanitary systems are segregated, many communities in Canada are also dealing with another significant stormwater pollution problem – that of combined sewers. A combined sewer is a system that collects sewage and stormwater together and transports it to a wastewater facility where it is treated before being released to a water body. A combined sewer can fail during heavy rains when overflows, containing both stormwater and sewage, are discharged into waterbodies without treatment.

Stormwater ponds have been used extensively in North America (including the City of Spruce Grove) to manage runoff from urban areas. Sometimes, developers view these facilities as amenities that can attract buyers to upscale homes. However, as a stormwater

management asset they have been designed primarily to reduce peak flows. Early pond design did not address either water quantity or quality control issues. Furthermore, by nature of their design, they allow more time for sediment and associated contaminants to settle out in the pond rather than being released into nearby streams. As such, over time the effectiveness of the facility to manage runoff deteriorates as sediment collects in the facility. In some cases, growth of vegetation in stormwater ponds has further reduced the effectiveness of runoff management and led to unsightliness and odour issues when runoff pollutants accelerated vegetation growth. Stormwater ponds can also elevate community safety issues when pond banks erode, or residents believe frozen ponds to be suitable skating venues.

Many municipalities have begun to utilize “green” infrastructure in efforts to meet stormwater management objectives. Wetlands and other natural resources can hold excess water in place, filtering out sediment and pollutants before they reach waterways while also helping to recharge groundwater. Bioretention cells (or bioswales), vegetative swales, and other use of infrastructure to mimic natural habitats and absorb excess water are being explored and deployed. No doubt these new systems, like traditional grey stormwater management facilities, may help to alleviate some stormwater management issues, but they may also bring other unforeseen issues that municipalities will be forced to contend with. The effectiveness of these “green” solutions remains a work in progress.

Whether traditional grey infrastructure, or new green infrastructure, consistent stable funding for stormwater management facilities has been a significant challenge for municipalities over the past century; this is described more fully in the next section.

# 6 THE STORMWATER FUNDING CHALLENGE

Municipalities like the City of Spruce Grove play a major role in stormwater management and their programs typically include: design, permitting, and construction of new capital improvement projects; operation and maintenance of stormwater management facilities; rehabilitation, renewal, retrofit, reconstruction or upgrade of existing facilities; emergency response, recovery, and clean-up after flooding events, system failures, spills and other water quality violations; engineering and support services for review and regulation of proposed land or building developments, and; inspection, monitoring, environmental compliance programs, enforcement of by-laws and detection of illicit discharges and cross-connections. However, municipal stormwater management programs are facing challenges on several fronts including: (a) funding service delivery, (b) adapting to changing environmental regulations, and (c) managing increasing community impacts as a result of climate change[8]. This section takes a closer look at one of these challenges—funding.

Traditional stormwater infrastructure, made up mainly of pipes and culverts, is costly to install and maintain. Most municipal infrastructure in Canada was built between the 1950s and 1970s and much of it is due for replacement, especially in older communities. As a result, the cost to replace stormwater management infrastructure in poor condition in Canada is estimated to be $10 billion[9]. Yet, in all but a few jurisdictions, most municipalities lack dedicated and sustainable funding mechanisms.

Municipalities are struggling to address these stormwater challenges and need financial solutions that are sustainable and predictable. The most common municipal funding mechanism currently in use in Canada today is the general (property) tax levy; but there are inherent flaws in funding municipal stormwater management programs through property taxes:

- Many properties produce runoff but do not pay property taxes (such as schools, churches and government-owned land).
- Property taxes are calculated based on a property's assessed value rather than its runoff contribution. As a result, there is no fairness in the amount charged—the amount of tax collected has no connection to the amount of stormwater runoff a

[8] *Urban Stormwater Fees: How to Pay for What We Need*, Environmental Commissioner of Ontario, 2016.

[9] *Informing the Future: The Canadian Infrastructure Report Card*, Canadian Construction Association, Canadian Public Works Association, Canadian Society for Civil Engineering, and the Federation of Canadian Municipalities, 2016.

property generates.

- Every budget cycle the stormwater management program must compete for funding with other, more visible and popular municipal services like roads, transit, police, and firefighting. As such, stormwater management program funding is neither predictable nor a priority compared to other municipal services.

- While it is widely accepted that mitigation measures undertaken by individual residential properties (e.g., rain barrels, lot grading) have only minor impact on a municipality's stormwater management program, property taxes create no incentives for property owners to reduce stormwater runoff and pollutant discharge from their properties.

- There is no transparency on stormwater service costs—residents often do not know what portion of their property tax bill is for stormwater services.

- The general revenue bucket does not earmark revenue for stormwater management programs or infrastructure.

Given the challenges of funding municipal stormwater management programs via general (property) tax levies, other funding sources are discussed in the section that follows.

# 7 STORMWATER FUNDING MECHANISMS

While there are other funding mechanisms available to Canadian municipalities, the following 8 mechanisms are the most commonly used:

1. General (Property) tax levies
2. Dedicated tax levies
3. Debt
4. Developer contributions and levies
5. Grants
6. Service fees
7. Connection fees
8. User fees

Each is described in the sections below.

## 7.1 General (Property) Tax Levies

Despite the proliferation of stormwater utilities in recent years, general (property) tax revenues remain the most common source of stormwater management funding in Canada.

General tax levies have certain attractive attributes for stormwater management. The sources of general tax levies are usually well-established, fully understood, and well-accepted by citizens and businesses. Substantial technical analysis (i.e., rate setting) is not needed to fund stormwater management from general tax levies.

However, general tax levies also have significant disadvantages as a source of stormwater management funding. Many worthy public purposes, including public safety and social services, are commonly funded from general tax levies. Stormwater management has historically struggled to compete effectively against other needs, and major long-term reallocations of general tax levies simply to enhance stormwater management capabilities are rare. In the absence of a major budget reallocation, increasing general tax levies to support stormwater management implies approval of a tax increase of some sort. Neither option is politically attractive for most municipal officials.

Because they are not earmarked or dedicated to any specific purpose, general tax levies shift with elected officials' and administrators' perceived priorities. Stormwater management needs are more likely to receive better treatment in a year following severe storms and drainage problems than in a year following drought. However, a lack of stable

funding makes it difficult to plan and carry out a consistent, long-term stormwater management program.

The practice of funding stormwater management from general tax levies contributes to a dispersal of stormwater management responsibilities. Stormwater management is not typically an independent municipal function, either operationally or financially. Components of what might be collectively considered a “consolidated stormwater management program” are often embedded in operational units such as public works, engineering, transportation, street maintenance, wastewater treatment, and even recreation. The funding of stormwater management in such cases is also typically embedded in whatever resources are assigned to the primary function. Departments may budget for costs that are stormwater-related, but the costs are not readily identifiable as such. Dispersion of functions and costs may obscure any discernible relationship between demands for stormwater services and facilities and how the cost burden is apportioned.

General tax levies have little if any inherent association with the origin of stormwater management demands and costs. Taxes are usually calculated based on the economic value of land and improvements and have little direct relationship with stormwater runoff quantity or quality.

Because general tax levies are collected from residents and businesses, certain properties that impose significant demands on stormwater systems and programs may be exempt from contributing financially to stormwater management (e.g., not-for-profits, institutional facilities). There is also disparity where properties have high assessment value yet produce little stormwater runoff (e.g., high-rise offices and residential condominium towers) versus properties that have low assessment value yet produce significant stormwater runoff (e.g., parking lots).

For these reasons, general (property) tax levies are considered the least effective funding mechanism for municipal stormwater management programs.

## 7.2 Dedicated Tax Levies

A dedicated levy can be administered specifically to raise revenue for stormwater services, such that a fixed property tax rate is applied and itemized on the property owner’s annual tax bill for specific public services. A dedicated tax levy can be used to fund capital improvements (e.g., local improvement levy) and/or operation of stormwater systems. A by-law is required to dedicate these funds specifically to stormwater management. The assessment concept is predicated on assigning costs in proportion to the direct and special benefits individually derived by specific properties.

The chief drawback of the dedicated tax levy is that the distribution of costs must be proportionate with the direct and special benefit accruing to each property being assessed. Generally, the benefits must be definable, measurable in some economic manner, and available to the property being assessed within a practical timeframe—and rarely is the necessary data available for the municipality to validate all 3 criteria.

Special assessments for stormwater management are most workable in relatively localized or specific applications. For example, a neighbourhood rehabilitation project that directly serves a small service area is an appropriate project for a dedicated tax levy. A dedicated tax levy is less suitable for capital projects that serve a wide area, and they are usually unsuitable for facilities providing a general benefit to the community at large.

## 7.3 Debt

The expense of major capital infrastructure, land, and equipment poses a significant challenge for stormwater management programs whose annual revenues and resources are limited. As a result, municipal governments often use debt financing to fund major capital improvements.

Debt servicing is commonly derived from general tax levies, user fees, or dedicated levies. In some cases, specific funding mechanisms or sources are identified in debt covenants. For example, a debenture might be issued with debt service to be paid from a special assessment (local improvement charge) upon properties served by the improvement.

The chief advantage of debt financing is that it enables expenditures to be undertaken that far exceed current revenues and resources. Construction of major improvements can be expedited in advance of what can be funded from annual budget appropriations by spreading project costs over time, much like a home mortgage or automobile loan enables a buyer to acquire assets they could not afford to buy for cash.

In the case of stormwater management, using debt financing to expedite a capital project by several years can result in significant savings if flooding, other damaging impacts, and inflation of land acquisition and construction costs are avoided. The major disadvantage of debt financing is that it is essentially a loan that incurs an interest expense, increasing the total cost of capital.

In Alberta, the *Municipal Government Act* defines the parameters within which municipal debt financing can occur (e.g., debt financing sources, debt limits, debt servicing limits).

## 7.4 Developer Contributions & Levies

Developer contributions and levies have been adopted by municipalities for a variety of

public infrastructure. They are based on the cost of mitigating development impacts of individual developments by building public improvements off site where impacts can't be solved on site. For example, road levies support the cost of additional lanes and/or signalization to accommodate the added traffic generated on arterial roads by new development. Such impacts cannot be effectively addressed by on site facilities. More recently in Alberta, development levies are being employed to meet other non-core community requirements such as recreation, fire, police, and library facilities.

The *Municipal Government Act* and associated regulations define the type of infrastructure leviable, and the general parameters within which rates are established. For example, offsite levies can only be used for new and/or expanded capital infrastructure. This point is critically important in terms of stormwater management programs. Developer levies cannot be used to bring inadequate existing systems up to an adequate service level. Thus, they are not useful for correcting many deficiencies that exist in stormwater systems nor can they be used to rehabilitate or replace infrastructure.

## 7.5 Grants

Federal and provincial funding for municipal stormwater management programs is sometimes available for technical studies and facility construction. Usually, funding from federal and provincial government sources takes the form of grants. Grants can be general and applied by the municipality to a broad array of projects, or grants can be ear-marked for a specifically approved project.

The primary disadvantage of grant funding for stormwater systems is their unpredictability. Federal and provincial grants are established, and terminated, based on the priorities and availability of funds by these other orders of government.

## 7.6 Service Fees

A variety of special service fees can reasonably be allocated to support stormwater management programs (e.g., building permit reviews and associated fees, lot inspection/grading fees). However, most of these fees are charged for the provision of special services to a relatively small customer group, as opposed to user fees that are generally applicable to all utility customers. As such, special fees typically generate only a small amount of revenue for the stormwater management program.

## 7.7 Connection Fees

Connection fees are similar to developer levies. They are based on the cost of mitigating impacts of individual properties on offsite improvements (new or existing). For example, stormwater connection fees support the cost of stormwater collection from the individual

property that was not previously serviced by the municipal stormwater system.

However, most connection fees are charged to a specific property or area, as opposed to user fees that are generally applicable to all utility customers. A such, connection fees typically generate only a small amount of revenue for the stormwater management program.

## 7.8 User Fees

Stormwater user fees can provide a dedicated and sustainable source of funding for stormwater management programs. Like water and wastewater utilities, stormwater user fees charge property owners a fee that is based on the estimated amount of stormwater runoff their property generates. The fees collected are then used to fund the stormwater management program thereby creating a dedicated revenue stream.

User fees are typically structured on a full cost recovery basis (accounting for short-term and long-term costs of capital, operations and maintenance, and renewal) which better reflects the true costs of stormwater management program services, and more fairly assigns those costs.

There are inherent benefits in funding municipal stormwater management programs through stormwater user fees including:

- Revenues collected through user fees are dedicated to the service for which they are charged. As such, stormwater management programs gain a dedicated revenue stream that promotes appropriate planning, operation, maintenance, rehabilitation and replacement of stormwater infrastructure.

- User fees by their nature show users how much they are paying for a service. Users, particularly larger commercial and industrial properties, understand the impact that their property is having on the operation, maintenance, rehabilitation and capital replacement of stormwater infrastructure.

- Stormwater user fees are inherently fairer than other funding mechanisms like general tax levies, which assign costs based on assessed property value.

- User fees free up general tax levies and other funding sources (e.g., grants), that were previously dedicated to stormwater management, for other municipal services.

- A stormwater user fee is highly flexible and can easily be tailored to individual situations. For example, while most urban municipalities apply user fees city-wide,

rural municipalities often apply user fees to more limited service areas where urban/suburban conditions exist.

However, the implementation of stormwater user fees is not without issue, and problems can be encountered if the new fee program is:

- Improperly communicated to users (regardless of technical distinctions between "taxes" and "user fees", user fees may be viewed by some citizens as a "tax").
- Not calculated and managed in a cost-effective manner.
- Not allocated in fair manner.
- Not implemented in an appropriate fashion (e.g., reduction of equivalent property taxes for the stormwater management program now covered through user fees or attempting to bridge the stormwater management infrastructure gap too quickly).

The cost of developing and implementing user fees is a function of the size of the community (number of accounts) and the complexity of processes employed. This includes all costs associated with the necessary stormwater management program and financial analyses, data assembly, rate structure, modification of billing and other information systems (or activation of a new system), and public education and involvement.

## 7.9 Conclusion

Because of the significant benefits offered by user fees, particularly in comparison to other funding mechanisms such as general (property) tax levies, the user fee concept has quickly become the preferred funding option for municipalities—in the US in particular and a growing number in Canada. The adoption of user fees as a leading practice funding mechanism is generally referred to as (and implemented as) a “stormwater utility” approach because it provides user fee funding and incorporates accounting and management practices similar to those of other municipal utilities like water, sewer, and solid waste.

The remainder of this report is focused on leveraging the benefits of stormwater user fees (i.e., a stormwater utility) in the City of Spruce Grove.

# 8 STORMWATER USER FEES

This section focuses on the user fee design choices available to the City of Spruce Grove.

## 8.1 Stormwater Rate Philosophy

Who should contribute to the costs of managing stormwater? The prevailing thinking is that all properties use the public drainage systems and therefore receive a benefit from the system. Even properties that are not directly connected to storm sewers benefit by way of protection from flooding and receive a service from the municipality in the form of an adequate and properly managed drainage system.

Research has consistently identified that any property that is part of the watershed benefits from surface drainage improvement, improvements of health, comfort, convenience, and enhanced property values. A report prepared by the Water Environment Federation[10] noted that:

- Users are properties that add runoff to a system and/or are served by the provision of stormwater services and facilities.
- Beneficiaries are people or properties that gain from stormwater management (are protected, for example, from the effects of flooding and resulting flood damage or benefit from improved water quality).
- Service or user fees are dedicated charges paid by generators of stormwater runoff on the estimated amount of water that leaves their property or in relation to the services and facilities they receive.

This perspective supports the need for all properties to contribute to the stormwater charges to maintain and replace the system in a fair and equitable manner.

## 8.2 Designing Stormwater User Fees

Stormwater user fees are charged directly to property owners and are based on the amount of stormwater runoff generated by the property. This approach is the same as that used by the City of Spruce Grove and other municipalities for water and sewer services (i.e., based on the actual consumption (water) and production (sewer) by property owners).

