



City of Spruce Grove: Stormwater Utility Rate Review

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Document Information

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Table of Contents

DOCUMENT INFORMATION	1
REVISION HISTORY	1
TABLE OF CONTENTS	2
1 INTRODUCTION	3
2 SCOPE OF REVIEW	3
3 METHODOLOGY	3
4 ASSUMPTIONS	4
5 ANALYSIS OF REVENUE REQUIREMENTS.....	5
5.1 EXISTING STORMWATER INFRASTRUCTURE	5
5.2 NEW STORMWATER INFRASTRUCTURE (CAPITAL PLAN)	6
5.3 EXISTING AND FUTURE DEBT PAYMENTS.....	9
5.4 OPERATING AND MAINTENANCE COSTS	9
5.5 DEPRECIATION EXPENSE ON ACQUIRED ASSETS	11
5.6 RETURN ON ASSETS IN SERVICE.....	12
5.7 REVENUE REQUIREMENTS.....	13
5.8 COMPARISON OF REVENUE REQUIREMENT: UTILITY (FULL COST) APPROACH VERSUS CASH NEEDS APPROACH	15
5.9 CUSTOMERS/STORMWATER DEMAND.....	16
6 RECOMMENDED RATES & FORECAST RECOVERIES	17
6.1 RECOMMENDED STORMWATER RATES.....	17
6.2 FORECAST STORMWATER RECOVERIES	17
7 ACKNOWLEDGEMENTS	20
8 DISCLAIMER	20
APPENDIX A – CUSTOMER IMPACTS	21
APPENDIX B – RETURN ON ASSETS	22

1 Introduction

The City of Spruce Grove (“the City”) provides stormwater services to City residents including: collection, transmission, storage, pumping, etc. Customers are billed monthly for stormwater services based on the size of water meter: (1) small customers (<1” water service), and (2) large customers (≥ 1 ” water service).

The City initiated this review to ensure stormwater rates are current and reflect the full cost of service provision.

2 Scope of Review

This rate review is focused on stormwater fixed charges.

3 Methodology

There are two generally accepted methods for determining the revenue requirements (and rates) for stormwater utility systems. These methods are:

- 1) The Utility (Full Cost) Approach, and
- 2) The Cash Needs Approach.

Though each method provides for short and long-term stormwater system program costs, the *utility (full cost) approach* generally results in greater rate stability. Under the *cash needs approach*, revenue requirements can fluctuate dramatically with cash demands that result from large capital expenditures. 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 delivery (i.e., depreciation) and through financial returns on system assets that will sustain the service in the future (i.e., return on the asset base). 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 increases over a number of years.

This study uses the *utility approach* to establish stormwater revenue requirements and rates.

4 Assumptions

Assumptions that are utilized throughout this analysis include:

Assumption	Description
Review Period	Though rates are usually approved on an annual basis, this study examines rate requirements over a 10-year review period from 2023 to 2032, thereby providing the City with insight into potential future rate changes.
Inflation	Inflation of 3.0% per annum was applied to current costs to establish future costs.
Depreciation	Depreciation and amortization are calculated on a straight-line base over the economic life of each asset class. Depreciation and amortization are calculated starting in the year of construction completion using the half-year rule.
Return on Acquired Assets that are Debt Supported	All assets are classified as either “acquired assets” or “contributed assets”, depending on the asset’s nature of origin and financing. Acquired assets that are debt supported are provided a rate of return equivalent to the average interest requirements in a given year.
Return on Acquired Assets that are Equity Supported	All assets are classified as either “acquired assets” or “contributed assets”, depending on the asset’s nature of origin and financing. Acquired assets that are equity supported are provided a rate of return of 8.50% which approximates the cost of equity capital for utilities as determined by the Alberta Utility Commission (i.e., the AUC “Generic Rate of Return” or “Generic Cost of Capital”).
Return on Working Capital	Determination of average working capital requirements is based on 1½ months of operation and maintenance costs in a given year (i.e., the “one-eighth” rule). Return on working capital is 8.50% (i.e., the AUC “Generic Rate of Return” or “Generic Cost of Capital”).

5 Analysis of Revenue Requirements

Revenue requirements are the total costs of the stormwater system that stormwater rates must recover for the utility to be self-sustaining. Each element used to determine the City's stormwater revenue requirements is described in the sections below.

5.1 Existing Stormwater Infrastructure

The cost of existing stormwater assets used in the provision of services (i.e., tangible capital assets) is included in the determination of revenue requirements. The City's stormwater assets are categorized into several categories based on their expected life (i.e., 75-year assets, 50-year assets, 45-year assets, 40-year assets, 30-year assets, 20-year assets, and 10-year assets).¹

Stormwater assets are also classified as either “acquired” assets or “contributed” assets depending on origin and nature of financing. Contributed assets are those that have been provided to the City through grants, local improvements (i.e., developer constructed and financed), third party contributions, and development levies. Acquired and contributed assets earn different rates of return, which is described more fully later in this section. This rate of return is used to make debt payments associated with creation of the infrastructure and to rehabilitate and replace assets when they reach the end of their economic life.

Table 1 summarizes the original and residual book value of assets currently in service. The City's stormwater assets are, on average, at 28% of their economic life with 72% of life remaining. It is important that reserves be accumulated for future asset rehabilitation and reconstruction.

¹ A municipality's assets are usually categorized based on their type, such as: catch basins and manholes, mains, storm ponds, pump stations, equipment, computers, and land. However, in some cases City assets within a given category have been assigned different asset life's, and so data synthesis and analysis using a different approach was required. Moving forward, it is recommended the City establish a singular asset life for each asset type.

Table 1: Net Book Value of Existing Stormwater Assets ²

Description	Gross Cost	Accumulated Depreciation	Net Book Value	Remaining % of Asset
System Acquired Assets				
75 Year Assets	\$ 2,923,848	\$ 633,859	\$ 2,289,989	78%
50 Year Assets	\$ 19,255,487	\$ 4,906,402	\$ 14,349,086	75%
45 Year Assets	\$ -	\$ -	\$ -	0%
40 Year Assets	\$ -	\$ -	\$ -	0%
30 Year Assets	\$ -	\$ -	\$ -	0%
20 Year Assets	\$ 302,585	\$ 23,799	\$ 278,786	92%
10 Year Assets	\$ 680,518	\$ 577,921	\$ 102,598	15%
Total Acquired	\$ 23,162,439	\$ 6,141,980	\$ 17,020,459	73%
Contributed Assets				
75 Year Assets	\$ 16,857,920	\$ 3,046,191	\$ 13,811,729	82%
50 Year Assets	\$ 45,839,538	\$ 14,982,182	\$ 30,857,356	67%
45 Year Assets	\$ -	\$ -	\$ -	0%
40 Year Assets	\$ -	\$ -	\$ -	0%
30 Year Assets	\$ -	\$ -	\$ -	0%
20 Year Assets	\$ -	\$ -	\$ -	0%
10 Year Assets	\$ -	\$ -	\$ -	0%
Total Contributed	\$ 62,697,457	\$ 18,028,373	\$ 44,669,084	71%
Total All Assets	\$ 85,859,896	\$ 24,170,353	\$ 61,689,543	72%

5.2 New Stormwater Infrastructure (Capital Plan)

Tables 2 and 3 provide details of the capital expenditures that are planned for the City's stormwater system over 10 years.³ The City's capital plan totals \$9.22 million in future dollars, of which \$9.22 million is anticipated to be acquired and \$0.00 is anticipated to be contributed.

These assets are placed into service in the year of construction completion. Similar to existing assets, when capital assets (that are acquired) are placed into service they earn a rate of return to repay any debt obligations that have arisen during their creation, and for the assets eventual rehabilitation and replacement.

² Land values (if any) are shown for information only. Land is not a depreciable asset.

³ The first 10 years of the capital plan are included, consistent with the 10-year outlook of this study.

Table 2: Capital Plan & Financing ⁴

Addition Description	Current Cost	Year	Inflation	3.00%		Allocation of Cost		System Acquired Financing		Contributed Assets		
				Future Cost		System Acquired	Contributed	Debtenture	Reserves	Grants	Developer	Other
Detailed engineering design for 7 High Risk ponds	\$ 125,000	2023	\$	128,750	\$	128,750	\$ -	\$ -	\$ 128,750	\$ -	\$ -	\$ -
Pond 15/39 Harvest Ridge Ponds	\$ 800,000	2024	\$	848,720	\$	848,720	\$ -	\$ 350,000	\$ 498,720	\$ -	\$ -	\$ -
Pond 4 (Fairway Park), 57 (Tim Hortons)	\$ 200,000	2025	\$	218,545	\$	218,545	\$ -	\$ -	\$ 218,545	\$ -	\$ -	\$ -
Pond 27 (Spruce Ridge Pond)	\$ 250,000	2026	\$	281,377	\$	281,377	\$ -	\$ -	\$ 281,377	\$ -	\$ -	\$ -
Pond 1 (Heatherglen – no design needed), Pond 23 (Century Crossing), Pond 5 (Vannderbuilt)	\$ 125,000	2027	\$	144,909	\$	144,909	\$ -	\$ -	\$ 144,909	\$ -	\$ -	\$ -
Detailed engineering design for the remaining 5 High Risk Ponds and 2 Med. Risk Ponds	\$ 100,000	2028	\$	119,405	\$	119,405	\$ -	\$ -	\$ 119,405	\$ -	\$ -	\$ -
Pond 18 (Jubilee Pond), Pond 55 (Pioneer Pond), Pond 35 (N City Centre)	\$ 150,000	2029	\$	184,481	\$	184,481	\$ -	\$ -	\$ 184,481	\$ -	\$ -	\$ -
Pond 30 (PW Yard), Pond 8 (Longview)	\$ 120,000	2030	\$	152,012	\$	152,012	\$ -	\$ -	\$ 152,012	\$ -	\$ -	\$ -
Pond 37 (Fairway Park), Pond 10 (Links Golf Hole 8)	\$ 100,000	2031	\$	130,477	\$	130,477	\$ -	\$ -	\$ 130,477	\$ -	\$ -	\$ -
Detailed engineering design for 7-10 ponds.	\$ 125,000	2032	\$	167,990	\$	167,990	\$ -	\$ -	\$ 167,990	\$ -	\$ -	\$ -
Storm Network Master Plan	\$ 150,000	2023	\$	154,500	\$	154,500	\$ -	\$ -	\$ 154,500	\$ -	\$ -	\$ -
Hotsy Steamer/Pressure Washer Trailer	\$ 38,500	2022	\$	38,500	\$	38,500	\$ -	\$ -	\$ 38,500	\$ -	\$ -	\$ -
Hydro Vac Drying Pad Facility (Water 20%/Sewer 15%/Drainage 65%)	\$ 243,750	2022	\$	243,750	\$	243,750	\$ -	\$ -	\$ 243,750	\$ -	\$ -	\$ -
Equipment Lifecycle Replacement Plan - 2014 5T Tandem Flusher (Water 10%/Sewer 60%/Drainage 30%)	\$ 181,500	2024	\$	192,553	\$	192,553	\$ -	\$ -	\$ 192,553	\$ -	\$ -	\$ -
Equipment Lifecycle Replacement Plan - Unit357Caterpillar450F Backhoe (Water 20%/Sewer 20%/Drainage 60%)	\$ 141,600	2024	\$	150,223	\$	150,223	\$ -	\$ -	\$ 150,223	\$ -	\$ -	\$ -
Support to City Center ARP - McLeod Avenue and Main Street	\$ 697,564	2022	\$	697,564	\$	697,564	\$ -	\$ 697,564	\$ -	\$ -	\$ -	\$ -
Greenbury Dewatering Install Phase 1	\$ 20,000	2022	\$	20,000	\$	20,000	\$ -	\$ -	\$ 20,000	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 250,000	2022	\$	250,000	\$	250,000	\$ -	\$ -	\$ 250,000	\$ -	\$ -	\$ -
Support to City Center ARP - McLeod Avenue and Main Street	\$ 163,246	2023	\$	168,143	\$	168,143	\$ -	\$ -	\$ 168,143	\$ -	\$ -	\$ -
Greenbury Dewatering Install Phase 1	\$ 350,000	2023	\$	360,500	\$	360,500	\$ -	\$ -	\$ 360,500	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 262,000	2023	\$	269,860	\$	269,860	\$ -	\$ -	\$ 269,860	\$ -	\$ -	\$ -
Westgrove, Aspenglen, Millgrove, Deer Park, Fairway Dr.	\$ 400,000	2023	\$	412,000	\$	412,000	\$ -	\$ -	\$ 412,000	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 262,000	2024	\$	277,956	\$	277,956	\$ -	\$ -	\$ 277,956	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 262,000	2025	\$	286,294	\$	286,294	\$ -	\$ -	\$ 286,294	\$ -	\$ -	\$ -
Woodhaven Linkside	\$ 800,000	2025	\$	874,182	\$	874,182	\$ -	\$ -	\$ 874,182	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 275,000	2026	\$	309,515	\$	309,515	\$ -	\$ -	\$ 309,515	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 275,000	2027	\$	318,800	\$	318,800	\$ -	\$ -	\$ 318,800	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 275,000	2028	\$	328,364	\$	328,364	\$ -	\$ -	\$ 328,364	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 290,000	2029	\$	356,663	\$	356,663	\$ -	\$ -	\$ 356,663	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 290,000	2030	\$	367,363	\$	367,363	\$ -	\$ -	\$ 367,363	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 290,000	2031	\$	378,384	\$	378,384	\$ -	\$ -	\$ 378,384	\$ -	\$ -	\$ -
Storm Sewer Rehab (Catch Basins)	\$ 290,000	2032	\$	389,736	\$	389,736	\$ -	\$ -	\$ 389,736	\$ -	\$ -	\$ -
	\$ 8,302,160			\$ 9,221,516		\$ 9,221,516	\$ -	\$ 1,047,564	\$ 8,173,952	\$ -	\$ -	\$ -