The actual volume of stormwater produced by a site is difficult to measure because it does

[10] *User Fee Funded Stormwater Programs*, Water Environment Federation, 2013.

not come from a point source, like a water tap, but rather from non-point sources running off the land. Consequently, the volume of stormwater generated by a site, and in turn the level of stormwater service a site requires, depends on the characteristics of that site: What is the impervious area (roofs, sidewalks, driveways, patios etc.) of the property? What is the slope of the property? etc.

Since the volume of stormwater running off a site cannot be directly or easily "metered", a "proxy measure" is generally used to estimate the volume of runoff. The method used most often is measuring the area of impervious surface on a site; or applying a metric when actual impervious areas measurements are not available or not easily attainable.

When designing a stormwater user fee, residential and non-residential properties are often treated separately because while residential properties are similar, non-residential properties vary in size, land use, and structure that it is difficult to compare or standardize.

There are numerous ways in which a stormwater user fee can be designed. The chosen design for a municipality will be a tradeoff between fairness (an exact measurement of runoff generated by a property and cost) and effectiveness of implementing and maintaining the user fee system and the data needed to generate the user fee rates.

The following questions help guide rate design (and are discussed in detail in Section 9.5):

- Does each individual property's runoff need to be calculated or can properties of similar size or characteristic be grouped together?
- What is the cost of gathering property runoff information?
- Does data exist on property size, impervious area, slope etc.?
- Are billing systems in place to charge user fees, and do the systems have the functionality required to calculate charges appropriately? If not, what is the cost to build such systems or modify existing systems?
- Are there staff in place that can create and manage the stormwater user fee system and if not, what additional staffing costs would be incurred?
- Is a fair and equitable, full cost stormwater management user fee affordable?

Other considerations include:

a. Availability of Information – While principles of fairness and equity are critical in the decision-making process, the availability of information to calculate the rates

cannot be ignored. The approach undertaken by many municipalities is to work with data that is readily available and to work, over time, to expand the database to include additional detail and parameters that impact stormwater costs.

b. Cost to Administer – If the cost of implementing and maintaining a given rate methodology demands an unreasonably large portion of the stormwater utility's projected revenues, then the approach may be either too complex or the potential stormwater utility's scope of service too small to justify the creation of a self-sustaining utility.

c. Homogeneity of Properties – In municipalities where properties are relatively homogeneous, there is less of a need to incorporate additional factors into the calculation. If there are classes of properties that are relatively homogenous, a decision may be made to charge a flat rate rather than one based on a calculated rate for every property.

## 8.3 Stormwater User Fee Options

A stormwater utility rate is a financing mechanism that allocates charges to individual properties and is administered as a user fee, in a similar fashion as a municipal water/sewer utility rate. Stormwater charges are typically applied on a monthly basis. The basic calculation for a stormwater rate is the municipal stormwater management program expense (i.e., the cost numerator) divided by the number of billing units within the municipality. To determine the billing unit denominator, there are a number of methods to allocate stormwater-related costs to property owners. The 9 billing unit approaches shown in the table below are common throughout North America and are listed in increasing order of accuracy (i.e., in terms of fairness and equity of the charge allocation):

Figure 3: User Fee Options

| Rate Type | Description |
|---|---|
| 1. Flat Fee | A single fee is applied to all properties and does not vary according to usage of the property (e.g., a charge of $15 per month per water meter account). |
| 2. Tiered Flat Fee: | A tiered flat fee is an extension of the flat fee by offering different ratepayer categories (e.g., $15 per month per residential property, and $150 per month per non-residential property). |

| | |
|---|---|
| 3. Runoff Coefficient: | The runoff coefficient charge varies by property size and is based on an assumed coefficient that reflects stormwater runoff potential by property type (e.g., residential zoned properties are assigned a runoff coefficient of 0.4 and non-residential zoned properties are assigned a runoff coefficient of 0.7). |
| 4. Intensity of Development Factor (IDF): | The IDF is similar to the runoff coefficient billing method however adjustment factors are applied to account for the property's development status (e.g., a factor of 0.0 for undeveloped properties, 1.0 for fully developed properties, and a factor between 0.0 and 1.0 for properties considered to be underdeveloped within their underlying zoning category). |
| 5. Equivalent Residential Unit (ERU): | The ERU requires a statistical sampling of measured impervious area for residential dwelling units to be performed to determine the average ERU size (i.e., square meters of impervious area). The average impervious area for all types of residential dwelling units becomes the base billing unit. Charges for residential properties are based on assigning one stormwater billing unit to each residential dwelling unit, regardless of density. Given the wide variability in impervious area statistics for non-residential properties, the impervious area for each non-residential property is measured. The charge for non-residential properties is determined by dividing the measured impervious area by the average ERU size. |

| | |
|---|---|
| 6. Single Family Unit (SFU): | Similar to the ERU, a statistical sampling of measured impervious area for single-family detached homes only is performed to determine the average SFU size (i.e., square meters of impervious area). The average impervious area for single-family detached homes becomes the base billing unit with one stormwater billing unit assigned to each single-family detached home and fractional billing units assigned to other residential property types. Multi-family residential properties such as apartments, condominiums, and town houses have a smaller SFU size than single-family detached homes. The charge for non-residential properties is determined by dividing the measured impervious area by the average SFU size. |
| 7. Tiered Residential Rate: | The Tiered SFU (or ERU) billing unit method extends the SFU (or ERU) method by accounting for the wide variability in impervious area among residential properties by assigning multiple tiers to single-family detached homes (e.g., Small, Medium and Large). The number of categories for multi-family residential properties can also be extended to distinguish high-rise apartments and condos, for example. |
| 8. Level-of-Service/Geography Base: | The ERU and SFU billing unit methods can be extended to include separate rate calculations that vary by the level of service provided within distinct geographical boundaries (e.g., a higher rate in urban areas that receive more stormwater services and facilities that provide a higher level of flood protection than in rural areas). |
| 9. Impervious Area Measurement: | The most accurate of all billing unit methods is to measure the impervious area of all properties within a given jurisdiction. |

Each of the approaches described above succeeds in creating a dedicated revenue stream for stormwater management. Where they differ is in the accuracy with which they estimate or calculate the impervious area measurement of the property (i.e., volume of stormwater runoff generated), and the fairness by which they use this calculation to allocate costs to rate payers. Generally, Approach 1: Flat Rate requires a minimum

amount of administrative effort to set-up and manage but also does not calculate the volume of stormwater generated as accurately (or allocate costs as fairly) as Approach 9: Impervious Area Measurement.

That said, the nature of development in the community also weighs significantly in determining the overall accuracy and fairness of a particular rate approach. For example, in a suburban community where development is relatively homogenous—predominantly residential single family dwellings of similar size—the flat rate might accurately and fairly allocate costs to each rate payer because the impervious area measurement of each property (and volume of stormwater generated) is similar. Accordingly, the strengths and weaknesses of each rate approach must be considered in relation to the unique circumstances of the municipality in question.

## 8.4 Adoption of Funding Mechanisms and User Fees by Other Municipalities

Figure 4 below provides a summary of the type of funding mechanism and/or user fee adopted by other municipalities in the Capital Region, across Alberta, and (to a lesser degree) across Canada. As can be seen, the vast majority of municipalities[11] continue to rely on the general (property) tax levy as the primary source funding for stormwater management programs. For those municipalities that have adopted a user fee, most have determined that the benefits of flat fees and/or tiered flat fees (i.e., simplicity, efficiency, and cost effectiveness) outweigh the implementation and ongoing administration costs of more complex approaches such as impervious area measurement. Some municipalities have sought to leverage the benefits of multiple approaches (and minimize weaknesses) by adopting a hybrid approach.

Figure 4: Rate Structures Adopted by Other Municipalities

| Funding Mechanism | Municipality |
|---|---|
| General (Property) Tax Levy | Airdire, Brooks, Beaumont, Camrose, Canmore, Cold Lake, Fort McMurray, Grande Prairie, Lacombe, Leduc County, Lethbridge, MD of Foothills, Medicine Hat, Parkland County, Red Deer, Stony Plain, Strathmore, Sylvan Lake, Turner Valley, Wetaskiwin, Wheatland County, Whitecourt. |
| Flat Fee | Calgary, Cochrane, Devon, Leduc, Lloydminster, Okotoks, Strathcona County, Sturgeon County, Regina. |

[11] *Stormwater Funding Guidance Manual*, US Environmental Protection Agency, 2006.

| | |
|---|---|
| Tiered Flat Fee | Chestermere, High River (hybrid – also see ERU), Morinville (hybrid – see ERU), Richmond, St. Albert, Surrey, Vancouver. |
| Runoff Coefficient | Edmonton (Hybrid – also see ERU, and IAM) |
| Intensity of Development (IDF) | |
| Equivalent Residential Unit (ERU) | High River (hybrid – also see tiered flat rate), Morinville (hybrid – also see tiered flat rate), Saskatoon, Halifax, Edmonton (Hybrid – also see Runoff Coefficient, and IAM) |
| Single Family Unit (SFU) | |
| Tiered Residential Rate | Mississauga. |
| Level of Service / Geography Base | |
| Impervious Area Measurement | Edmonton (Hybrid – also see Runoff Coefficient and ERU), Victoria. |

## 8.5 Municipal Case Studies & Lessons Learned

This section highlights recent stormwater rate studies in Canada and lessons learned.

### 8.5.1 Edmonton

In 2002 the City of Edmonton implemented a stormwater utility. Up to that point its stormwater systems were funded from property taxes and were about 50% funded. The stormwater utility was established to provide a separate, more stable funding source not subject to competition with other municipal services, and to provide Edmonton with an improved ability to raise rates to generate enough funds to properly operate the system. Edmonton's stormwater utility was initially established to be revenue neutral, with a start-up revenue of $11.0 million. Customers were identified to be those who paid sanitary and water utility charges, and the stormwater utility charges were added to those utility bills. To provide transparency for residents, in 2002 a special line item was provided on their property tax bills that indicated how much their taxes would be reduced as they no longer funded Edmonton's stormwater systems. Additionally, a special outreach effort was required for schools, churches and community leagues, as the stormwater utility charge represented a new charge for those stakeholders—they did not pay property taxes.

Edmonton's billing structure has been established to be simplistic in nature, easy to

implement and maintain, while providing customer equity in that customers are billed in relative proportion to their use of the system. The Billing Charge = Area x Development Intensity x Runoff Coefficient x Rate. Area is the area of the property, which is information maintained by the property tax department, and is shared at no cost with the storm utility. Development Intensity is 1.0 for most properties and allows the potential for properties to achieve a reduced charge if they demonstrate that they produce less runoff (e.g. I = 0.75 for properties with on-site storage). Runoff Coefficient are the values within the development design standards associated with the land zoning (e.g. R=0.5 for single family residential), which is also information maintained by the property tax department and shared at no cost.

### 8.5.2 Calgary

The City of Calgary's Water Services and Water Resources business units (the Water Utility) manage and operate the stormwater line of service. This service has operated as a self-funded activity since 2004. The stormwater charges are set to recover the full cost of providing stormwater management services, however the stormwater line of service does not include the payment of franchise fees to the City of Calgary.

The key components of Calgary's stormwater service include: (1) Revenue - Revenue is generated from the flat stormwater charge; (2) Off-site levies - An off-site levy is collected on greenfield development. The off-site levy is used to fund the full cost of infrastructure investments required to support new growth; (3) Cost of service basis - A rate study is carried out regularly to ensure costs are being recovered appropriately from each customer class and that the right mix of charges are in place; Capital intensive - The nature of stormwater services requires ongoing capital investment in infrastructure. Programs are required to migrate towards consistent and desired levels of service to customers. The demand for new stormwater services continues to grow in response to population growth, environmental objectives, and the 2013 flood event, over and above the requirement to provide reliable service to Calgarians; and (4) Financial Policies - In addition to complying with relevant Council and Administrative policies, financial policies specific to the stormwater service are maintained.

There is currently a single customer class for stormwater services and the same flat rate is charged to all residential, industrial, commercial and institutional customers. Revenue from this stormwater charge is used to fund operations, maintenance, the Community Drainage Improvements (CDI) program, flood mitigation, and water quality improvement projects.

### 8.5.3 Victoria

In 2010, City of Victoria staff made a presentation to council on the challenges and

opportunities of its stormwater infrastructure. The presentation identified that 58% of its stormwater infrastructure was installed prior to 1920 and would require repair or replacement. Following the 2010 presentation, staff began collecting data, formed a number of working groups, and conducted focus groups with residents. Council endorsed the final stormwater rate model in 2014.

The original intent was to roll out the stormwater utility in 2014 and a credit program the year after, but staff opted to delay the program until the fall of 2016. In the interim, property owners were sent an estimated bill of what they would pay a year and a half in advance so that they could adjust accordingly. The change in timeline also allowed staff to implement a credit program ahead of the stormwater fee, such that people could submit their applications early and be approved for credit by the time the fee took effect.

#### 8.5.4 Kitchener

In 2011, the City of Kitchener began funding stormwater management though a user-fee program. The City of Kitchener had previously funded stormwater management mainly through general property taxes, but stormwater management had to compete for these funds with other more visible and popular services such as parks, roads, libraries, and social services. As a result, the average annual expenditure for stormwater management was only $4.5 million per year, far less than what was needed to sustainably manage stormwater in light of aging infrastructure, regulatory requirements and the added pressures of climate change. To meet a sustainable service level, the City of Kitchener estimated that it needed $13 million per year in 2010.

The City of Kitchener's stormwater user rate is charged based upon the contribution of stormwater runoff, calculated based on the impervious surface area of the property. The City of Kitchener uses a 13-tiered flat fee rate schedule to calculate the rate for each property, which is administered on monthly utility bills. The tiers are based on property type (residential, multi-residential and non-residential) and impervious area ("smallest" to "largest") or number of residential units. For example, the average single dwelling homeowner is currently charged approximately $11.44/per month for stormwater management. The City of Kitchener also offers incentives to all rate payers who demonstrate best practices for managing stormwater runoff.

#### 8.5.5 Mississauga

The City of Mississauga began funding stormwater management through a stormwater charge in January 2016. The City of Mississauga previously funded stormwater through general property taxes and reserves; in 2012 the annual expenditure of $14.7 million was funded from these sources. However, the City of Mississauga stormwater infrastructure is aging and will need additional operation, maintenance and capital improvement costs to

sustain and improve service levels; the estimated sustainable service level is $39 million per year.

Mississauga's stormwater charge is based on the amount of impervious area on a property. Residential properties are categorized into five tiers based on the size of their rooftop ("smallest" to "largest") as an indicator of total impervious area, with charges ranging from $50 - $170 per year. The charge for multi-residential and non-residential properties is determined by dividing the property's total impervious area by a single billing unit (267m2) and then multiplying by the stormwater rate ($100). The City of Mississauga created an online "stormwater charge estimator" where property owners can enter an address to determine what their charge might be.

#### 8.5.6 Lessons Learned

Municipalities that have implemented stormwater user fee programs reported the following lessons learned:

**I. Education is Key**

Education is seen as key success factor for any stormwater management funding system. Stormwater and related funding matters are not a high priority issue for most residents. But when municipalities take the time to educate residents, people tend to support the concept that those who contribute the most stormwater to the system through impermeable surfaces should contribute the most funds toward managing it.

A good consultation format is often comprised of a presentation and then breakout into smaller focus groups where a staff representative can lead discussions in a more intimate setting, thereby allowing residents the opportunity to speak and avoiding any one voice to overtake the discussion.

**II. Revenue Neutrality**

The introduction of an "equivalent" fee structure (i.e., where user fees initially generate the same revenues as general tax levies allocated to the stormwater management program the year prior) is seen by many to be a reasonable and palatable first step when introducing a user pay system.

### III. Stable Funding

Since implementing a stormwater charge, many municipalities have been able to schedule the construction of stormwater capital projects that previously fell into a category called “unfunded” (i.e., projects seeking funding from general (property) taxes in a future annual budget).