⁴ The analysis undertaken herein indicates that the stormwater utility reserve will not be sufficient to fund capital projects to the extent identified in the City's current capital plan. As such, debenture funding has been used to finance additional projects. Note: the City is not bound to the financing plan shown here...its purpose is solely to determine rates. The City may change or move financing methods as desired to reflect changing circumstances. If/when financing methods change, they will be reflected in future rate updates.

Table 3: Summary of Capital Plan by Asset Class ⁵

Year	75 Year Assets	50 Year Assets	45 Year Assets	40 Year Assets	30 Year Assets	20 Year Assets	10 Year Assets	Land	Grand Total
2023	\$ 128,750	\$ 1,210,503	\$ -	\$ -	\$ -	\$ 154,500	\$ -	\$ -	\$ 1,493,753
2024	\$ 848,720	\$ 277,956	\$ -	\$ -	\$ -	\$ -	\$ 342,776	\$ -	\$ 1,469,452
2025	\$ 152,012	\$ 367,363	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 519,375
2026	\$ 218,545	\$ 1,160,476	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 1,379,021
2027	\$ 281,377	\$ 309,515	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 590,892
2028	\$ 144,909	\$ 318,800	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 463,709
2029	\$ 119,405	\$ 328,364	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 447,769
2030	\$ 184,481	\$ 356,663	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 541,144
2031	\$ 130,477	\$ 378,384	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 508,861
2032	\$ 167,990	\$ 389,736	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ 557,726
Total	\$ 2,376,666	\$ 5,097,760	\$ -	\$ -	\$ -	\$ 154,500	\$ 342,776	\$ -	\$ 7,971,702
mm Acquired Assets	\$ 2,376,666	\$ 5,097,760	\$ -	\$ -	\$ -	\$ 154,500	\$ 342,776	\$ -	\$ 7,971,702
Contributed Assets	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 2,376,666	\$ 5,097,760	\$ -	\$ -	\$ -	\$ 154,500	\$ 342,776	\$ -	\$ 7,971,702

⁵ The capital plan shown in *Table 3* totals \$7.97 million, which is less than the total reflected in *Table 2*. This is because *Table 2* includes 2022 capital items that are not included in the City's TCA balance.

5.3 Existing and Future Debt Payments

Revenue requirements (and rates) must provide for payments on existing and future debts as summarized in *Table 4*.

Table 4: Existing and Future Debts ⁶

Year	Existing Debt			Future Debt			Total Debt		
	Principal	Interest	Total	Principal	Interest	Total	Principal	Interest	Total
2023	\$ 91,423	\$ 51,429	\$ 142,852	\$ 14,926	\$ 33,237	\$ 48,163	\$ 106,349	\$ 84,666	\$ 191,015
2024	\$ 93,892	\$ 48,960	\$ 142,852	\$ 23,139	\$ 49,190	\$ 72,328	\$ 117,031	\$ 98,150	\$ 215,180
2025	\$ 96,428	\$ 46,424	\$ 142,852	\$ 24,260	\$ 48,068	\$ 72,328	\$ 120,688	\$ 94,492	\$ 215,180
2026	\$ 99,032	\$ 43,820	\$ 142,852	\$ 25,436	\$ 46,892	\$ 72,328	\$ 124,468	\$ 90,712	\$ 215,180
2027	\$ 101,706	\$ 41,146	\$ 142,852	\$ 26,669	\$ 45,659	\$ 72,328	\$ 128,375	\$ 86,805	\$ 215,180
2028	\$ 104,453	\$ 38,400	\$ 142,852	\$ 27,962	\$ 44,366	\$ 72,328	\$ 132,415	\$ 82,766	\$ 215,180
2029	\$ 107,273	\$ 35,579	\$ 142,852	\$ 29,317	\$ 43,011	\$ 72,328	\$ 136,591	\$ 78,590	\$ 215,180
2030	\$ 110,170	\$ 32,682	\$ 142,852	\$ 30,738	\$ 41,590	\$ 72,328	\$ 140,909	\$ 74,272	\$ 215,180
2031	\$ 113,145	\$ 29,707	\$ 142,852	\$ 32,228	\$ 40,100	\$ 72,328	\$ 145,374	\$ 69,806	\$ 215,180
2032	\$ 116,201	\$ 26,651	\$ 142,852	\$ 22,854	\$ 25,309	\$ 48,163	\$ 139,055	\$ 51,960	\$ 191,015
Total	\$ 1,033,724	\$ 394,798	\$ 1,428,522	\$ 257,530	\$ 417,420	\$ 674,950	\$ 1,291,253	\$ 812,218	\$ 2,103,472

5.4 Operating and Maintenance Costs

Table 5 summarizes the operating and maintenance budget for 2023 (i.e., Year 1 of the review period). Total non-utility revenues are forecast at \$0, total operating and maintenance expenditures are forecast at \$1.58 million, and net expenditures (expenditures less non-utility revenues) are forecast at \$1.58 million.