### IV. Skepticism

Municipalities implementing a new stormwater user fee are likely to experience some negative feedback from residents. In particular, some residents doubt that moving to a user fee will result in decreased property taxes. Commitment to, and demonstration of, positive tax impacts (i.e., lower taxes and/or reallocation to other services) is key.

To address this concern, some municipalities add a separate line item on property tax bills the year following implementation of the utility. The tax line indicates how much taxes have decreased as result of the stormwater user fee.

### V. Tax-exempt Properties

Tax-exempt property owners are more likely to be concerned about (and resistant to) user fee programs as it can result in significant cost challenges for them. This challenge is exacerbated by the fact that tax-exempt properties often have limited opportunities for generate new revenue.

### VI. Alternatives to a Credit Program

Implementing a credit program for residential properties is often too administratively costly and the resources to manage the program may not be available. Municipalities can still recognize the efforts of property owners to reduce the stormwater they generate through other means. For example, a “home visit” program is one way to reach out to property owners to not only inform but also to recognize owners for their efforts.

### VII. At First You Don’t Succeed…

For any municipality implementing a new stormwater management program, there are likely to be tools that work in some places but not everywhere—the ability to implement, monitor, assess, and adapt specific stormwater management program elements will be key factors for success.

## VIII. Transition Time

Transition time can be a key component in the implementation of a new stormwater utility. Although this may delay the start, it can provide a good opportunity to implement education programs and respond to resident concerns.

# 9 CITY OF SPRUCE GROVE: EXISTING STORMWATER RECOVERIES, INFRASTRUCTURE DEFICIT, & UTILITY BILLING SYSTEM

To facilitate selection and implementation of the best stormwater user fee approach for the City of Spruce Grove, it is important to understand the nature of stormwater funding today in the City, and how other administrative functions and tools (such as billing systems) might impact choices moving forward. The sections below provide an overview of existing stormwater funding mechanisms, recoveries, infrastructure deficit, and utility billing system in the City.

## 9.1 Current Funding Mechanisms in the City of Spruce Grove

Currently in the City of Spruce Grove, stormwater-related costs are not accumulated together into an overall program or reported as such. Rather, stormwater-related costs are dispersed across many areas of responsibility. Likewise, funding sources for stormwater-related activities are dispersed. In Section 7, 8 municipal funding mechanisms were discussed. Of those 8 mechanisms, the City of Spruce Grove primarily makes use of the following:

Developer Contributions. New stormwater infrastructure is constructed and paid for by developers; then turned over to the City to manage into the future. Developer contributions total approximately $1 million per year[12], which is about 42% of annual funding as shown in Figure 5 below. While these new assets are contained in the City's tangible capital asset ledger and depreciated annually, this depreciation is not reflected as part of the cost of the overall stormwater management program.

**Note, developer responsibility for the construction and funding of new stormwater infrastructure (onsite and offsite) will continue regardless if the City chooses to replace the general (property) tax levy draw with user fees to fund its portion of the stormwater management program**.

General (Property) Tax Levies. The City draws on the general (property) tax levy to fund stormwater operations (including billing and administration), maintenance, capital rehabilitation and replacement, etc. This totals approximately $1.4 million in 2019, which is about 58% of annual funding.

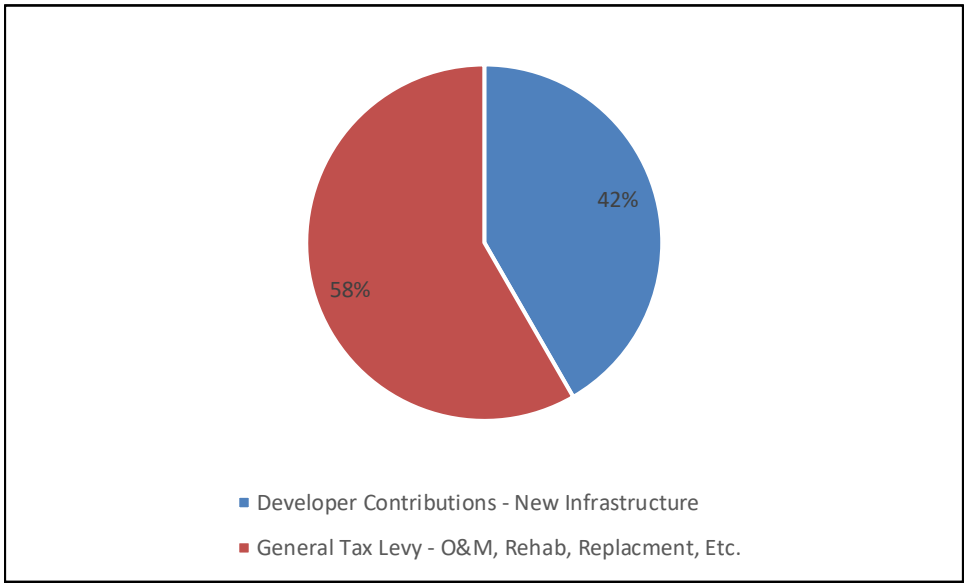
Grants. The City's tangible capital asset leger indicates the use of grants (e.g., MSI) to

[12] From 2004 to 2018 the City's tangible capital asset ledger includes approximately $1 million of contributed stormwater infrastructure per year.

fund construction of certain stormwater management assets. However, these assets were associated with the construction of new road projects. Given that developers construct and finance nearly all new stormwater infrastructure in the City (onsite and offsite), the use of grants specifically for stormwater facilities is rare.

Service Fees. The City collects a variety of special service fees (e.g., building permit reviews and associated fees, lot inspection/grading fees). But these fees are relatively small and are not dedicated to the stormwater management program.

Figure 5: Primary Stormwater Funding Sources




## 9.2 Existing Recoveries

After accounting for new infrastructure, which is financed by developers, the City is currently funding its ongoing stormwater management program (i.e., operations, maintenance, rehabilitation, etc.) via the general tax levy. In 2019, the City's stormwater utility is forecast to draw approximately $1.41 million[13] from the general tax levy in order to meet its cash requirements. When considering the split between residential and non-residential taxes, the general tax levy for the stormwater management program will be approximately $1.10 million[14] from residential taxpayers and approximately $0.31 million[15] from non-residential taxpayers. The City currently has approximately 12,322 utility rate

[13] This assumes the City approves and implements the capital infrastructure plan (and associated financing plan) that was used as the basis of this review.

[14] $30,732,848 (residential levy) / $39,506,490 (total levy) = 78% X $1,412,176

[15] $8,773,642 (non-residential levy) / $39,506,490 (total levy) = 22% X $1,412,176

payers. Of these utility customers 11687 are residential customers (i.e., predominately have a water meter <1"), and 635 customers are non-residential (i.e., predominantly have a water meter >= 1")[16]. So effectively in 2019 each residential rate payer is paying a stormwater charge equivalent to approximately $8 per month[17], and each non-residential customer is paying a stormwater charge equivalent to approximately $41 per month[18], as shown in the figure below. The ratio between residential and non-residential rate payers is approximately 4:1 when considering both tax levy and cost allocation ratios[19]. These rate "equivalents" and ratio are important as they help to establish the start point of a long-term rate strategy (described in Section 12).

Figure 6: 2019 Tax Recoveries & Equivalent Rate[20]

| | | | | |
|---|---|---|---|---|
| Residential Tax Levy | $ 30,732,848 | 78% | | |
| Non-Residential Tax Levy | $ 8,773,642 | 22% | | |
| Total Tax Levy | $ 39,506,490 | 100% | | |
| Ratio of Res to Non-Res | | 3.5 | | |
| | | | | |
| | **Operating Expense** | **Interest Expense** | **Pay-As-You-Go** | **Total** |
| 2019 Tax Allocation | $ 845,676 | $ - | $ 566,500 | $ 1,412,176 |
| | | | | |
| 2019 Residential Cost Allocation | | | | $ 1,098,558.71 |
| 2019 Non-residential Cost Allocation | | | | $ 313,617.56 |
| | | | | |
| 2019 Monthly Residential Rate Equivalent | | | | $ 7.83 |
| 2019 Monthly Non-residential Rate Equivalent | | | | $ 41.16 |
| Ratio of Res to Non-res | | | | 5.3 |

## 9.3 Infrastructure Deficit Forecast

Should the City of Spruce Grove continue using the general tax levy as the primary funding source for the stormwater management program it will generate funding over the next 9 years of approximately $14.78 million[21], as shown in the table and graph below. However, the stormwater *utility (full cost)* revenue requirement over the same period will be approximately $54.74 million. As a result, the City of Spruce Grove will have created a stormwater infrastructure funding gap of approximately $39.97 million if it continues to

[16] The recommended rate structure for Spruce Grove is based on meter size (not customer type), and therefore the small customer group currently includes ~12191 small customers, some of which are small non-residential customers. The large customer group currently includes ~121 customers, all of which are large non-residential customers.

[17] $1,098,559 (residential cost allocation) / 11,687 (utility customers <1") / 12 (months)

[18] $313,618 (non-residential cost allocation) / 635 (utility customers >=1") / 12 (months)

[19] The tax levy differential is 3.5:1 and the cost allocation differential is 5.3:1. Together, they result in a differential of approximately 4.4:1

[20] Pay-as-you-go financing supports capital improvements on a "pay-as-you-go" basis from current revenues.

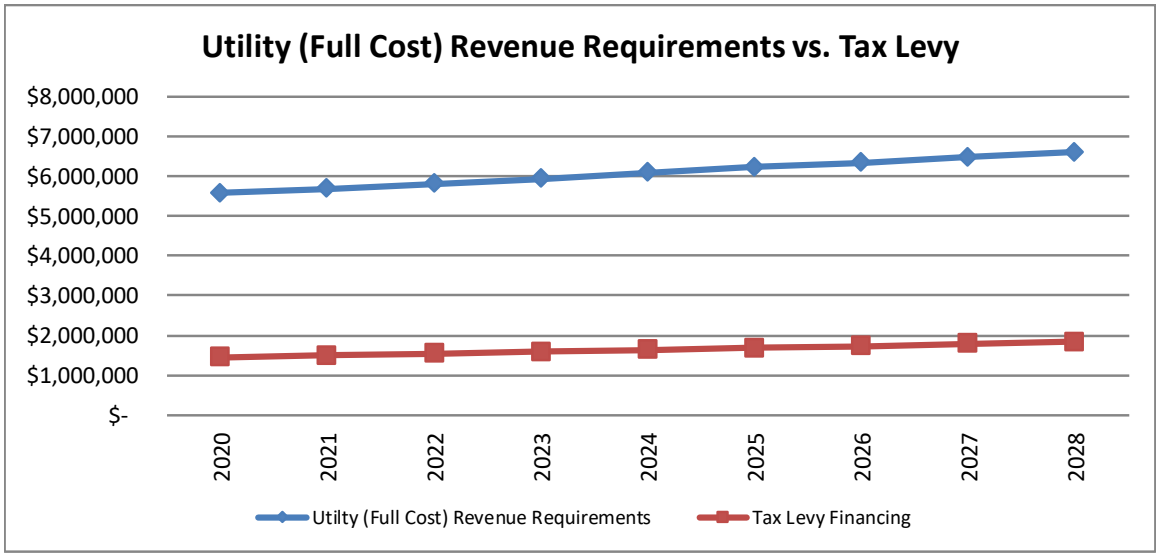
[21] Based on the 2019 tax levy draw of $1.41 million escalated by 3% per annum.

fund the stormwater management program using the general tax levy as the primary funding mechanism.

Figure 7a: Infrastructure Deficit Created by Tax Levy

| Year | Utility (Full Cost) Revenue Requirement | Spruce Grove Tax Levy Financing of SWM | Infrastructure Deficit Created By Tax Levy |
|---|---|---|---|
| 2020 | $ 5,580,102 | $ 1,454,542 | $ (4,125,560) |
| 2021 | $ 5,685,254 | $ 1,498,178 | $ (4,187,076) |
| 2022 | $ 5,812,126 | $ 1,543,123 | $ (4,269,003) |
| 2023 | $ 5,933,244 | $ 1,589,417 | $ (4,343,827) |
| 2024 | $ 6,082,775 | $ 1,637,099 | $ (4,445,676) |
| 2025 | $ 6,222,996 | $ 1,686,212 | $ (4,536,783) |
| 2026 | $ 6,345,611 | $ 1,736,799 | $ (4,608,812) |
| 2027 | $ 6,473,751 | $ 1,788,903 | $ (4,684,848) |
| 2028 | $ 6,606,193 | $ 1,842,570 | $ (4,763,623) |
| | | | |
| Total | $ 54,742,051 | $ 14,776,842 | $ (39,965,208) |

Figure 7b: Full Cost Revenue Requirements vs. General Tax Levy




## 9.4 Current Utility Billing System

### 9.4.1 Key Attributes

The City of Spruce Grove currently uses the Diamond ERP (Enterprise Resource Planning software) to support a number of functions in the municipality including water, sewer, and solid waste billing. During this review it was important to understand the attributes of the Diamond utility billing "module", its strengths, weaknesses (if any), etc., in order to

determine how the utility billing system might impact choices with respect to stormwater user fees. The key attributes of the City's utility billing system are:

a. Water and sewer charges are based on the monthly metered consumption of water and a combined (water and sewer) consumption rate.

b. Solid waste charges are based on a fixed monthly rate.

c. The Diamond utility billing module can accommodate the establishment of fixed and/or variable charges for any number of other services. Additional utility rates (beyond water and sewer) can be configured internally by City staff without customization to Diamond or involvement of 3rd party ERP integration specialists, just as they were for the City's solid waste charge.

d. Key attributes of a typical utility customer in Diamond include customer name, customer ID, customer address, customer type (i.e., residential, non-residential), and water meter size.

e. The Diamond utility billing module does not contain key information required for certain stormwater rate calculations such as lot sizes, impervious area measurements, etc. The City's GIS system (ESRI ArcGIS Enterprise) contains lot area information, but this system is not integrated with Diamond. Furthermore, the City's GIS system does not contain impervious area measurements. The impervious area sample information that was used in this study required manual measurement by GIS staff.

f. The Diamond ERP also contains functionality pertaining to property tax billing. To facilitate tax billing, the Diamond tax module is integrated with an external system called the Camelot assessment system. Specifically, the Diamond tax module "draws" assessment values from the Camelot assessment system on a regular basis.

g. Integration between Diamond and other systems such as Camelot is not easy to establish. That is, integration with other systems cannot occur without drawing upon the expertise and resources of 3rd party integrators, and at a cost.

h. In certain instances, a single property can have multiple water meters and, therefore, multiple utility customers (i.e., one-to-many relationship). This is a challenge for stormwater billing where there is a one-to-one relationship between a property and a stormwater utility bill.

i. The City's utility billing and customer support functions are coordinated by several

staff: 1 Utility Supervisor, 3 Billing Specialists, 1 Meter Technician, and 2 Account Representatives[22].

### 9.4.2 Impact on Stormwater Funding Choices for the City of Spruce Grove

With respect the key attributes of the City's Diamond Utility Billing module outlined in the previous section and their potential impact on stormwater utility funding options, the following was noted:

a. City staff indicated a strong preference to leave Diamond in its native form in order to reduce implementation, upgrade, and ongoing maintenance costs.

b. To facilitate complex stormwater rate calculations that utilize impervious area measurements of individual properties, these measurements would need to be completed for all ~12,300 existing utility customers in the City's GIS system (ESRI ArcGIS Enterprise) which is external to Diamond, and then integrated with/into Diamond. Similarly, all new properties (and/or changes to existing properties stemming from re-development) would need to be measured and added (~300 to 500 per year). This is a significant impact; accordingly, the value of implementing a complex rate structure would need to be significant in order to offset associated implementation, integration, and management costs and risks.

c. Less complex stormwater rate structures (e.g., tiered flat rates, ERU, described in Section 8.3) can be accommodated within the existing Diamond system without the burden of initial and ongoing individual property impervious area measurements or integration between Diamond and an external systems.

d. Implementation of a complex stormwater rate structure will require additional City staffing (costs) to facilitate initial and ongoing area measurements and system integration. In contrast, implementation of a less complex stormwater rate structure can be accommodated with existing staffing levels.

e. To rectify the disparity between multiple water meters and a single property (required for stormwater utility billing) all multi-metered addresses (approximately 2-4% of utility customers) would need to be examined and "mapped" to a single property, similar to the approach the City currently uses to rectify utility customer

[22] These staff are not dedicated 100% to the stormwater function. They serve a number of municipal functions such as water and sewer administration, solid waste administration, etc. In establishing the 2019 base operations and maintenance budget for stormwater (see Section 11.5), only a portion of these staff costs were allocated to the City's stormwater management cost base.

disparities (e.g., trailer park water customers).

## 9.5 Impervious Area Metrics

A sample of 257 residential and non-residential properties in the City of Spruce Grove was examined. The lot area was extracted from the City's GIS system and impervious area of each property was measured manually by GIS staff. Also, the water meter size of each sample property was validated. It was determined that the average impervious area for residential property is approximately 2,900 $ft^2$ (approximately 49% of the overall area of the property). Other utility customers with a water meter <1" vary from 17% impervious area (institutional) to 82% impervious area (commercial), but the number of these other utility customers is relatively small. It was also determined that utility customers with a water meter >= 1" (i.e., predominantly larger non-residential) have an average impervious area between 26-62 X greater than the average residential customer, as shown in the table below. The relevance of this ratio is discussed in more detail in Section 12.1.

Figure 8: Impervious Area Ratios

| | Total Utility Customer Count | Measurement Count | Average Parcel Area (sqft) | Average Impervious Area (sqft) | Average Impervious Area as % of Parcel Area | Ratio of Impervious Area Size Compared to Residential |
|---|---|---|---|---|---|---|
| **Residential** | 11,653 | 42 | 5,945 | 2,894 | 48.7% | - |
| **Multi-Family (<1")** | 34 | 10 | 92,624 | 63,690 | 68.8% | 22 |
| **Multi-Family (>=1")** | 37 | 9 | 110,748 | 75,463 | 68.1% | 26 |
| **Commercial (<1")** | 549 | 180 | 23,201 | 19,125 | 82.4% | 7 |
| **Commercial (>=1")** | 75 | 15 | 146,195 | 120,694 | 82.6% | 42 |
| **Institutional (<1")** | 17 | 1 | 261,240 | 44,636 | 17.1% | 15 |
| **Institutional (>=1")** | 19 | 7 | 539,807 | 179,171 | 33.2% | 62 |

# 10 DETERMINING THE RIGHT USER FEE FOR THE CITY OF SPRUCE GROVE

Section 7 demonstrated that user fees are a more effective funding mechanism for municipal stormwater management programs than general (property) tax levies; and in Section 8 several user fee types were identified. But which user fee is best aligned with the needs and circumstances in the City of Spruce Grove? To answer this question, lets return to Section 8.1 which identified several key questions used to guide user fee selection and design. Each of these questions is examined in the tables below within the context of the City of Spruce Grove and the various user fee options:

- Does each individual property's runoff need to be calculated or can properties of similar size or characteristic be grouped together?
- Does data exist on property size and impervious area?
- Are billing systems in place to charge user fees, and do the systems have the functionality required to calculate charges appropriately; and if not, what is the cost to build such systems or modify systems?
- Are there staff in place that can create and manage the stormwater user fee system; and if not, what additional costs would be incurred?
- Is a fair and equitable, full cost stormwater management user fee affordable?
- What is the cost of gathering property runoff information?

In addition, each of user fee options is analyzed to determine their relative alignment with the City's utility billing system.

Figure 9a: Measurement of Runoff

| Rate Type | Does each individual property's runoff need to be calculated or can properties of similar size or characteristic be grouped together? | Impact on the City of Spruce Grove |
|---|---|---|
| 1. Flat Fee | No need to measure. Properties are grouped. | Low. Easy set up and administer. |
| 2. Tiered Flat Fee | No need to measure. Properties are grouped. | Low. Easy set up and administer. |
| 3. Runoff Coefficient | Sample measurements can be used. Properties can be grouped. | Low. Modest set up and easy to administer if sample measurements used.<br>High if individual measurements used. |
| 4. Intensity of Development Factor (IDF) | Sample measurements can be used. Properties can be grouped. | Low. Modest set up and easy to administer if sample measurements used.<br>High if individual measurements used. |
| 5. Equivalent Residential Unit (ERU) | Res – Sample measurements can be used.<br>Non-res – Measurements of all properties needed. | Res – Low. Easy to set-up and administer.<br>Non-res – High. Difficult and costly to set-up and administer. |
| 6. Single Family Unit (SFU) | Res – Sample measurements can be used.<br>Non-res – Measurements of all properties needed. | Res – Low. Easy to set-up and administer.<br>Non-res – High. Difficult and costly to set-up and administer. |
| 7. Tiered Residential Rate | Res – Sample measurements can be used.<br>Non-res – Measurements of all properties needed. | Res – Low. Easy to set-up and administer.<br>Non-res – High. Difficult and costly to set-up and administer. |
| 8. Level-of-Service/Geography Base | Res – Sample measurements can be used.<br>Non-res – Measurements of all properties needed. | Res – Low. Easy to set-up and administer.<br>Non-res – High. Difficult and costly to set-up and administer. |
| 9. Impervious Area Measurement | Measurement of all properties needed. | High. Difficult and costly to set-up and administer. |

Figure 9b: Availability of Data

| Rate Type | Does data exist on property size & impervious area? | Impact on the City of Spruce Grove |
|---|---|---|
| 1. Flat Fee | N/A | Low |
| 2. Tiered Flat Fee | N/A | Low |
| 3. Runoff Coefficient | No | Low if sample measurements used.<br>High if individual measurements used. |
| 4. Intensity of Development Factor (IDF) | No | Low if sample measurements used.<br>High if individual measurements used. |
| 5. Equivalent Residential Unit (ERU) | No | Res – Low if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 6. Single Family Unit (SFU) | No | Res – Low if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 7. Tiered Residential Rate | No | Res – Low if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 8. Level-of-Service/Geography Base | No | Res – Low if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 9. Impervious Area Measurement | No | High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |

Figure 9c: Billing System

| Rate Type | Does the billing system have the functionality required to calculate charges? | Impact on the City of Spruce Grove |
|---|---|---|
| 1. Flat Fee | Yes | Low. Easy to set-up and administer. |
| 2. Tiered Flat Fee | Yes | Low. Easy to set-up and administer. |
| 3. Runoff Coefficient | Yes | Low. Easy to set-up and administer if sample measurements used.<br>High if individual measurements used. |
| 4. Intensity of Development Factor (IDF) | Yes | Low. Easy to set-up and administer if sample measurements used.<br>High if individual measurements used. |
| 5. Equivalent Residential Unit (ERU) | No | Res – Low. Easy to set-up and administer if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 6. Single Family Unit (SFU) | No | Res – Low. Easy to set-up and administer if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 7. Tiered Residential Rate | No | Res – Low. Easy to set-up and administer if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 8. Level-of-Service / Geography Base | No | Res – Low. Easy to set-up and administer if sample measurements used.<br>Non-res – High. Difficult and costly to measure all properties and integrate with Diamond on ongoing basis. |
| 9. Impervious Area Measurement | No | High. Difficult and costly to measure all properties and integrate external system with Diamond. |

Figure 9d: Staffing

| Rate Type | Are staff in place to set-up and administer rates? | Impact on the City of Spruce Grove |
|---|---|---|
| 1. Flat Fee | Yes | Low. Can be set-up and administered by existing staff. |
| 2. Tiered Flat Fee | Yes | Low. Can be set-up and administered by existing staff. |
| 3. Runoff Coefficient | Yes | Low. Can be set-up and administered by existing staff if sample measurements used.<br>High. Will require 3rd party integrators to setup and additional FTE resources to administer if individual measurements used. |
| 4. Intensity of Development Factor (IDF) | Yes | Low. Can be set-up and administered by existing staff if sample measurements used.<br>High. Will require 3rd party integrators to setup and additional FTE resources to administer if individual measurements used. |
| 5. Equivalent Residential Unit (ERU) | No | Res – Low. Can be set-up and administered by existing staff.<br>Non-res – High. Will require 3rd party integrators to setup and additional FTE resources to administer. |
| 6. Single Family Unit (SFU) | No | Res – Low. Can be set-up and administered by existing staff.<br>Non-res – High. Will require 3rd party integrators to setup and additional FTE resources to administer. |
| 7. Tiered Residential Rate | No | Res – Low. Can be set-up and administered by existing staff.<br>Non-res – High. Will require 3rd party integrators to setup and additional FTE resources to administer. |
| 8. Level-of-Service / Geography Base | No | Res – Low. Can be set-up and administered by existing staff.<br>Non-res – High. Will require 3rd party integrators to setup and additional FTE resources to administer. |
| 9. Impervious Area Measurement | No | High. Will require 3rd party integrators to setup and additional FTE resources to administer. |

Figure 9e: Staffing

| Rate Type | Is the rate fair and equitable? | Is the rate affordable? |
|---|---|---|
| 1. Flat Fee | Moderately fair and equitable given the relative homogeneity of development in the City of Spruce Grove. | Yes. Very affordable to set-up and administer. |
| 2. Tiered Flat Fee | Moderately fair and equitable given the relative homogeneity of development in the City of Spruce Grove. | Yes. Very affordable to set-up and administer. |
| 3. Runoff Coefficient | Fair and equitable given the relative homogeneity of development in the City of Spruce Grove. | Yes. Very affordable to set-up and administer if sample measurements used.<br>No. Costly to set-up and administer if individual measurements used. |
| 4. Intensity of Development Factor (IDF) | Fair and equitable given the relative homogeneity of development in the City of Spruce Grove. | Yes. Very affordable to set-up and administer if sample measurements used.<br>No. Costly to set-up and administer if individual measurements used. |
| 5. Equivalent Residential Unit (ERU) | Yes, fair and equitable. | Res – Yes. Very affordable to set-up and administer.<br>Non-res – No. Costly to set-up and administer. |
| 6. Single Family Unit (SFU) | Yes, fair and equitable. | Res – Yes. Very affordable to set-up and administer.<br>Non-res – No. Costly to set-up and administer. |
| 7. Tiered Residential Rate | Yes, fair and equitable. | Res – Yes. Very affordable to set-up and administer.<br>Non-res – No. Costly to set-up and administer. |
| 8. Level-of-Service / Geography Base | Yes, fair and equitable. | Res – Yes. Very affordable to set-up and administer.<br>Non-res – No. Costly to set-up and administer. |
| 9. Impervious Area Measurement | The most fair and equitable. | No. Costly to set-up and administer. |

Figure 9f: Summary of Comparisons

| Rate Type | Requires Measurement of Individual Properties | Initial Set-up | Ongoing Administration | Fairness & Equity |
|---|---|---|---|---|
| 1. Flat Fee | No | Easy | Easy | Yes, but lower* |
| 2. Tiered Flat Fee | No | Easy | Easy | Yes, but lower* |
| 3. Runoff Coefficient | Sample measurements | Easy | Easy | Yes |
| 4. Intensity of Development Factor (IDF) | Sample measurements | Easy | Easy | Yes |
| 5. Equivalent Residential Unit (ERU) | Res – Sample measurements<br>Non-res – Yes | Moderate | Moderate | Yes, but higher |
| 6. Single Family Unit (SFU) | Res – Sample measurements<br>Non-res – Yes | Moderate | Moderate | Yes, but higher |
| 7. Tiered Residential Rate | Res – Sample measurements<br>Non-res – Yes | Moderate + | Moderate + | Yes, but higher |
| 8. Level-of-Service/Geography Base | Res – Sample measurements<br>Non-res – Yes | Moderate + | Moderate + | Yes, but higher |
| 9. Impervious Area Measurement | Yes | Difficult | Difficult | Yes. Highest |

* Lower when development is varied, but high when development is relatively homogenous.

As noted in the tables above, the rate approaches are generally listed in increasing order of accuracy with respect to allocating charges to properties based on relative contribution of stormwater runoff. The first four approaches are the easiest to set up and administer, however flat rates reflect (relatively) less equitable allocations of stormwater management program costs. The final five approaches are based on some form of measured impervious area (sample and/or actual). With increasing accuracy however, the cost to administer and manage the stormwater rate increases. The final three rate approaches often feature

prohibitively high administration costs. Rate approaches 3 and 4 (and 5 and 6 when using sample measurements) offer a "sweet spot" with relatively low set-up and administration costs, while achieving fair and equitable rates.

Each of the rate types was also examined with a view to comparing their relative alignment with the City of Spruce Grove Diamond Utility Billing System, as summarized in the table below.

Figure 9g: Alignment of Rate Approaches to City of Spruce Grove Utility Billing System

| Rate Type | Aligns with City's utility billing system? | Requires new Integration for utility billing system? | Cost of system requirements? |
|---|---|---|---|
| 1. Flat Fee | Yes | No | Low |
| 2. Tiered Flat Fee | Yes | No | Low |
| 3. Runoff Coefficient | Yes | No | Low |
| 4. Intensity of Development Factor (IDF) | Yes | No | Low |
| 5. Equivalent Residential Unit (ERU) | Res – Yes<br>Non-res - No | Res – No<br>Non-res - Yes | Res – Low<br>Non-res - High |
| 6. Single Family Unit (SFU) | Res – Yes<br>Non-res - No | Res – No<br>Non-res - Yes | Res – Low<br>Non-res - High |
| 7. Tiered Residential Rate | Res – Yes<br>Non-res - No | Res – No<br>Non-res - Yes | Res – Low<br>Non-res - High |
| 8. Level-of-Service/Geography Base | Res – Yes<br>Non-res - No | Res – No<br>Non-res - Yes | Res – Low<br>Non-res - High |
| 9. Impervious Area Measurement | No | Yes | High |

Rate approaches 5-8 would require individual measurements of impervious area of all non-residential properties and placement in the City's Camelot assessment system, and then integration of Camelot with Diamond Utility Billing Module. Rate approach 9 would require individual measurements of impervious area of all residential and non-residential

properties and placement in the City's Camelot assessment system, and then integration of Camelot with Diamond Utility Billing Module. Once again, rate approaches 3 and 4 (and 5 and 6 when using sample measurements) offer a "sweet spot". All stormwater utility billing data would be contained within the City's Diamond Utility Billing System, and therefore no integration with external systems such as Camelot would be required.

**Conclusion**: Rate approaches 3 (runoff coefficient) or 4 (IDF), or a hybrid of approaches 5 (ERU) or 6 (SFU), where sample measurements are utilized rather than individual measurements, offer the best alignment with the circumstances in the City of Spruce Grove.

# 11 STORMWATER REVENUE REQUIREMENTS

While there are many different ways to structure stormwater user fees, all rely on one common "ingredient" – revenue requirements. In order for a municipality to implement a stormwater user fee, it must determine the underlying costs of the stormwater utility. In other words, it must determine how much revenue the user fees must generate in order to pay for the utility's costs.

Utility costs are comprised of: (1) capital costs, (2) debt costs, (3) operations and maintenance (O&M) costs, (4) depreciation, and (5) return on assets. Each of these cost elements is described below, along with the generally accepted methods of aggregating these costs into an overall revenue requirement.

## 11.1 Generally Accepted Methods

In Alberta, specific methods of calculating stormwater user fees are not mandated by law; rather, they are guided by common utility rate setting conventions. There are two generally accepted conventions for determining the revenue requirements of all utilities, including stormwater management programs. These conventions are:

a. *The Cash Needs Approach*: Revenue requirements are comprised of (1) capital costs, (2) debt costs, and (3) net O&M costs.
b. *The Utility (Full Cost) Approach*: Revenue requirements are comprised of (1) net O&M costs, (2) depreciation, and (3) return on assets.