⁶ The analysis undertaken herein indicates that the stormwater utility reserve will not be sufficient to fund capital projects to the extent identified in the City's current capital plan. As such, debenture funding has been used to finance additional projects and whose payments are reflected in Future Debt. Note: the City is not bound to the financing plan shown here...its purpose is solely to determine rates. The City may change or move financing methods as desired to reflect changing circumstances. If/when financing methods change, they will be reflected in future rate updates.

Table 5: Operating and Maintenance Revenues and Costs ⁷

Non Utility Billing Revenues and Recoveries	
	\$ -
O&M Expenditures	
1102 - Full Time Salaries	\$ 361,474
1112 - Full Time Overtime	\$ 6,260
1122 - Shift Premiums	\$ 603
1192 - Full Time Benefits	\$ 90,369
1202 - Part Time- Temporary/Casual Wages	\$ 46,634
1212 - Part Time Temporary/Casual Overtime	\$ 116
1292 - Part Time- Temporary/Casual Benefits	\$ 3,264
1602 - External Training	\$ 1,015
1602 - External Training	\$ 1,218
1602 - External Training	\$ 3,045
1602 - External Training	\$ 508
1702 - DO NOT USE - Travel & Subsistence - Staff	\$ 1,015
1702 - DO NOT USE - Travel & Subsistence - Staff	\$ 1,015
1702 - DO NOT USE - Travel & Subsistence - Staff	\$ 2,030
1702 - DO NOT USE - Travel & Subsistence - Staff	\$ 508
3212 - Contracted and General Services	\$ 163,910
3212 - Contracted and General Services	\$ 52,867
3212 - Contracted and General Services	\$ 1,000
3212 - Contracted and General Services	\$ 52,867
3212 - Contracted and General Services	\$ 77,609
3212 - Contracted and General Services	\$ 500,000
5312 - Advertising	\$ 5,000
5602 - Professional Fees	\$ 50,000
8022 - Vehicle/Equipment Rental	\$ 31,976
8122 - Materials Supplies	\$ 7,101
8122 - Materials Supplies	\$ 90,197
8132 - Tools	\$ 1,200
8132 - Tools	\$ 2,363
8142 - Uniforms and PPE	\$ 1,100
8142 - Uniforms and PPE	\$ 2,200
8142 - Uniforms and PPE	\$ 511
8142 - Uniforms and PPE	\$ 1,100
8242 - Custom Business Products	\$ 1,800
8252 - Postage & Courier	\$ 12,000
8352 - R&M Infrastructure	\$ 2,750
8352 - R&M Infrastructure	\$ 2,750
Total Expenditures	\$ 1,579,374
Net Expenditures	\$ 1,579,374

⁷ Amortization and interest on debt are not included in the budget as they are summarized in other sections of the report.

Table 6 summarizes the projected net operating expenditures that must be recovered from stormwater utility rates over the review period. Projected expenditures over the rate planning period are based on 2023 baseline costs (adjusted for step increases/decreases, if any) plus inflation of 3.0% inflation per year. Net expenditures are forecast to increase from \$1.58 million in 2023 to \$2.06 million in 2032.

Table 6: Forecast Net Operating and Maintenance Costs

Year	Miscellaneous Recoveries	Expenditures	Net Expenditures
2023	\$ -	\$ 1,579,374	\$ 1,579,374
2024	\$ -	\$ 1,626,755	\$ 1,626,755
2025	\$ -	\$ 1,675,558	\$ 1,675,558
2026	\$ -	\$ 1,725,825	\$ 1,725,825
2027	\$ -	\$ 1,777,600	\$ 1,777,600
2028	\$ -	\$ 1,830,928	\$ 1,830,928
2029	\$ -	\$ 1,885,855	\$ 1,885,855
2030	\$ -	\$ 1,942,431	\$ 1,942,431
2031	\$ -	\$ 2,000,704	\$ 2,000,704
2032	\$ -	\$ 2,060,725	\$ 2,060,725

5.5 Depreciation Expense on Acquired Assets

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 basis over the economic life of assets in each asset class (50-year assets, 30-year assets, etc). *Table 7* summarizes the depreciation expenses in each year of the rate-planning period.

*Table 7: Depreciation Expense*⁸

Description	2023	2024	2025	2026	2027
75 Year Assets	\$ 39,843	\$ 46,359	\$ 53,475	\$ 56,807	\$ 59,649
50 Year Assets	\$ 394,344	\$ 409,028	\$ 421,166	\$ 433,455	\$ 437,365
45 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
40 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
30 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
20 Year Assets	\$ 15,129	\$ 23,449	\$ 31,768	\$ 31,768	\$ 31,768
10 Year Assets	\$ 27,145	\$ 33,895	\$ 33,895	\$ 31,922	\$ 26,460
Total Depreciation	\$ 476,462	\$ 512,731	\$ 540,304	\$ 553,952	\$ 555,242

Description	2028	2029	2030	2031	2032
75 Year Assets	\$ 61,411	\$ 63,437	\$ 65,681	\$ 67,564	\$ 69,554
50 Year Assets	\$ 441,222	\$ 443,285	\$ 444,109	\$ 449,486	\$ 457,159
45 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
40 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
30 Year Assets	\$ -	\$ -	\$ -	\$ -	\$ -
20 Year Assets	\$ 31,510	\$ 31,251	\$ 31,251	\$ 31,251	\$ 31,251
10 Year Assets	\$ 22,972	\$ 22,972	\$ 19,211	\$ 15,450	\$ 15,450
Total Depreciation	\$ 557,115	\$ 560,946	\$ 560,252	\$ 563,752	\$ 573,414

5.6 Return on Assets in Service

Under the *utility approach*, revenue requirements include returns on stormwater assets that are employed in the provision of service. Determination of returns are based on the capital structure of the utility and are used 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.

A deemed capital structure of 40% debt and 60% equity is used to calculate returns. The deemed capital structure helps to generate a smooth revenue requirement during periods of abnormally low or high capital construction. Private utilities often utilize a deemed structure comprised of 60% debt; however, the deemed structure used here includes a 40% debt assumption, in alignment with the increased debt constraints placed on municipalities.

There are 4 types of assets in service which earn a rate of return:

1. **Acquired assets that are debt supported:** Acquired assets that are debt supported earn a rate of return that meets average debt interest obligations each year. For example, in year 1 of the review period the return of 4.79% is based on the average interest of all outstanding debentures.