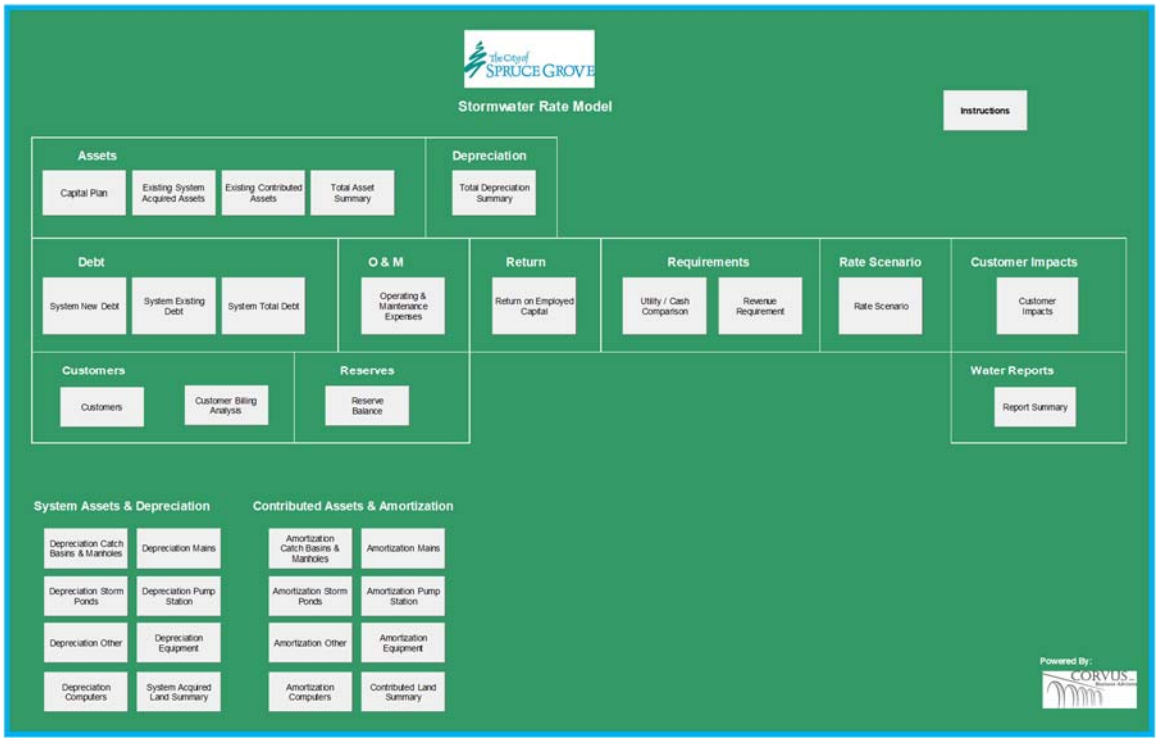
Though each method provides for short and long-term stormwater system program costs, the *full cost approach* (or simply, the "*utility approach*") results in greater rate stability. Under the *cash needs approach*, revenue requirements can fluctuate dramatically with cash demands that result from large capital expenditures in one year, but not the next. The *utility approach*, however, develops revenue requirements not based on what is being spent today but rather on the assets that are "consumed" in service (depreciation) and through financial returns on stormwater system assets (asset base) that will sustain the service in the future. Depreciation and return represent non-cash provisions that, when placed in reserve, may be used to defray the impact of large capital expenditures or, alternatively, may be drawn upon to cover cash needs when decision makers wish to smooth the impact of rate changes over a number of years.

This study uses the *utility approach* to establish the City of Spruce Grove's stormwater revenue requirements.

## 11.2 Utility Rate Model & Review Period

The development of full cost utility rates described in this study was supported by the CORVUS Utility Rate Model. The model forecasts rate requirements and rate impacts for a 10-year planning period. In all cases, information used in the model was either developed by, or vetted with, City of Spruce Grove staff. A snapshot of the model's control panel is shown below, and a description of the elements contained in the model is provided in Appendix A.

Figure 10: CORVUS Utility Rate Model




## 11.3 Capital Costs

**Existing Stormwater Infrastructure** – Stormwater infrastructure that is "in service" is used as a base upon which a rate of return is generated. The rate of return is used to make debt payments associated with creation of the infrastructure and to rehabilitate or replace assets when they reach the end of their economic life.

The table below summarizes the original and residual book value of stormwater assets currently in service in the City of Spruce Grove. Assets in service are classified into two groups: (1) those acquired by the City (acquired assets), and (2) those contributed to the City through grants, local improvements, third party contributions and development levies (contributed assets). Each of these two asset classes earn different rates of return, which

is described later in Section 11.7.

In the City of Spruce Grove, stormwater assets are at 23% of their life on average (77% remaining) as shown in the table below. It is important that reserves be accumulated to rehabilitate and reconstruct assets when they reach the end of their useful life.

Figure 11: Net Book Value of Existing Assets

| Description | Gross Cost | Accumulated Depreciation | Remaining % of Asset |
|---|---|---|---|
| | | | |
| **System Acquired Assets** | | | |
| Catch Basins | $ 5,699,308 | $ 1,454,741 | 74% |
| Mains | $ 46,004,717 | $ 13,546,689 | 71% |
| Storm Ponds | $ 14,491,410 | $ 1,801,191 | 88% |
| Other | $ 15,997 | $ 2,666 | 83% |
| **Total Acquired** | **$ 66,211,432** | **$ 16,805,287** | **75%** |
| | | | |
| **Contributed Assets** | | | |
| Catch Basins | $ 2,482,336 | $ 151,970 | 94% |
| Mains | $ 5,418,484 | $ 510,776 | 91% |
| Storm Ponds | $ 4,834,248 | $ 826,872 | 83% |
| Other | $ - | $ - | 0% |
| **Total Contributed** | **$ 12,735,068** | **$ 1,489,619** | **88%** |
| | | | |
| **Total All Assets** | **$ 78,946,500** | **$ 18,294,906** | **77%** |

**Future Stormwater Assets (i.e., the Capital Plan)** – The tables below provide details of the capital expenditures that are planned for the City's stormwater system. The capital plan averages about $3.74 million per year and was developed by City staff with assistance from ISL Engineering and Land Services. These assets will be placed into service in the year of construction. As with existing assets in service, when capital assets are placed into service they will earn a rate of return for any debt obligations that have arisen during their construction, and for the assets' eventual rehabilitation and replacement, which is described in Section 11.7.

Figure 12: Summary of Capital Plan by Asset Class[23]

| Year | Catch Basins | Mains | Storm Ponds | Other | Equipment | Grand Total |
|---|---|---|---|---|---|---|
| 2019 | $ 257,500 | $ 1,493,500 | $ 3,965,500 | $ - | $ - | $ 5,716,500 |
| 2020 | $ 265,225 | $ 2,068,755 | $ 596,226 | $ - | $ 140,569 | $ 3,070,775 |
| 2021 | $ 273,182 | $ 983,454 | $ 1,521,076 | $ - | $ 364,970 | $ 3,142,682 |
| 2022 | $ 281,377 | $ 1,575,712 | $ 1,052,351 | $ - | $ 661,799 | $ 3,571,239 |
| 2023 | $ 303,730 | $ 1,043,347 | $ 2,086,693 | $ - | $ - | $ 3,433,770 |
| 2024 | $ 312,842 | $ 1,671,673 | $ 1,552,268 | $ - | $ - | $ 3,536,783 |
| 2025 | $ - | $ 1,106,886 | $ 2,459,748 | $ - | $ - | $ 3,566,634 |
| 2026 | $ - | $ 1,140,093 | $ 2,533,540 | $ - | $ - | $ 3,673,633 |
| 2027 | $ - | $ 1,174,296 | $ 2,609,546 | $ - | $ - | $ 3,783,842 |
| 2028 | $ - | $ 1,209,525 | $ 2,687,833 | $ - | $ - | $ 3,897,358 |
| | | | | | | |
| Total | $ 1,693,856 | $ 13,467,241 | $ 21,064,781 | $ - | $ 1,167,338 | $ 37,393,216 |

[23] Costs are shown in future dollars (current estimates are inflated by 3% per year to the year of construction.

## Figure 13: Capital Plan & Financing

| | | | Inflation | 3.00% | Allocation of Cost | | System Acquired Financing | | Contributed Assets | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Category | Description | Current Cost | Year | Future Cost | System Acquired | Contributed | Debenture | Reserves | Grants | Developer | Other |
| Storm Ponds | Brookwood Surge Pond | $ 3,850,000 | 2019 | $ 3,965,500 | $ 3,965,500 | $ - | $ 3,965,500 | $ - | $ - | $ - | $ - |
| Storm Ponds | Lakewood, Grove Meadows, Linkside | $ 462,000 | 2020 | $ 490,136 | $ 490,136 | $ - | $ 490,136 | $ - | $ - | $ - | $ - |
| Storm Ponds | Major Maintenance Condition Study Implementation | $ 50,000 | 2020 | $ 53,045 | $ 53,045 | $ - | $ - | $ 53,045 | $ - | $ - | $ - |
| Storm Ponds | Sediment Buildup Survey - 1 Pond | $ 50,000 | 2020 | $ 53,045 | $ 53,045 | $ - | $ - | $ 53,045 | $ - | $ - | $ - |
| Storm Ponds | Woodhaven | $ 792,000 | 2021 | $ 865,440 | $ 865,440 | $ - | $ 865,440 | $ - | $ - | $ - | $ - |
| Storm Ponds | Major Maintenance Condition Study Implementation | $ 550,000 | 2021 | $ 601,000 | $ 601,000 | $ - | $ 601,000 | $ - | $ - | $ - | $ - |
| Storm Ponds | Sediment Buildup Survey - 1 Pond | $ 50,000 | 2021 | $ 54,636 | $ 54,636 | $ - | $ 54,636 | $ - | $ - | $ - | $ - |
| Storm Ponds | Westgrove, Aspenglen, Millgrove, Deer Park | $ 385,000 | 2022 | $ 433,321 | $ 433,321 | $ - | $ 433,321 | $ - | $ - | $ - | $ - |
| Storm Ponds | Major Maintenance Condition Study Implementation | $ 550,000 | 2022 | $ 619,030 | $ 619,030 | $ - | $ 619,030 | | $ - | $ - | $ - |
| Storm Ponds | Major Maintenance Condition Study Implementation | $ 800,000 | 2023 | $ 927,419 | $ 927,419 | $ - | $ 927,419 | $ - | $ - | $ - | $ - |
| Storm Ponds | Sediment Buildup Survey - 10 Ponds | $ 500,000 | 2023 | $ 579,637 | $ 579,637 | $ - | $ - | $ 579,637 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 1 pond | $ 500,000 | 2023 | $ 579,637 | $ 579,637 | $ - | $ - | $ 579,637 | $ - | $ - | $ - |
| Storm Ponds | Major Maintenance Condition Study Implementation | $ 800,000 | 2024 | $ 955,242 | $ 955,242 | $ - | $ - | $ 955,242 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 1 pond | $ 500,000 | 2024 | $ 597,026 | $ 597,026 | $ - | $ 250,000 | $ 347,026 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 4 ponds | $ 2,000,000 | 2025 | $ 2,459,748 | $ 2,459,748 | $ - | $ - | $ 2,459,748 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 4 ponds | $ 2,000,000 | 2026 | $ 2,533,540 | $ 2,533,540 | $ - | $ - | $ 2,533,540 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 4 ponds | $ 2,000,000 | 2027 | $ 2,609,546 | $ 2,609,546 | $ - | $ - | $ 2,609,546 | $ - | $ - | $ - |
| Storm Ponds | Sediment Removal - 4 ponds | $ 2,000,000 | 2028 | $ 2,687,833 | $ 2,687,833 | $ - | $ - | $ 2,687,833 | $ - | $ - | $ - |
| Equipment | Storm Pond Scanning Equipment | $ 50,000 | 2020 | $ 53,045 | $ 53,045 | $ - | $ - | $ 53,045 | $ - | $ - | $ - |
| Equipment | Hotsy Trailer | $ 32,000 | 2020 | $ 33,949 | $ 33,949 | $ - | $ - | $ 33,949 | $ - | $ - | $ - |
| Equipment | Camera (Fiberscope) | $ 36,000 | 2020 | $ 38,192 | $ 38,192 | $ - | $ - | $ 38,192 | $ - | $ - | $ - |
| Equipment | Technology, Ipads etc. | $ 4,500 | 2020 | $ 4,774 | $ 4,774 | $ - | $ - | $ 4,774 | $ - | $ - | $ - |
| Equipment | Small Tools | $ 10,000 | 2020 | $ 10,609 | $ 10,609 | $ - | $ - | $ 10,609 | $ - | $ - | $ - |
| Equipment | Rental Line | $ 50,000 | 2021 | $ 54,636 | $ 54,636 | $ - | $ - | $ 54,636 | $ - | $ - | $ - |
| Equipment | Confined Space Entry gear(Davit arm)/Gas tec,bump kit,etc. | $ 26,000 | 2021 | $ 28,411 | $ 28,411 | $ - | $ 28,411 | $ - | $ - | $ - | $ - |
| Equipment | 200 JD wheeled excavator | $ 240,000 | 2021 | $ 262,254 | $ 262,254 | $ - | $ - | $ 262,254 | $ - | $ - | $ - |
| Equipment | Utility Trailer/float | $ 18,000 | 2021 | $ 19,669 | $ 19,669 | $ - | $ - | $ 19,669 | $ - | $ - | $ - |
| Equipment | Off Road Vehicle | $ 28,000 | 2022 | $ 31,514 | $ 31,514 | $ - | $ - | $ 31,514 | $ - | $ - | $ - |
| Equipment | Vactor Truck | $ 560,000 | 2022 | $ 630,285 | $ 630,285 | $ - | $ 630,285 | $ - | $ - | $ - | $ - |
| Mains | Industrial Storm Implementation | $ 550,000 | 2019 | $ 566,500 | $ 566,500 | $ - | $ 566,500 | $ - | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 250,000 | 2019 | $ 257,500 | $ 257,500 | $ - | $ 257,500 | $ - | $ - | $ - | $ - |
| Mains | City Center ARP Infrastructure upgrades | $ 500,000 | 2020 | $ 530,450 | $ 530,450 | $ - | $ 430,450 | $ 100,000 | $ - | $ - | $ - |
| Mains | Industrial Storm Implementation | $ 550,000 | 2020 | $ 583,495 | $ 583,495 | $ - | $ 583,495 | $ - | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 250,000 | 2020 | $ 265,225 | $ 265,225 | $ - | $ 265,225 | $ - | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 250,000 | 2021 | $ 273,182 | $ 273,182 | $ - | $ - | $ 273,182 | $ - | $ - | $ - |
| Mains | City Center ARP Infrastructure upgrades | $ 500,000 | 2022 | $ 562,754 | $ 562,754 | $ - | $ - | $ 562,754 | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 250,000 | 2022 | $ 281,377 | $ 281,377 | $ - | $ - | $ 281,377 | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 262,000 | 2023 | $ 303,730 | $ 303,730 | $ - | $ - | $ 303,730 | $ - | $ - | $ - |
| Mains | City Center ARP Infrastructure upgrades | $ 500,000 | 2024 | $ 597,026 | $ 597,026 | $ - | $ - | $ 597,026 | $ - | $ - | $ - |
| Catch Basins & Manh | Storm Sewer rehabilitation (catch basins) | $ 262,000 | 2024 | $ 312,842 | $ 312,842 | $ - | $ - | $ 312,842 | $ - | $ - | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2019 | $ 927,000 | $ - | $ 927,000 | $ - | $ - | $ - | $ 927,000 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2020 | $ 954,810 | $ - | $ 954,810 | $ - | $ - | $ - | $ 954,810 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2021 | $ 983,454 | $ - | $ 983,454 | $ - | $ - | $ - | $ 983,454 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2022 | $ 1,012,958 | $ - | $ 1,012,958 | $ - | $ - | $ - | $ 1,012,958 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2023 | $ 1,043,347 | $ - | $ 1,043,347 | $ - | $ - | $ - | $ 1,043,347 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2024 | $ 1,074,647 | $ - | $ 1,074,647 | $ - | $ - | $ - | $ 1,074,647 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2025 | $ 1,106,886 | $ - | $ 1,106,886 | $ - | $ - | $ - | $ 1,106,886 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2026 | $ 1,140,093 | $ - | $ 1,140,093 | $ - | $ - | $ - | $ 1,140,093 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2027 | $ 1,174,296 | $ - | $ 1,174,296 | $ - | $ - | $ - | $ 1,174,296 | $ - |
| Mains | New Mains, Ponds, & Catch Basins etc. (Developer) | $ 900,000 | 2028 | $ 1,209,525 | $ - | $ 1,209,525 | $ - | $ - | $ - | $ 1,209,525 | $ - |
| | | **$ 32,017,500** | | **$ 37,393,216** | **$ 26,766,200** | **$ 10,627,016** | **$ 10,968,348** | **$ 15,797,852** | **$ -** | **$ 10,627,016** | **$ -** |

## 11.4 Existing and Future Debt Payments

Utility revenues must provide for debt payments on existing and future debts. The City has no existing debts. However, in the future debt will be required to pay for certain new stormwater assets until sufficient reserves can be amassed. The following table summarizes debt payments associated with new debentures over the rate-planning period.

Figure 14: Debt Payments[24]

| Year | Existing Debt | | | Future Debt | | | Total Debt | | |
|---|---|---|---|---|---|---|---|---|---|
| | Principal | Interest | Total | Principal | Interest | Total | Principal | Interest | Total |
| 2019 | $ - | $ - | $ - | $ 6,941 | $ 7,950 | $ 14,891 | $ 6,941 | $ 7,950 | $ 14,891 |
| 2020 | $ - | $ - | $ - | $ 136,469 | $ 155,833 | $ 292,302 | $ 136,469 | $ 155,833 | $ 292,302 |
| 2021 | $ - | $ - | $ - | $ 181,286 | $ 197,993 | $ 379,279 | $ 181,286 | $ 197,993 | $ 379,279 |
| 2022 | $ - | $ - | $ - | $ 228,758 | $ 240,078 | $ 468,836 | $ 228,758 | $ 240,078 | $ 468,836 |
| 2023 | $ - | $ - | $ - | $ 281,866 | $ 283,255 | $ 565,121 | $ 281,866 | $ 283,255 | $ 565,121 |
| 2024 | $ - | $ - | $ - | $ 315,646 | $ 303,106 | $ 618,751 | $ 315,646 | $ 303,106 | $ 618,751 |
| 2025 | $ - | $ - | $ - | $ 332,222 | $ 300,986 | $ 633,208 | $ 332,222 | $ 300,986 | $ 633,208 |
| 2026 | $ - | $ - | $ - | $ 342,577 | $ 290,631 | $ 633,208 | $ 342,577 | $ 290,631 | $ 633,208 |
| 2027 | $ - | $ - | $ - | $ 353,255 | $ 279,953 | $ 633,208 | $ 353,255 | $ 279,953 | $ 633,208 |
| 2028 | $ - | $ - | $ - | $ 345,955 | $ 257,026 | $ 602,980 | $ 345,955 | $ 257,026 | $ 602,980 |
| | | | | | | | | | |
| Total | **$ -** | **$ -** | **$ -** | **$ 2,524,975** | **$ 2,316,811** | **$ 4,841,785** | **$ 2,524,975** | **$ 2,316,811** | **$ 4,841,785** |

## 11.5 Operations and Maintenance (O&M) Costs

The table below outlines projected net O&M expenditures that must be provided for by stormwater utility charges. Projected expenditures over the rate planning period are based on baseline costs (2019 budgeted operating expenditures[25] adjusted for budgeted step increases/decreases) plus a provision for future escalation of costs (3.0% inflation on costs and revenues are taken into consideration in each year of the 10-year planning period).

[24] The borrowing assumptions are: (1) Catch Basins, Mains, & Ponds - 25 year borrowing rate (annual) as published by the Alberta Capital Finance Authority 15 March 2019 is 3.132%. This equates to 1.554% semi-annual rate. (2) Equipment - 15 year borrowing rate (annual) as published by the Alberta Capital Finance Authority 15 March 2019 is 2.872%. This equates to 1.426% semi-annual rate.

[25] The 2019 base budget includes: (a) Engineering administration ~$165,000, (b) Public Works ~$581,000, and (c) Billing and contingency ~$100,000. Total ~$846,000.

Figure 15: Net Operating Expenditures

| Year | Miscellaneous Recoveries | Expenditures | Net Expenditures |
|---|---|---|---|
| 2019 | $ - | $ 845,676 | $ 845,676 |
| 2020 | $ - | $ 871,047 | $ 871,047 |
| 2021 | $ - | $ 897,178 | $ 897,178 |
| 2022 | $ - | $ 924,093 | $ 924,093 |
| 2023 | $ - | $ 951,816 | $ 951,816 |
| 2024 | $ - | $ 980,371 | $ 980,371 |
| 2025 | $ - | $ 1,009,782 | $ 1,009,782 |
| 2026 | $ - | $ 1,040,075 | $ 1,040,075 |
| 2027 | $ - | $ 1,071,277 | $ 1,071,277 |
| 2028 | $ - | $ 1,103,416 | $ 1,103,416 |

## 11.6 Depreciation Expense

Depreciation represents the value of assets consumed while in service to ratepayers. A depreciation expense establishes part of the provision used for the rehabilitation and replacement of assets. Under the *utility approach* a depreciation expense is calculated only on acquired assets (contributed assets have not been purchased and therefore no expense can emanate from these assets). The depreciation expense established within the stormwater revenue requirement is calculated on a straight-line base over the economic life of assets in each asset class (e.g., catch basins, mains, storm ponds, etc.). The tables below outline the economic life of each stormwater asset class and the depreciation expenses in each year of the rate-planning period.

Figure 16a: Economic Life of Asset Classes

| Category | Economic Life | |
|---|---|---|
| Catch Basins | 50 | Years |
| Mains | 50 | Years |
| Storm Ponds | 75 | Years |
| Other | 15 | Years |

Figure 16b: Depreciation Expense[26]

| Description | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| **System Acquired Assets** | | | | | |
| Catch Basins | $ 116,561 | $ 121,603 | $ 126,460 | $ 131,665 | $ 137,469 |
| Mains | $ 925,759 | $ 941,822 | $ 950,094 | $ 952,314 | $ 956,092 |
| Storm Ponds | $ 219,655 | $ 250,067 | $ 264,182 | $ 281,339 | $ 302,265 |
| Other | $ 1,066 | $ 1,066 | $ 1,066 | $ 1,066 | $ 1,066 |
| **Total Depreciation** | $ 1,263,042 | $ 1,314,558 | $ 1,341,803 | $ 1,366,384 | $ 1,396,893 |

| Description | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| **System Acquired Assets** | | | | | |
| Catch Basins | $ 143,408 | $ 145,531 | $ 144,595 | $ 143,729 | $ 142,720 |
| Mains | $ 961,495 | $ 959,586 | $ 950,984 | $ 942,462 | $ 933,130 |
| Storm Ponds | $ 326,525 | $ 353,272 | $ 386,561 | $ 420,848 | $ 456,164 |
| Other | $ 1,066 | $ 1,066 | $ 1,066 | $ 1,066 | $ 1,066 |
| **Total Depreciation** | $ 1,432,495 | $ 1,459,455 | $ 1,483,206 | $ 1,508,105 | $ 1,533,080 |

## 11.7 Return

Different rates of return are established depending on the type of asset:

- Acquired assets that are debt supported: Average debt obligation.
- Acquired assets that are equity supported: *Generic Rate of Return* established by the Alberta Utilities Commission (AUC)[27].
- Contributed assets: No return.
- Working capital: *Generic Rate of Return.*

The actual capital structure of a utility is most often used to determine the weight of each cost of capital. However, the relative components of debt and equity can change over time. Sometimes the actual capital structure can have excessive amounts of debt or equity. As such, an alternative capital structure, referred to as a "deemed capital structure", is used to determine a fair return. The AUC has determined that the optimum capital structure for an investor-owned utility is 60% debt based and 40% equity. However, municipal debt is constrained by the *Municipal Government Act* and related debt regulations. As such, for municipal utilities the level of debt to equity has been revised downward to 40% debt and 60% equity. The deemed capital structure helps to generate a smooth revenue requirement during periods of abnormally low or high capital construction.

[26] Depreciation is calculated in the year of construction.

[27] The current *Generic Rate of Return* was established in 2017 by the AUC.

**Acquired assets** that are deemed to be **debt supported** (40% of all acquired assets) are provided a rate of return that meets average debt obligations (principle and interest payments). For example, in 2019 (Year 1 of the review period) a return of 3.00% is determined by the average interest of all outstanding debentures (with 3% as the minimum[28]).

**Acquired assets** that are deemed to be **equity supported** (60% of all acquired assets) are provided a rate of return of 8.50% (the AUC 2017 *Generic Rate of Return*) which approximates the cost of equity capital for stormwater utilities as determined by the AUC.

**Contributed assets** do not earn a rate of return.

Determination of average **working capital** requirements is based on 1½ months of O&M costs (the "one-eighth" rule). Returns on working capital are assumed to be 8.50% (the AUC 2017 *Generic Rate of Return*).

To illustrate, the table below summarizes return calculations for each asset in service in 2019 (i.e., Year 1 of the review period[29]). The average return on all assets in service is 5.15%. As previously indicated this return is intended to meet any borrowing obligations that are incurred in the creation of assets and to rehabilitate and replace the assets when they reach the end of their economic life.

Figure 17: 2019 Summary of Returns

| 2019 | | | | | | | |
|---|---|---|---|---|---|---|---|
| Description | Actual Capital In Service | % Actual Capital Structure | % Actual System Acquired Asset Structure | Deemed % System Acquired Asset Structure | Deemed Rate Base | Rate of Return | Return on Deemed Rate Base |
| **System Acquired Assets** | | | | | | | |
| Debt Portion | $ 5,047,785 | 7.78% | 9.54% | 40.00% | $ 21,173,041 | 3.00% | $ 635,191 |
| Equity Portion | $ 47,884,818 | 73.81% | 90.46% | 60.00% | $ 31,759,562 | 8.50% | $ 2,699,563 |
| Total System Acquired | $ 52,932,603 | 81.59% | 100.00% | 100.00% | $ 52,932,603 | | $ 3,334,754 |
| | | | | | | | |
| **Contributed Assets** | $ 11,940,706 | 18.41% | | | $ 11,940,706 | 0.00% | $ - |
| | | | | | | | |
| **Total Assets** | $ 64,873,309 | 100.00% | | | $ 64,873,309 | | $ 3,334,754 |
| | | | | | | | |
| **Working Capital** | $ 845,676 | | | | $ 105,710 | 8.50% | $ 8,985 |
| | | | | | | | |
| | | | | | | **Total Return** | $ 3,343,739 |
| | | | | | | | 5.15% |

[28] In determining revenue requirements, if the average debt obligation is below 3%, a minimum return of 3% is used in alignment with current Alberta Capital Financing borrowing rates.

[29] Returns are calculated for each year of the 10-year review period.

## 11.8 Summary of Revenue Requirements

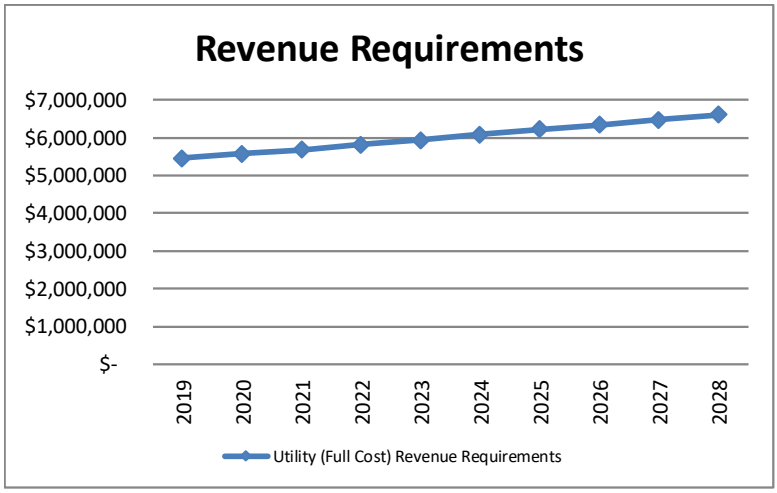
Based on the various elements described in the previous sections it has been determined that the City of Spruce Grove stormwater utility revenue requirements under the *utility approach* increase from approximately $5.45 million in Year 1 of the rate review period to approximately $6.61 million in Year 10, as depicted in table and graph below.

Figure 18a: Stormwater Revenue Requirements

| Description | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| O&M costs (Net) | $ 845,676 | $ 871,047 | $ 897,178 | $ 924,093 | $ 951,816 |
| | | | | | |
| Depreciation | $ 1,263,042 | $ 1,314,558 | $ 1,341,803 | $ 1,366,384 | $ 1,396,893 |
| | | | | | |
| Return | | | | | |
| System Assets - Debt | $ 635,191 | $ 644,808 | $ 654,617 | $ 668,920 | $ 680,842 |
| System Assets - Equity | $ 2,699,563 | $ 2,740,435 | $ 2,782,123 | $ 2,842,910 | $ 2,893,580 |
| Contributed Assets | $ - | $ - | $ - | $ - | $ - |
| Working Capital | $ 8,985 | $ 9,255 | $ 9,533 | $ 9,818 | $ 10,113 |
| | | | | | |
| Total | $ 5,452,458 | $ 5,580,102 | $ 5,685,254 | $ 5,812,126 | $ 5,933,244 |

| Description | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| O&M costs (Net) | $ 980,371 | $ 1,009,782 | $ 1,040,075 | $ 1,071,277 | $ 1,103,416 |
| | | | | | |
| Depreciation | $ 1,432,495 | $ 1,459,455 | $ 1,483,206 | $ 1,508,105 | $ 1,533,080 |
| | | | | | |
| Return | | | | | |
| System Assets - Debt | $ 713,402 | $ 745,923 | $ 760,605 | $ 776,139 | $ 792,234 |
| System Assets - Equity | $ 2,946,092 | $ 2,997,107 | $ 3,050,674 | $ 3,106,847 | $ 3,165,740 |
| Contributed Assets | $ - | $ - | $ - | $ - | $ - |
| Working Capital | $ 10,416 | $ 10,729 | $ 11,051 | $ 11,382 | $ 11,724 |
| | | | | | |
| Total | $ 6,082,775 | $ 6,222,996 | $ 6,345,611 | $ 6,473,751 | $ 6,606,193 |

Figure 18b: Stormwater Revenue Requirements




## 11.9 Comparison of Utility Revenue Requirement vs Cash Requirements

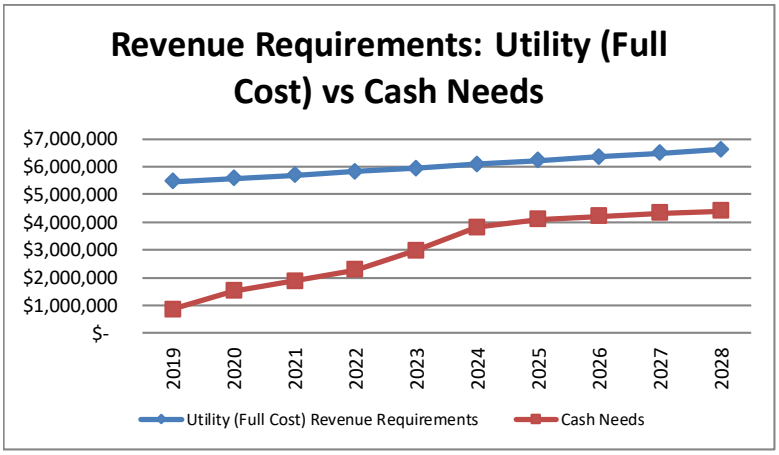
Currently, the City is partially funding stormwater requirements based on its perceived cash requirements. Accordingly, it is useful to understand, and compare, the revenue recovery required under the *Utility Approach* with the *Cash Needs Approach*, as shown in the table and graph below.