⁸ Depreciation is calculated starting in the year of construction/completion, with the half year rule applied in the first year.

2. **Acquired assets that are equity supported:** Acquired assets that are equity supported earn a rate of return of 8.50% (the Alberta Utility Commission's ("AUC") Generic Rate of Return) which approximates the cost of equity capital for stormwater utilities as determined by the AUC.
3. **Working capital:** Determination of average working capital requirements is based on 1½ months of operations and maintenance costs (the "one-eighth" rule). Return on working capital is 8.50% (the AUC Generic Rate of Return).
4. **Contributed assets:** Contributed assets do not earn a rate of return.

To illustrate, *Table 8* summarizes returns for each asset in service in year 1 of the rate planning period. The average return on all assets in service is 2.08%. Forecast returns for each year of the rate planning period are summarized in *Appendix B*.

Table 8: Forecast Returns for Year 1

2023							
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	\$ 2,881,117	4.68%	15.97%	40.00%	\$ 7,215,100	4.79%	\$ 345,603
Equity Portion	\$ 15,156,633	24.62%	84.03%	60.00%	\$ 10,822,650	8.50%	\$ 919,925
Total System Acquired	\$ 18,037,750	29.29%	100.00%	100.00%	\$ 18,037,750		\$ 1,265,529
Contributed Assets	\$ 43,536,007	70.71%			\$ 43,536,007	0.00%	\$ -
Total Assets	\$ 61,573,757	100.00%			\$ 61,573,757		\$ 1,265,529
Working Capital	\$ 1,579,374				\$ 197,422	8.50%	\$ 16,781
						Total Return	\$ 1,282,309
							2.08%

5.7 Revenue Requirements

Table 9 summarizes the forecast revenue requirements under the *utility approach*. These revenue requirements are based on each of the elements described previously in this section. Stormwater revenue requirements are forecast to increase from \$3.34 million in 2023 to \$4.03 million in 2032.

Table 9: Stormwater Revenue Requirements ⁹

Description	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
O&M costs (Net)	\$ 1,579,374	\$ 1,626,755	\$ 1,675,558	\$ 1,725,825	\$ 1,777,600	\$ 1,830,928	\$ 1,885,855	\$ 1,942,431	\$ 2,000,704	\$ 2,060,725
Depreciation	\$ 476,462	\$ 512,731	\$ 540,304	\$ 553,952	\$ 555,242	\$ 557,115	\$ 560,946	\$ 560,252	\$ 563,752	\$ 573,414
Return										
System Assets - Debt	\$ 345,603	\$ 363,934	\$ 380,004	\$ 380,712	\$ 378,958	\$ 376,863	\$ 376,483	\$ 375,700	\$ 374,648	\$ 374,348
System Assets - Equity	\$ 919,925	\$ 968,718	\$ 1,011,493	\$ 1,013,377	\$ 1,008,708	\$ 1,003,132	\$ 1,002,122	\$ 1,000,037	\$ 997,238	\$ 996,438
Contributed Assets	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Working Capital	\$ 16,781	\$ 17,284	\$ 17,803	\$ 18,337	\$ 18,887	\$ 19,454	\$ 20,037	\$ 20,638	\$ 21,257	\$ 21,895
Principal Shortfall	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total	\$ 3,338,145	\$ 3,489,423	\$ 3,625,161	\$ 3,692,202	\$ 3,739,395	\$ 3,787,491	\$ 3,845,444	\$ 3,899,059	\$ 3,957,599	\$ 4,026,820

⁹ A principal shortfall is the difference between depreciation and principal debt payment in a given year. If the number is negative, there is a shortfall, and this amount is added to the revenue requirement in that year.

5.8 Comparison of Revenue Requirement: Utility (Full Cost) Approach Versus Cash Needs Approach

As described in *Section 4*, the *utility approach* provides revenue targets for rates that ensure the utility is self-sustaining. Full cost rates not only ensure current costs are covered, but they allow the utility to generate reserves that will be necessary to rehabilitate and replace assets in the future.

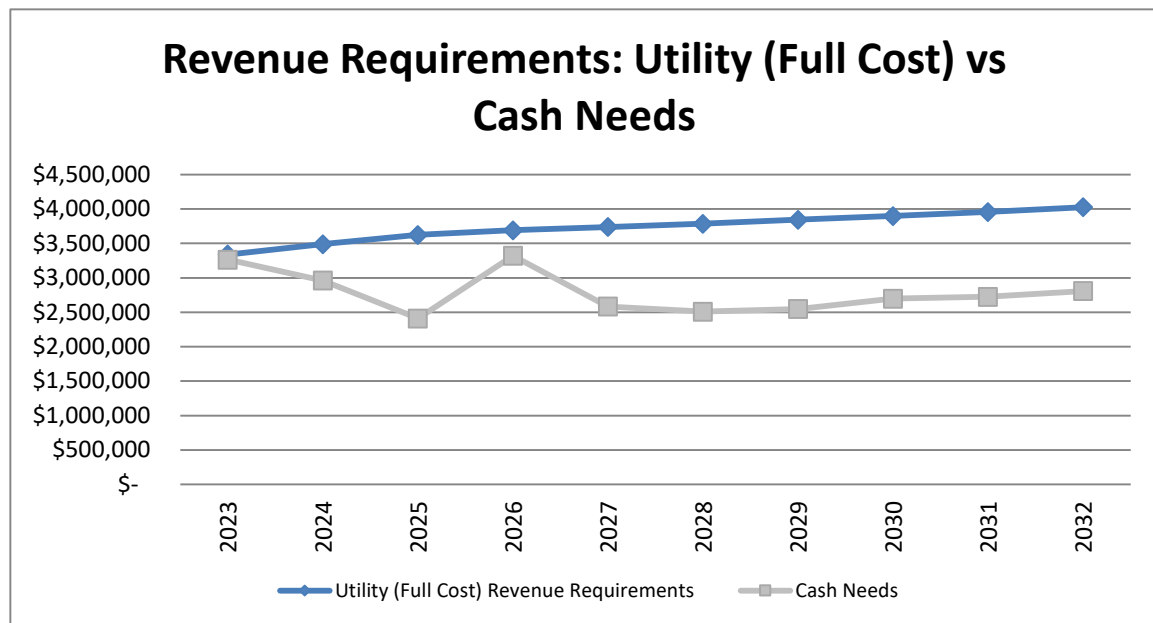
A *cash approach*, on the other hand, only describes the minimum amount of cash the utility must generate to satisfy current costs. Rates which generate revenue less than this minimum will create a utility loss which must be subsidized via other sources such as taxes.

Based on all revenue requirements described in this section, *Table 10* and the accompanying graph compare the City's revenue requirements under both the *utility approach* (i.e., the ideal/maximum) and the *cash approach*.¹⁰

Table 10: Comparison of Full Cost and Cash Revenue Requirements

Year	Revenue Requirement - Utility (Full Cost)					Revenue Requirement - Cash				
	Operating & Maintenance Expenses	Depreciation	Return on Assets	Principal Short Fall	Total Revenue Requirement	Operating & Maintenance Expenses	Debt Charges	Revenue Requirement Before Capital Drawn From Reserve	Capital Drawn From Reserves	Total Revenue Requirement
2023	\$ 1,579,374	\$ 476,462	\$ 1,282,309	\$ -	\$ 3,338,145	\$ 1,579,374	\$ 191,015	\$ 1,770,389	\$ 1,493,753	\$ 3,264,142
2024	\$ 1,626,755	\$ 512,731	\$ 1,349,936	\$ -	\$ 3,489,423	\$ 1,626,755	\$ 215,180	\$ 1,841,936	\$ 1,119,452	\$ 2,961,388
2025	\$ 1,675,558	\$ 540,304	\$ 1,409,299	\$ -	\$ 3,625,161	\$ 1,675,558	\$ 215,180	\$ 1,890,738	\$ 519,375	\$ 2,410,113
2026	\$ 1,725,825	\$ 553,952	\$ 1,412,425	\$ -	\$ 3,692,202	\$ 1,725,825	\$ 215,180	\$ 1,941,005	\$ 1,379,021	\$ 3,320,026
2027	\$ 1,777,600	\$ 555,242	\$ 1,406,553	\$ -	\$ 3,739,395	\$ 1,777,600	\$ 215,180	\$ 1,992,780	\$ 590,892	\$ 2,583,672
2028	\$ 1,830,928	\$ 557,115	\$ 1,399,448	\$ -	\$ 3,787,491	\$ 1,830,928	\$ 215,180	\$ 2,046,108	\$ 463,709	\$ 2,509,817
2029	\$ 1,885,855	\$ 560,946	\$ 1,398,642	\$ -	\$ 3,845,444	\$ 1,885,855	\$ 215,180	\$ 2,101,036	\$ 447,769	\$ 2,548,805
2030	\$ 1,942,431	\$ 560,252	\$ 1,396,376	\$ -	\$ 3,899,059	\$ 1,942,431	\$ 215,180	\$ 2,157,611	\$ 541,144	\$ 2,698,755
2031	\$ 2,000,704	\$ 563,752	\$ 1,393,144	\$ -	\$ 3,957,599	\$ 2,000,704	\$ 215,180	\$ 2,215,884	\$ 508,861	\$ 2,724,745
2032	\$ 2,060,725	\$ 573,414	\$ 1,392,681	\$ -	\$ 4,026,820	\$ 2,060,725	\$ 191,015	\$ 2,251,740	\$ 557,726	\$ 2,809,466

¹⁰ There may be years when significant capital costs result in cash requirements exceeding utility (full cost) requirements.



5.9 Customers/Stormwater Demand

The City currently has approximately 12,417 stormwater customers, the vast majority (99%) of which are designated “small” customers (water service <1”), as summarized in *Table 11*. The City estimates that stormwater customers/demand will increase an average of approximately 2.29% per year over the review period.

Table 11: Stormwater Customers

	Small Customers (<1")	Large Customers (>=1")	Total
Jan	12,397	140	12,537
Feb	12,414	141	12,555
Mar	12,435	141	12,576
Apr	12,146	140	12,286
May	12,178	139	12,317
Jun	12,174	138	12,312
Jul	12,186	140	12,326
Aug	12,196	140	12,336
Sep	12,245	140	12,385
Oct	12,301	140	12,441
Nov	12,322	139	12,461
Dec	12,336	140	12,476
Average	12,278	140	12,417
%	98.87%	1.13%	100.00%

6 Recommended Rates & Forecast Recoveries

6.1 Recommended Stormwater Rates

The City's current stormwater charge is \$11.50 per month for "small" customers. This rate is not sufficient to achieve full costs. In 2020 when the City implemented a stormwater charge, the rate strategy that was adopted would see the City gradually increase rates to achieve full cost within a few years. It is recommended the City maintain this gradual approach. Accordingly, in 2023 it is recommended the City establish a monthly stormwater charge of \$14.55 for small customers, and \$58.20 for large customers. And these rates should increase gradually to \$21.65 for small customers and \$86.60 for large customers in 2026. From 2027 onward, rates can decrease gradually, assuming there are no adjustments to capital and operating cost inputs, as summarized in *Table 12*.

Table 12 Recommended Stormwater Rates

	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032
Small Customers (<1")	\$ 14.55	\$ 16.50	\$ 20.50	\$ 21.65	\$ 21.40	\$ 21.20	\$ 21.05	\$ 20.90	\$ 20.80	\$ 20.70
Large Customers (>=1")	\$ 58.20	\$ 66.00	\$ 82.00	\$ 86.60	\$ 85.60	\$ 84.80	\$ 84.20	\$ 83.60	\$ 83.20	\$ 82.80

The impact of the recommended rate strategy on customers is summarized in *Appendix A*.