Similar to most utilities, the stormwater revenue requirements in the City of Spruce Grove under the *Cash Needs Approach* are "deceiving" as they are far less than the revenue requirements under the *Utility Approach*. This is because the *Cash Needs Approach* makes provision only for the cash requirements of the utility today—the *Cash Needs Approach* makes no provision for the rehabilitation and ultimate replacement of the utilities assets when they reach the end of their useful life.

Figure 19a: Utility Revenue Requirements vs Cash Requirements

| | Revenue Requirement - Utility (Full Cost) | | | | Revenue Requirement - Cash | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Net Operating Expenditures | Depreciation | Return | Total Revenue Requirement | Net Operating Expenditures | Debt Charges | Revenue Requirement Before Capital Drawn From | Capital Drawn From Reserves | Total Revenue Requirement |
| 2019 | $ 845,676 | $ 1,263,042 | $ 3,343,739 | $ 5,452,458 | $ 845,676 | $ 14,891 | $ 860,567 | $ - | $ 860,567 |
| 2020 | $ 871,047 | $ 1,314,558 | $ 3,394,498 | $ 5,580,102 | $ 871,047 | $ 292,302 | $ 1,163,348 | $ 346,659 | $ 1,510,007 |
| 2021 | $ 897,178 | $ 1,341,803 | $ 3,446,273 | $ 5,685,254 | $ 897,178 | $ 379,279 | $ 1,276,457 | $ 609,741 | $ 1,886,198 |
| 2022 | $ 924,093 | $ 1,366,384 | $ 3,521,648 | $ 5,812,126 | $ 924,093 | $ 468,836 | $ 1,392,929 | $ 875,645 | $ 2,268,574 |
| 2023 | $ 951,816 | $ 1,396,893 | $ 3,584,535 | $ 5,933,244 | $ 951,816 | $ 565,121 | $ 1,516,937 | $ 1,463,004 | $ 2,979,941 |
| 2024 | $ 980,371 | $ 1,432,495 | $ 3,669,910 | $ 6,082,775 | $ 980,371 | $ 618,751 | $ 1,599,122 | $ 2,212,136 | $ 3,811,258 |
| 2025 | $ 1,009,782 | $ 1,459,455 | $ 3,753,759 | $ 6,222,996 | $ 1,009,782 | $ 633,208 | $ 1,642,990 | $ 2,459,748 | $ 4,102,738 |
| 2026 | $ 1,040,075 | $ 1,483,206 | $ 3,822,329 | $ 6,345,611 | $ 1,040,075 | $ 633,208 | $ 1,673,283 | $ 2,533,540 | $ 4,206,823 |
| 2027 | $ 1,071,277 | $ 1,508,105 | $ 3,894,368 | $ 6,473,751 | $ 1,071,277 | $ 633,208 | $ 1,704,486 | $ 2,609,546 | $ 4,314,032 |
| 2028 | $ 1,103,416 | $ 1,533,080 | $ 3,969,698 | $ 6,606,193 | $ 1,103,416 | $ 602,980 | $ 1,706,396 | $ 2,687,833 | $ 4,394,229 |

Figure 19b: Utility Revenue Requirements vs Cash Requirements




## 11.10 Key Conclusions

The *Cash Needs Approach* outlines the minimum amount of cash required in any given year and is similar to the City's current draw on taxes. If, after having established a stormwater utility, revenue production falls below cash needs this will result in a utility "loss", and the requirement for subsidy from the City (i.e., a draw on taxes).

Over the long-term, rates and revenues need to satisfy the utility (full cost) revenue requirements in order for the utility to be fully self-sustained (i.e., in order to generate sufficient reserves to finance the rehabilitation and replacement of stormwater assets when they reach the end of their useful life).

Transition to full cost rates immediately would likely require a very high rate. Accordingly, the ideal rate strategy would see a gradual, long-term transition that at least covers cash needs in the short-term and gradually moves toward full cost rates in the long-term. This is discussed more fully in Section 12.

# 12 RECOMMENDATIONS

This section describes the recommended stormwater rate structure for the City of Spruce Grove, and the long-term rate transition strategy that will enable the City to gradually achieve a sustainable utility without immediate and significant rate increases.

## 12.1 Recommended Rate Structure

To leverage existing data and conditions in the City of Spruce Grove without adding undue administrative costs or billing complexities, it is recommended that 2 stormwater user fees be established:

1. Small customer charge: for utility customers with a water service <1" (i.e., predominantly residential customers and small non-residential customers), and

2. Large customer charge: for utility customers with a water service >=1" (i.e., predominantly medium and large non-residential customers)

The stormwater charge for small customers was established based on average lot size and an estimate of impervious area for the customer class. Utilizing water meter size to distinguish customers rather than customer type (i.e., residential vs non-residential) eliminates inequitable allocation of costs to small non-residential ratepayers with properties (and runoff) that are essentially the same as their residential counterparts.

Essentially this is a hybrid of Approach 5: ERU described in Section 8.3. This approach is ideal for the City of Spruce Grove because:

- It is relatively easy and low cost to set-up and administer.
- It does not require the integration of any 3rd party systems.
- It can be set-up and administered via existing functionality in the City's Diamond utility billing module.
- It can be set-up and administered by existing staff resources.
- It delivers a relatively high degree of equity and fairness in terms of allocation of stormwater costs to users/rate payers.

After examining conditions in the City of Spruce Grove in Section 9.5, it was determined that larger utility customers with a water meter >= 1" have an average impervious area

between 26 to 62 times greater than the average small utility customer with a water meter <1". The analysis highlights the high degrees of variability within large customer area measurements, and significant difference between small and large customers. If a metric between 26 and 62 was used to establish stormwater charges for large customers it would result in unreasonably high rates and, therefore, the need to measure the imperviousness of all customers falling into this rate class. As such, it is recommended that the City's existing tax levy and cost allocation differential (i.e., 4:1) be used to establish the rate differential between small and large stormwater customers. This aligns with the differential being applied to equivalent stormwater charges within the City's current general tax levy, and (to a lesser degree) with other municipalities in Canada and utilities such as EPCOR.

## 12.2 Recommended Rate Strategy

Though it is best practice for municipalities to adopt utility rates for a relatively short period of time (usually just one year[30]), this review considered the long-term (10-year) costs of the City's stormwater utility in order to develop a rate strategy that achieves full cost requirements gradually over time.

The recommended small customer rate and large customer rate for the 10-year review period are shown in the table below. It is assumed the implementation of a stormwater utility would occur in 2020, hence the $0 rate in 2019[31]. The small customer rate commences at $9.30 per month, which is approximately $1 more per month than the 2019 effective rate via the general tax levy. The small customer rate grows gradually over the 10-year period to $32.50 per month in 2028. Multi-family properties with more than 4 units, and supplied by a single water meter, should be charged the large customer rate.

The large customer rate commences at $37.20 per month, which is 4X the small customer rate and approximately $4 more per month than the 2019 effective rate via the general tax levy. The large customer rate grows gradually over the 10-year period to $130.00 per month in 2028.

The rates in Year 1 will meet the cash requirements of the City's stormwater utility, but they are below full cost. Accordingly, it is recommended that rates gradually increase each

[30] Adopting a utility rate for just one year gives the municipality additional flexibility to adjust the pace of rate increases or decreases depending on changing economic circumstances, capital plan adjustments, etc.

[31] It is assumed the City will continue to fund its stormwater management program via the general tax levy in 2019 and make the switch to user fees in 2020.

year over the 10-year period, in order to reach the full cost requirement in Year 10.

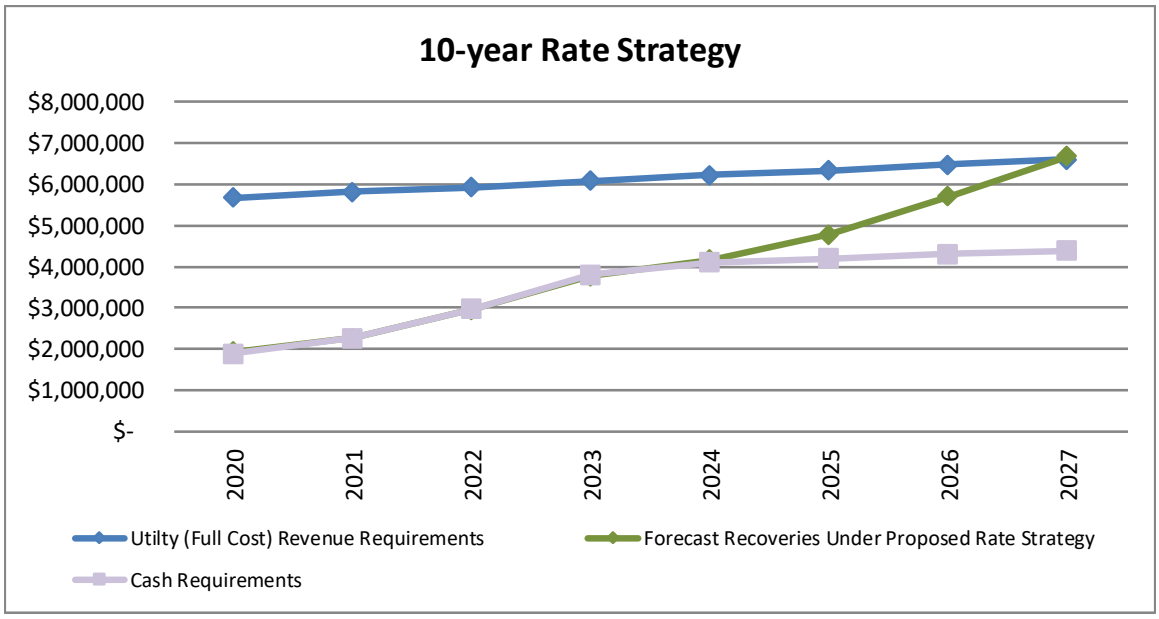
Figure 20: Summary of Rates – Utility (Full Cost) Rate Strategy[32]

| | 2019 | 2020 | 2021 | 2022 | 2023 |
|---|---|---|---|---|---|
| Small Customers (<1") | $ - | $ 9.30 | $ 11.50 | $ 13.00 | $ 16.50 |
| Large Customers (>=1") | $ - | $ 37.20 | $ 46.00 | $ 52.00 | $ 66.00 |

| | 2024 | 2025 | 2026 | 2027 | 2028 |
|---|---|---|---|---|---|
| Small Customers (<1") | $ 20.50 | $ 22.00 | $ 24.50 | $ 28.50 | $ 32.50 |
| Large Customers (>=1") | $ 82.00 | $ 88.00 | $ 98.00 | $ 114.00 | $ 130.00 |

Under the proposed rate strategy, the projected revenues will meet cash requirements in 2020, and meet the full cost revenue requirement in 2028 as shown in the graph below ("green" line). Implementation of the proposed rate strategy also eliminates the need for future draws on taxes—reducing the tax burden by approximately $29.47 million from 2020 to 2028.

Figure 21: Forecast Recoveries




Under the proposed rate strategy, approximately $4.34 million in reserves are amassed from 2020 to 2028, as shown in the table below. These funds will be used to finance future

[32] Multi-family developments with more than 4 units, and supplied by a single water meter, should be charged the large customer rate.

stormwater capital requirements.

Figure 22: Forecast Reserve Balance

| Year | Reserve Receipts | Reserve Applied | Reserve Balance |
|---|---|---|---|
| 2019 | $ (860,567) | $ - | $ 0 |
| 2020 | $ 356,986 | $ 346,659 | $ 10,327 |
| 2021 | $ 664,590 | $ 609,741 | $ 65,176 |
| 2022 | $ 869,434 | $ 875,645 | $ 58,966 |
| 2023 | $ 1,441,794 | $ 1,463,004 | $ 37,756 |
| 2024 | $ 2,184,836 | $ 2,212,136 | $ 10,456 |
| 2025 | $ 2,534,101 | $ 2,459,748 | $ 84,809 |
| 2026 | $ 3,106,857 | $ 2,533,540 | $ 658,126 |
| 2027 | $ 4,004,872 | $ 2,609,546 | $ 2,053,451 |
| 2028 | $ 4,973,021 | $ 2,687,833 | $ 4,338,639 |

# 13 IMPLEMENTATION & ONGOING MANAGEMENT OF A STORMWATER UTILITY

## 13.1 Creating a Stormwater Utility

As outlined in Section 9.1, developer contributions currently fund the construction of new stormwater infrastructure (onsite and offsite). Creation of a stormwater utility in the City of Spruce Grove will not alter developer-related funding. Rather, the stormwater utility and associated user fees, will focus on funding and delivery of operations, maintenance, capital rehabilitation and replacement.

The steps outlined below are intended to help guide the City's implementation of a stormwater utility, beyond the information contained in the body of this report which focuses primarily on utility rate setting and billing.

1. Adopt a Stormwater Utility. It is important to understand that adopting a funding mechanism such as a stormwater user fee can be taken independent of the establishment of a stormwater utility, but this is not ideal. Should the City elect to adopt a stormwater user fee but not a stormwater utility approach, there remains a risk that transition to a full cost fee structure will not be achieved and with such the infrastructure gap will either remain or grow. Adoption of a stormwater utility will ensure the stormwater management program is appropriately managed and funded into the future.

   So, what does adoption of a stormwater utility entail? In adopting a stormwater utility, the City should establish a framework that sets the utility apart from municipally supported operations. This does not mean the stormwater utility needs to be organizationally segregated from the civic administration. Stewardship of the utility can remain organizationally aligned as it is today.

   A utility framework for stormwater management in the City should include:

   a) All costs, operating and capital, for the stormwater management program should be appropriately gathered and segregated so that revenue requirements are understood.

   b) All revenues associated with the stormwater management program should likewise be gathered and segregated so that net funds can be placed in infrastructure replacement reserves for future rehabilitation and replacement of assets.

c) A reserve account(s) should be created and earmarked solely for the provision of stormwater management services.

d) Utility borrowing should be permitted recognizing that debt repayment will be accomplished from utility customer charges.

e) A supporting financial policy framework should be established (examples from the City of Calgary are provided in Appendix D).

2. Adopt a Stormwater User Fee. Revenue requirements are defined in this report and outline what funds need to be generated to meet capital and operating expenses. It should be noted that revenue requirements are based upon the capital and operating projections as they stand today. These requirements should be updated and refined annually as stormwater asset management evolves and the necessary supporting engineering and condition studies are completed.

   A rate design has also been identified in this report with a view to balancing equity considerations with ease of implementation and administration. Moreover, the rate design ensures that the vast majority of users (residential customers) are charged at the outset similar to what they are charged via property taxes (i.e., revenue neutral) and non-residential customers are charged below what they might be charged if stormwater runoff were the sole basis of rate design.

   This study has also determined that if the recommended rate structure is adopted the current utility billing system can be used to generate bills much like it has been deployed for solid waste management charges.

   It should be noted, however, that before the stormwater user fee can be implemented there still remains work to be undertaken regarding assignment of charges for multiple water meters contained under a single property. The objective of this work should be to ensure that ratepayers are appropriately billed.

3. Ensure Revenue Neutrality. As discussed in Section 8.5.6, experience in other municipalities has shown that new stormwater user fees will be seen as a “tax grab” and serve to undermine successful implementation if property taxes are not reduced to offset user fees. Reduction of equivalent property taxes should form the backbone of messaging to taxpayers. The most effective means of communication is the tax notice where a specific stormwater tax credit should be highlighted.

4. Develop & Implement a Communication Plan. After the City of Spruce Grove has decided to implement a utility and user fee structure the implications of these decisions need to be shared with citizens. A strong public education program is critical for successful implementation. At minimum, public education should include:

   - Identification of key messages for target groups that are most affected by the stormwater charge. In particular, special messaging for large utility customers (>=1") which generate the most significant runoff and in turn would receive higher stormwater bills. As well, special messaging will be required for properties that are currently tax-exempt (e.g., churches, schools etc.).