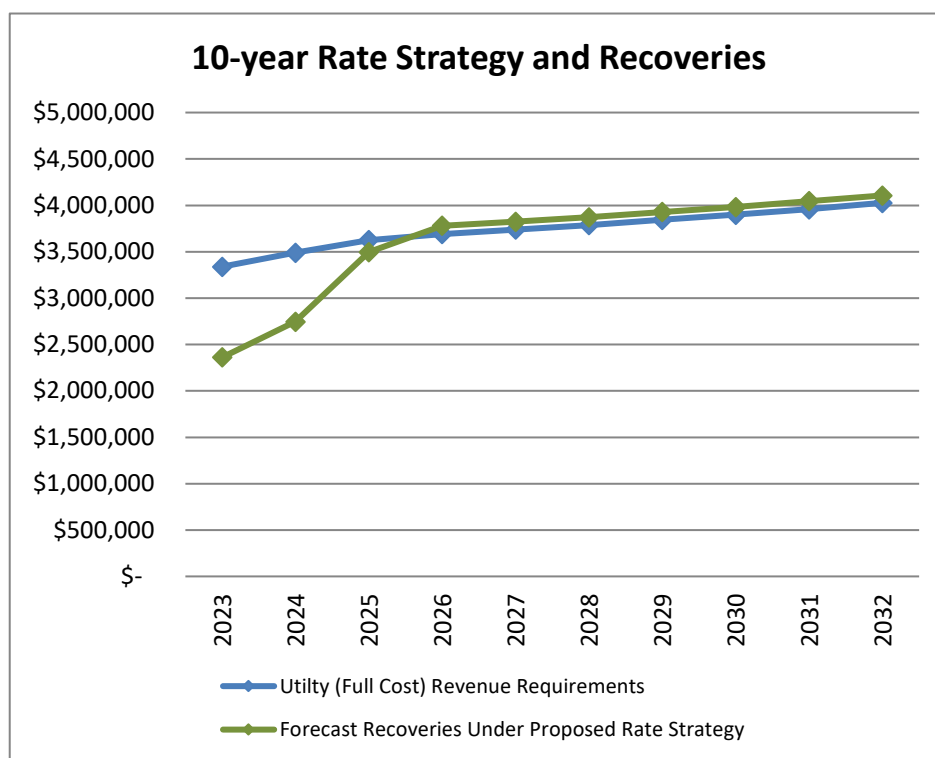
6.2 Forecast Stormwater Recoveries

The stormwater rates recommended and summarized in the previous section will ensure the City achieves full cost revenue requirements immediately thereby ensuring the sustainability of the stormwater utility and reducing the risk of future tax subsidization.

The forecast revenue generated from the recommended rate structure is summarized in *Table 13* and the accompanying graph ('green' line).

Table 13: Forecast Stormwater Recoveries ¹¹

Year	Utility (Full Cost) Revenue Requirement	Actual Revenue Under the Proposed Rate Strategy
2023	\$ 3,338,145	\$ 2,362,224
2024	\$ 3,489,423	\$ 2,746,904
2025	\$ 3,625,161	\$ 3,497,343
2026	\$ 3,692,202	\$ 3,781,527
2027	\$ 3,739,395	\$ 3,824,023
2028	\$ 3,787,491	\$ 3,872,664
2029	\$ 3,845,444	\$ 3,928,699
2030	\$ 3,899,059	\$ 3,982,788
2031	\$ 3,957,599	\$ 4,045,258
2032	\$ 4,026,820	\$ 4,106,227
Total	\$ 34,062,594	\$ 33,785,432



The impact of the recommended rate strategy on the forecast stormwater reserve balance over the 10-year planning period is shown in *Table 14*. In addition to financing

¹¹ Even though rates remain the same from 2025 onward, full cost revenue requirements are surpassed on the assumption that the number of customers increase at the pace anticipated by the City. If the number of customers increases more than anticipated, the City can consider implementing a gradual rate decline commencing in 2027 (on the assumption that other cost inputs remain the same).

several capital projects over the review period, the stormwater reserve is forecast to amass approximately \$9.44 million by 2032.

Table 14: Forecast Stormwater Reserve

Year	Reserve Receipts	Reserve Applied	Reserve Balance
2023	\$ 591,835	\$ 1,493,753	\$ 223,959
2024	\$ 904,968	\$ 1,119,452	\$ 9,475
2025	\$ 1,606,605	\$ 519,375	\$ 1,096,705
2026	\$ 1,840,522	\$ 1,379,021	\$ 1,558,206
2027	\$ 1,831,243	\$ 590,892	\$ 2,798,557
2028	\$ 1,826,556	\$ 463,709	\$ 4,161,404
2029	\$ 1,827,663	\$ 447,769	\$ 5,541,298
2030	\$ 1,825,176	\$ 541,144	\$ 6,825,330
2031	\$ 1,829,374	\$ 508,861	\$ 8,145,842
2032	\$ 1,854,487	\$ 557,726	\$ 9,442,604

7 Acknowledgements

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

8 Disclaimer

CORVUS Business Advisor has relied upon City of Spruce Grove to provide all the data and information used to construct the utility rate model and create the rates, such as TCA's, capital plans and costs estimates, debenture details, and operating budgets etc. As such, CORVUS Business Advisors makes no guarantee as to the accuracy of the input data and information provided by these groups or the results that stem from this data and information.

Appendix A – Customer Impacts

Small Customers (<1")		
	Existing	2023
Stormwater Utility Charge	\$ 11.50	\$ 14.55
Total Monthly Billing	\$ 11.50	\$ 14.55
Change from Existing Billing		\$ 3.05
Large Customers (>=1")		
	Existing	2023
Stormwater Utility Charge	\$ 46.00	\$ 58.20
Total Monthly Billing	\$ 46.00	\$ 58.20
Change from Existing Billing		\$ 12.20

Appendix B – Return on Assets

2023							
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	\$ 2,881,117	4.68%	15.97%	40.00%	\$ 7,215,100	4.79%	\$ 345,603
Equity Portion	\$ 15,156,633	24.62%	84.03%	60.00%	\$ 10,822,650	8.50%	\$ 919,925
Total System Acquired	\$ 18,037,750	29.29%	100.00%	100.00%	\$ 18,037,750		\$ 1,265,529
Contributed Assets	\$ 43,536,007	70.71%			\$ 43,536,007	0.00%	\$ -
Total Assets	\$ 61,573,757	100.00%			\$ 61,573,757		\$ 1,265,529
Working Capital	\$ 1,579,374				\$ 197,422	8.50%	\$ 16,781
						Total Return	\$ 1,282,309
							2.08%
2024							
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	\$ 2,764,087	4.50%	14.55%	40.00%	\$ 7,597,788	4.79%	\$ 363,934
Equity Portion	\$ 16,230,385	26.43%	85.45%	60.00%	\$ 11,396,683	8.50%	\$ 968,718
Total System Acquired	\$ 18,994,471	30.94%	100.00%	100.00%	\$ 18,994,471		\$ 1,332,652
Contributed Assets	\$ 42,403,523	69.06%			\$ 42,403,523	0.00%	\$ -
Total Assets	\$ 61,397,994	100.00%			\$ 61,397,994		\$ 1,332,652
Working Capital	\$ 1,626,755				\$ 203,344	8.50%	\$ 17,284
						Total Return	\$ 1,349,936
							2.19%
2025							
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	\$ 2,643,399	4.33%	13.33%	40.00%	\$ 7,933,275	4.79%	\$ 380,004
Equity Portion	\$ 17,189,790	28.13%	86.67%	60.00%	\$ 11,899,913	8.50%	\$ 1,011,493
Total System Acquired	\$ 19,833,189	32.45%	100.00%	100.00%	\$ 19,833,189		\$ 1,391,497
Contributed Assets	\$ 41,277,678	67.55%			\$ 41,277,678	0.00%	\$ -
Total Assets	\$ 61,110,866	100.00%			\$ 61,110,866		\$ 1,391,497
Working Capital	\$ 1,675,558				\$ 209,445	8.50%	\$ 17,803
						Total Return	\$ 1,409,299
							2.30%

City of Spruce Grove – Stormwater Utility Rate Review

2026							
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	\$ 2,518,931	4.20%	12.68%	40.00%	\$ 7,948,051	4.79%	\$ 380,712
Equity Portion	\$ 17,351,197	28.90%	87.32%	60.00%	\$ 11,922,077	8.50%	\$ 1,013,377
Total System Acquired	\$ 19,870,128	33.10%	100.00%	100.00%	\$ 19,870,128		\$ 1,394,088
Contributed Assets	\$ 40,158,959	66.90%			\$ 40,158,959	0.00%	\$ -
Total Assets	\$ 60,029,087	100.00%			\$ 60,029,087		\$ 1,394,088
Working Capital	\$ 1,725,825				\$ 215,728	8.50%	\$ 18,337
						Total Return	\$ 1,412,425
							2.34%
2027							
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	\$ 2,390,556	4.06%	12.09%	40.00%	\$ 7,911,438	4.79%	\$ 378,958
Equity Portion	\$ 17,388,039	29.56%	87.91%	60.00%	\$ 11,867,157	8.50%	\$ 1,008,708
Total System Acquired	\$ 19,778,595	33.62%	100.00%	100.00%	\$ 19,778,595		\$ 1,387,666
Contributed Assets	\$ 39,047,255	66.38%			\$ 39,047,255	0.00%	\$ -
Total Assets	\$ 58,825,850	100.00%			\$ 58,825,850		\$ 1,387,666
Working Capital	\$ 1,777,600				\$ 222,200	8.50%	\$ 18,887
						Total Return	\$ 1,406,553
							2.38%
2028							
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	\$ 2,258,141	3.92%	11.48%	40.00%	\$ 7,867,699	4.79%	\$ 376,863
Equity Portion	\$ 17,411,107	30.22%	88.52%	60.00%	\$ 11,801,549	8.50%	\$ 1,003,132
Total System Acquired	\$ 19,669,249	34.14%	100.00%	100.00%	\$ 19,669,249		\$ 1,379,994
Contributed Assets	\$ 37,943,278	65.86%			\$ 37,943,278	0.00%	\$ -
Total Assets	\$ 57,612,527	100.00%			\$ 57,612,527		\$ 1,379,994
Working Capital	\$ 1,830,928				\$ 228,866	8.50%	\$ 19,454
						Total Return	\$ 1,399,448
							2.42%

City of Spruce Grove – Stormwater Utility Rate Review

2029							
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	\$ 2,121,551	3.75%	10.80%	40.00%	\$ 7,859,779	4.79%	\$ 376,483
Equity Portion	\$ 17,527,896	31.02%	89.20%	60.00%	\$ 11,789,668	8.50%	\$ 1,002,122
Total System Acquired	\$ 19,649,447	34.78%	100.00%	100.00%	\$ 19,649,447		\$ 1,378,605
Contributed Assets	\$ 36,853,451	65.22%			\$ 36,853,451	0.00%	\$ -
Total Assets	\$ 56,502,898	100.00%			\$ 56,502,898		\$ 1,378,605
Working Capital	\$ 1,885,855				\$ 235,732	8.50%	\$ 20,037
						Total Return	\$ 1,398,642
							2.47%
2030							
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	\$ 1,980,642	3.58%	10.10%	40.00%	\$ 7,843,428	4.79%	\$ 375,700
Equity Portion	\$ 17,627,928	31.82%	89.90%	60.00%	\$ 11,765,142	8.50%	\$ 1,000,037
Total System Acquired	\$ 19,608,570	35.40%	100.00%	100.00%	\$ 19,608,570		\$ 1,375,737
Contributed Assets	\$ 35,782,590	64.60%			\$ 35,782,590	0.00%	\$ -
Total Assets	\$ 55,391,160	100.00%			\$ 55,391,160		\$ 1,375,737
Working Capital	\$ 1,942,431				\$ 242,804	8.50%	\$ 20,638
						Total Return	\$ 1,396,376
							2.51%
2031							
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	\$ 1,835,268	3.38%	9.39%	40.00%	\$ 7,821,472	4.79%	\$ 374,648
Equity Portion	\$ 17,718,411	32.65%	90.61%	60.00%	\$ 11,732,207	8.50%	\$ 997,238
Total System Acquired	\$ 19,553,679	36.03%	100.00%	100.00%	\$ 19,553,679		\$ 1,371,886
Contributed Assets	\$ 34,717,877	63.97%			\$ 34,717,877	0.00%	\$ -
Total Assets	\$ 54,271,556	100.00%			\$ 54,271,556		\$ 1,371,886
Working Capital	\$ 2,000,704				\$ 250,088	8.50%	\$ 21,257
						Total Return	\$ 1,393,144
							2.56%

City of Spruce Grove – Stormwater Utility Rate Review

2032							
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	\$ 1,417,338	2.66%	7.25%	40.00%	\$ 7,815,196	4.79%	\$ 374,348
Equity Portion	\$ 18,120,653	34.07%	92.75%	60.00%	\$ 11,722,795	8.50%	\$ 996,438
Total System Acquired	\$ 19,537,991	36.73%	100.00%	100.00%	\$ 19,537,991		\$ 1,370,785
Contributed Assets							
	\$ 33,653,190	63.27%			\$ 33,653,190	0.00%	\$ -
Total Assets	\$ 53,191,181	100.00%			\$ 53,191,181		\$ 1,370,785
Working Capital							
	\$ 2,060,725				\$ 257,591	8.50%	\$ 21,895
						Total Return	\$ 1,392,681
							2.61%