   - A stormwater utility website should be created. The website should describe stormwater services, contain utility customer and operational bylaws, rate bylaws and other documents that explain what stormwater management is and how the City of Spruce Grove intends to address various stormwater management issues. As it relates to establishing a stormwater user fee, the website should have specific information that addresses common questions from stormwater ratepayers (i.e., frequently asked questions).

   - A brochure should be prepared that describes the stormwater management issues and need for user fees and provided to all households.

   - An electronic presentation should be prepared that describes the need for the stormwater utility, the user fee, and customer impacts.

   - The media in Spruce Grove should be contacted and one-on-one or group meetings scheduled to address likely issues of concern to the public.

   - One-on-one or group meetings with key customers (e.g., large utility customers and institutional / not-for-profit groups) should be scheduled to outline the need for the stormwater utility, the user fee, and customer impacts.

   Experiences in other municipalities suggest that the issuance of the first utility bill is important as many customers will be unaware of the new stormwater user fee regardless of public engagement to that point. The municipality should consider sending notification of new charges that will be forthcoming by adding messaging to existing water, sewer and solid waste billing several months before the first stormwater billing.

5. Create a Cross Departmental Implementation Team. No plan will ever be implemented without issue. Be prepared for issues as they arise. Other municipal experiences suggest that a cross-departmental team is best positioned to manage implementation issues.

6. Promote Stormwater Reduction Efforts: As highlighted in Section 8.5.6, implementing a credit program for residential properties is often too administratively costly and the resources to manage the program may not be available. As an alternative to a credit program, the City can promote and recognize stormwater management civic responsibility via its education program and messaging.

7. Establish a Continuous Improvement Philosophy. The City should develop and implement procedures for monitoring, assessing, and adapting its stormwater management program (business practices of the utility, technical requirements of the municipality, customer relations, etc.).

## 13.2 Ongoing Administration of a Stormwater Utility

If a stormwater utility structure is adopted as outlined in the previous section, there are ongoing tasks that need to be administered including:

1. The reserve(s) that is established for the stormwater utility can be used for capital rehabilitation and replacement as well as a mechanism for deferring rate changes (i.e., a rate mitigation fund). The rate strategy contained in this report results in the capital replacement reserve achieving a balance of approximately $4 million, as highlighted in Section 12.2. The City should establish a cap that will ensure that capital funding is available but not collected too far in advance of project construction. Funds collected above the cap would be used to reduce user fee increases.

2. As described in Section 11, rate setting considers the depreciation of assets as wells as return on assets. Accordingly, it is necessary that the condition of the City's stormwater asset base be understood and that the need for and timing of rehabilitation and replacement of assets be confirmed. There may be changes in the City's stormwater capital plan, and these would be injected into future rate calculations.

3. Facility/asset life-cycle management, the exploration of "green" stormwater management options for runoff, and pollution mitigation need to be explored. There

may be changes in the City's stormwater operating and capital plans, and these would be injected into future rate calculations.

4. The 10-year rate strategy outlined in this report will ensure that cash requirements are met in the short-term, while gradually moving toward the full cost requirements by the end of the review period. As costs change, and public input is received, the long-term rate strategy should be re-examined from time to time to determine if rate adjustments (increases or decreases) are required.

5. Even after implementation of a stormwater user fee, ongoing management of stormwater capital costs must consider and utilize other financing sources such as developer contributions, grants, and debt—and policies determined for each as they relate to the stormwater utility. As noted above, a supporting financial policy framework should be established (examples from the City of Calgary are provided in Appendix D).

# 14 ACKNOWLEDGEMENTS

The CORVUS team would like to thank all City of Spruce Grove staff from Engineering, Planning, and Finance, who supported the work of this review.

# 15 DISCLAIMER

CORVUS Business Advisor has relied upon the City of Spruce Grove to provide all the data and information used to construct the stormwater rate model and create the rates, such as customer data and assumptions, operating costs, capital costs, capital financing, etc. As such, CORVUS Business Advisors makes no guarantee as to the accuracy of the input data and information provided by City or the results that stem from this data and information.

Stormwater rates are not intended to stay static; they are based upon educated assumptions and the best available information of the day. Customer assumptions, cost estimates etc. can change each year. Accordingly, rates calculations should be updated regularly with the most current information (usually every three years). When information changes, it will be reflected in a future update, and rates adjusted accordingly.

# 16 REFERENCES

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# APPENDIX A – UTILITY RATE MODEL

Each element of the CORVUS Utility Rate Model is described below.

**Existing Stormwater Assets** – The cost of existing stormwater assets used in the provision of services (tangible capital assets) is included in the stormwater rate model. Stormwater asset costs are categorized into one or more of the following generic categories:

- Catch Basins
- Mains
- Storm Ponds
- Pumping Stations
- Equipment
- Computers
- Land
- Other

The model contains a summary of this asset cost information summarized by asset category and by year of construction.

**Future Stormwater Assets** – City staff, with support from ISL Engineering and Land Services, developed a multi-year capital plan to support future needs. The first 10 years of the plan are included in the stormwater rate model, consistent with the 10-year outlook of this study. The 10-year plan includes the cost of assets to be constructed and an associated financing plan. The model includes mechanisms for integrating capital plan impacts into future year rate setting.

**Depreciation of Stormwater Assets** – City staff were consulted on the development of depreciation allowances for each stormwater asset category. Depreciation is calculated in the rate model using a straight-line depreciation approach based on the economic life assigned to each asset category. The stormwater rate model contains information on the annual and accumulated depreciation for each asset class by year from year of construction to present. The stormwater rate model also forecasts future depreciation expenses for the 10-year planning period based on assets currently in service and those that will be added as a result of the 10-year capital plan described above.

**Existing and Future Debt Financing** – The stormwater rate model considers the impact of existing and future debt financing costs on stormwater rates. The model provides a

breakdown of all existing outstanding debentures used to finance stormwater infrastructure. Debt information includes the original principal financed, the borrowing term, interest rate, principal payment, interest payment, as well as the outstanding balance associated with each debt. The model also establishes future debt impacts for new assets identified in the 10-year capital plan.

**Operations and Maintenance (O&M) Costs** – The stormwater rate model considers the O&M costs associated with the provision of stormwater services over the 10-year planning period. Operating budget provisions were determined with City staff. The model accounts for inflation used to escalate each expenditure category. In addition, the model accounts for cost "step" increases or decreases (if any) to accommodate changes in planning assumptions (e.g., the addition of new staff).

**Return** – The stormwater rate model establishes returns on stormwater assets that are employed in the provision of service. Determination of returns are based on a deemed capital structure in order to smooth rate impacts associated with rate volatility that results from large swings in capital construction activity. The model allows for rates of return for equity and debt, as well as working capital employed in the operation of the stormwater utilities. The Alberta Utility Commission's *Generic Rate of Return* has been applied to equity assets (those assets financed through utility rates) and working capital, and the average cost of debt in any given year (minimum 3%) is used as the rate of return on debt assets (those assets financed through utility borrowings) in that year. No return is established on contributed assets (those assets provided by way of grant, levies, and third parties etc.).

**Customer Information Profile** – Customer profile information from 2017 and 2018 was analyzed and is used as the basis for forecasting rate requirements in the stormwater rate model. The stormwater rate model customer profile includes the number of accounts of each customer class.

**Revenue Requirements and Rate Impacts** – The stormwater rate model outlines what revenue should be recovered through stormwater rates (revenue requirements) under the *utility approach*, and the impact of rate structure / strategy on recoveries. The model compares recovery targets and recovery estimates as well as impacts on "typical" ratepayers as a result of rate changes. The model allows the City to develop a long-term strategy in developing stormwater rates and consideration of rate smoothing over the rate planning period.

**Reserve Balances** – The *utility approach* to rate setting establishes provisions for future

asset replacement. As such, the accumulation and use of asset replacement funds (reserve funds) is also considered in the stormwater rate model. The model ensures future rate scenarios are sufficient to meet reserve financing requirements identified in the 10-year capital plan and to meet reserve covenants (reserve minimums and maximums) (if any).

# APPENDIX B – CUSTOMER IMPACTS

The effective stormwater charge today is $8.28 per month for small customers and $33.00 per month for large customers (as explained in Section 9.1). Effectively, the proposed rate in 2020 will see small customer paying approximately $1 more per month and large customers paying approximately $4 more per month than do today via the City's tax levy. Though approved from year-to-year, future rates (from 2021 on) should be gradually increased in order to achieve utility (full cost) requirements by 2028.

Figure 23: Customer Impacts

| **Small Customers (<1")** | | |
|---|---|---|
| | Existing | 2020 |
| Stormwater Utility Charge | $ 8.28 | $ 9.30 |
| | | |
| Total Monthly Billing | $ 8.28 | $ 9.30 |
| **Change from Existing Billing** | | $ 1.02 |
| | | |
| **Large Customers (>=1")** | | |
| | Existing | 2020 |
| Stormwater Utility Charge | $ 33.00 | $ 37.20 |
| | | |
| Total Monthly Billing | $ 33.00 | $ 37.20 |
| **Change from Existing Billing** | | $ 4.20 |

# APPENDIX C – COMPARISON OF STORMWATER CHARGES IN ALBERTA

The following tables provide an overview of municipal stormwater rates for the Edmonton Metropolitan Region, Calgary Metropolitan Region, and other Alberta municipalities with population >10,000[33].

Figure 24: Comparison of Municipal Stormwater Rates in Alberta

| 2018/2019 | Airdrie | Beaumont* | Brooks | Calgary | Camrose |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | n/a** | n/a** | $ 15.43 | n/a** |
| Flat Rate/mo - Non-res | n/a** | n/a** | n/a** | $ 15.43 | n/a** |

| 2018/2019 | Canmore | Chestermere | Cochrane | Cold Lake | Devon* |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | $ 16.03 | $ 4.47 | n/a** | $8.00 |
| Flat Rate/mo - Non-res | n/a** | $ 26.97 | $ 4.47 | n/a** | $8.00 |

| 2018/2019 | EPCOR | Fort McMurray | Fort Sask* | Grande Prairie | High River |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | $ 9.00 | n/a** | n/a** | n/a** | $ 6.00 |
| Flat Rate/mo - Non-res | $ 40.00 | n/a** | n/a** | n/a** | $ 12.00 |

| 2018/2019 | Lacombe | Leduc* | Leduc County* | Lethbridge | Lloydminster |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | $ 5.00 | n/a** | n/a** | $ 5.00 |
| Flat Rate/mo - Non-res | n/a** | $ 5.00 | n/a** | n/a** | $ 5.00 |

[33] Municipal rate information was drawn (or estimated) from available internet sources in January 2019.

| 2018/2019 | MD of Foothills | Medicine Hat | Morinville* | Okotoks | Parkland County* |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | n/a** | $ 5.00 | $ 13.00 | n/a** |
| Flat Rate/mo - Non-res | n/a** | n/a** | $ 10.00 | $ 13.00 | n/a** |

| 2018/2019 | Red Deer | Rockyview County | St. Albert | Stony Plan* | Strathcona County |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | n/a** | $ 16.11 | n/a** | $ 8.50 |
| Flat Rate/mo - Non-res | n/a** | n/a** | $ 43.09 | n/a** | $ 8.50 |

| 2018/2019 | Strathmore | Sturgeon County* | Sylvan Lake | Turner Valley | Wetaskiwin |
|---|---|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Published Via Municipal Websites)** | | | | | |
| Flat Rate/mo - Res | n/a** | $ 12.50 | n/a** | n/a** | n/a** |
| Flat Rate/mo - Non-res | n/a** | $ 12.50 | n/a** | n/a** | n/a** |

| 2018/2019 | Whitecourt | Spruce Grove* | |
|---|---|---|---|
| **Dedicated Stormwater / Drainage Charges (As Pub** | | Existing | New |
| Flat Rate/mo - Res | n/a** | n/a** | $ 9.30 |
| Flat Rate/mo - Non-res | n/a** | n/a** | $ 37.20 |

*Edmonton Capital Region

**n/a - 23 of 36 munis do not have a dedicated stormwater charge. Costs are paid via other revenues (e.g., taxes).

Figure 25: Summary of Charges by Region

| | No Dedicated Charge | Flate Rate | Dynamic Rate | Total | |
|---|---|---|---|---|---|
| Edmonton Metropolitan Region | 6 | 6 | 1 | 13 | 35% |
| Calgary Metropolitan Region | 5 | 5 | | 10 | 27% |
| Other Cities | 10 | 1 | | 11 | 30% |
| Other Towns (>10,000) | 3 | | | 3 | 8% |
| Total | 24 | 12 | 1 | 37 | |
| | 65% | 32% | 3% | 100% | |

# APPENDIX D – SAMPLE FINANCIAL POLICIES

Financial policies help to manage obligations, constraints, and financial risks especially in the area of financing long-term assets. The following is a sample financial policy from the City of Calgary.

Debt and Cash Financing

An appropriate mix of debt and cash financing derived from debt service coverage ratio and minimum cash requirements is necessary to deliver stormwater management services. A good mix of financing strengthens the financial position of the Stormwater Utility while providing greater flexibility when planning for future capital requirements.

O&M costs are always fully funded from revenues. Subject to funding availability, capital projects that are part of the on-going improvement program or will reduce the O&M costs will be cash financed.

Debt financing will be used for capital projects that are substantial in cost and size and where the benefits will extend over a relatively long period. This spreads the costs of the infrastructure over an appreciable portion of the useful life of the assets. The nature of infrastructure is mostly long-lived projects serving current and future generations, which means debt financing is appropriate to achieve “intergenerational equity” with the rate payers who benefit from these capital infrastructures help pay for the cost of the assets.

Debt limits and debt servicing limits are normally established by lending institutions to ensure that debts and related interest costs are repaid in a timely manner. The City has both a debt limit and a debt servicing limit as required by the Municipal Government Act (MGA). The MGA outlines that debt may not exceed a limit of twice the revenue and that debt servicing may not exceed a limit of 35 per cent of revenue. The City has set an administrative target of 80 per cent of the MGA total debt and debt servicing limits. Debt from the Stormwater Utility contributes to the City debt levels and is subject to these targets.

Instead of a fixed specific level of maximum debt limit, a better way to determine the reasonableness of debt obligations is through a debt service coverage ratio. Debt service coverage ratio states net operating income as a multiple of debt, and its target would be stated in terms of how many times those debt servicing obligations could be paid after other obligations are met. A debt service coverage ratio reflects the Stormwater Utility’s ability to pay debt service after first paying for critical operations and maintenance expenditures. The ratio should be calculated per the following formula:

Debt Service Coverage Ratio = Total Revenues - (Operating Expenses + Any payments to the City) / Total Debt Service

It is recommended that the Stormwater Utility maintain a debt service coverage ratio at minimum of 1.75 times in place of the current policy's measures and targets.

Cash Financing of Maintenance Capital

The Stormwater Utility will have a target of cash financing 100 per cent of the capital maintenance projects identified in the capital budget.

Debt to Equity Ratio

The Stormwater Utility will report annually the debt to equity ratio, targeted at 40/60, which supports to maintain a long-term capital structure with adequate revenues to support the level of debt service.

Debt Term

For assets financed by self-supported debt, the Stormwater Utility will apply debt terms based on the specific asset and its purpose with the objective of matching a longer debt term with an asset that has a longer useful life. The Stormwater Utility will employ up to a 25 year debt term on major projects to provide greater flexibility to match debt terms to specific asset.

Sustainment Reserves

The City will establish as Stormwater Utility Sustainment Reserve. This reserve will provide a measure of financial flexibility in cash flow to fund unplanned expenditures in both operating and capital, and to manage the financial risks of short-term shortfalls in projected revenue of the Stormwater Utility. This reserve will have a target balance of 10 per cent of total revenues.

The independent financial review recommended that in lieu of the policy of maintaining sustainment reserves equal to 10 per cent of total revenues, that the sustainment reserves balance be equal to 120 days of annual operating expenses.

Depreciation

The Stormwater Utility will maintain depreciation rates that are aligned with generally accepted accounting practices. Depreciation on contributed assets is not charged as an operating expense for the purpose of rate setting.