

AURORA STORMWATER MASTER PLAN: FINANCIAL MANAGEMENT AND RATE STRUCTURE OPTIONS

MAY 2015

FOR:

City of Aurora
15151 E. Alameda Parkway
Aurora, CO

BY:

Calibre Engineering, Inc.
9090 S. Ridgeline Blvd, Suite 105
Highlands Ranch, CO 80129
(303) 730-0434

Table of Contents

1.	EXECUTIVE SUMMARY	5
1.1.	INTRODUCTION	5
1.1.1.	Summary of Findings	5
1.1.1.1.	Rate Study Review Findings	5
1.1.1.2.	Review of City’s Existing Rate Structure	7
1.1.1.3.	Comparison of Three New Rate Structure Options	7
1.1.1.4.	Information, processes, and staff	8
1.1.1.5.	Public Knowledge and Stormwater Revenue	9
1.1.1.6.	Stormwater Sub Funds	9
1.1.1.7.	Allocating costs	9
2.	REVIEW OF RATE STUDY	11
2.1.	Review of Funds Described in Rate Study	11
2.1.1.	Storm Drain Fund	11
2.1.1.1.	Operational Fund	11
2.1.1.2.	System Improvement Fund	11
2.1.1.3.	Development Fund	11
2.1.2.	Summary of Expenditures and Revenues for Each Fund	12
2.1.2.1.	Operating Fund	12
2.1.2.2.	Capital (System) Improvement Fund	13
2.1.2.3.	Development Fund	14
3.	IMPERVIOUS AREA BASED RATE STRUCTURES FOR USER FEES	14
3.1.	Definitions and Types of Rate Structures for User Fees	15
3.2.	Single Family Residential Detached Rate Structures	16
3.2.1.	Charging the Same Fee for All SFRs	16
3.2.2.	Charging by Residential Unit	16
3.2.3.	Charging Detached SFR’s Based on Measured Impervious Area	17
3.2.4.	Charging Detached SFRs Based on Measured Impervious Area and Percent Imperviousness	18
3.3.	Non-Single Family Residential Rate Structures	18
3.3.1.	Charging All Non-SFRs Based on Measured Impervious Area	18

- 3.3.2. Charging All Non-SFRs Based on Measured Impervious Area and Percentage Imperviousness..... 19
- 4. DESCRIPTION OF CURRENT RATE STRUCTURE AND NEW OPTIONS FOR CONSIDERATION ... 19
 - 4.1. Aurora’s Existing Rate Structure 19
 - 4.2. Implementation of Aurora’s Existing Rate Structure 21
 - 4.2.1. Outside Hard Surface Exceeds Three Times Gross Floor Space of Building: 21
 - 4.2.2. Outside Hard Surface DOES NOT Exceed Three Times Gross Floor Space of Building: 22
 - 4.2.3. Pros of Current Implementation 22
 - 4.2.4. Cons of Current Implementation..... 22
 - 4.3. Three Options for Replacing the Existing Rate Structure 23
 - 4.3.1. Option 1- Charge the Same Fee to All SFR Detached Properties and Measure the Impervious Area of Non-SFR Properties. 23
 - 4.3.1.1. Option 1: Pros Based on This Analysis 23
 - 4.3.1.2. Option 1: Cons Based on This Analysis 23
 - 4.3.1.3. Option 1: Implementation Needs..... 24
 - 4.3.2. Option 2- Charge SFR and Non-SFR Fees Based on Measured Impervious Area..... 25
 - 4.3.2.1. Option 2: Pros Based on This Analysis 25
 - 4.3.2.2. Option 2: Cons Based on This Analysis 25
 - 4.3.2.3. Option 2: Implementation Needs..... 25
 - 4.3.3. Option 3- Charge SFR and Non-SFR Fees Based on Impervious Area and Percent Impervious..... 26
 - 4.3.3.1. Option 3: Pros Based on This Analysis..... 27
 - 4.3.3.2. Option 3: Cons Based on This Analysis 27
 - 4.3.3.3. Option 3 Implementation Needs (The same as for Option 2) 27
- 5. STORMWATER DEVELOPMENT IMPACT FEES AND INFORMATION NEEDS..... 28
 - 5.1. Aurora’s City Code Regarding Impact Fees:..... 29
 - 5.2. Important Points about Development Impact Fees: 29
 - 5.2.1. Communities experiencing significant growth 29
 - 5.2.2. Impact fees can be the same citywide, for groups of basins, or for individual basins. 30
 - 5.2.3. For more mature communities 30
 - 5.3. Information Needs for Development Impact Fees: 30

5.3.1.	Projection of stormwater capital projects.....	30
5.3.2.	A projection of the planned impervious area.....	31
5.3.3.	Dollars per acre.....	31
5.3.4.	Impervious area owing development fee.....	31
5.4.	Impact Fee Incentives for Low Impact Development (LID) and Green Infrastructure (GI).....	31
6.	COST ALLOCATION WITHIN MAINTENANCE EXPENDITURES AND BETWEEN CAPITAL AND MAINTENANCE EXPENDITURES.....	32
6.1.	UDFCD Classification of Maintenance and Capital Activities.....	32
6.2.	UDFCD Maintenance Activities.....	33
6.3.	UDFCD Capital Activities.....	34
6.4.	Recommendations Based on UDFCD Methodology	34
7.	BIBLIOGRAPHY & REFERENCES	36
8.	APPENDICES & FIGURES	37

1. EXECUTIVE SUMMARY

1.1. INTRODUCTION

The purpose of this report is to (a) review the rate study completed by StepWise Utility Consultants in August of 2011, (b) describe Aurora’s existing stormwater rate structure, (c) develop, describe, and compare three new stormwater rate structure options, and (d) describe, in general terms, what information, processes, and staff would need to be set in place to implement the options.

This report also (e) describes Aurora’s existing stormwater development impact fee and what information, processes, and staff would need to be set in place to revise the existing fee, (f) describes possible options for credits, against the stormwater user fee and/or the development impact fee, for developments implementing Green Infrastructure and Low Impact Development (LID) practices, and (g) includes a section on cost allocation within maintenance expenditures and between capital and maintenance expenditures.

1.1.1. Summary of Findings

1.1.1.1. Rate Study Review Findings

Review of StepWise Rate Study Findings (text from the report is in quotes and italicized).

1.1.1.1.1. *“There is no proposed change to the stormwater rates based on the results of the financial plan presented in Appendix G. Projected revenue for the stormwater fund appears to be adequate at the existing levels to sustain operations for an extended time” (Page 28).*

This finding did not consider potential changes in rates due to changes in expenditures. The study appeared to be comprehensive because it reviewed the financial information available from the Finance Department. However, it is noted later in this review that the expenditure categories used by the Finance Department do not present an understandable picture of all activities carried out by the Stormwater Program. In addition, the 10-year projected financial plan did not show an escalation in expenditures beyond the annual growth of revenue and did not include a description of projected expenditures.

1.1.1.1.2. *“The financial plan shows that no increase in total revenue is required, but changes to the rates may produce increases or decreases in monthly bills to different customers with no change to overall*

revenues” (Page 28).

This finding did not consider increases in expenditures. It is true that changes to the rate structure, without increasing revenue, would increase rates to some customers and decrease rates to others.

- 1.1.1.1.3. *“We have recommended that Aurora obtain a GIS map of its stormwater system showing the impervious area for individual customers” (Page 27).*

This would be necessary to change to an impervious area based rate structure.

- 1.1.1.1.4. *“Allocation of stormwater costs is typically done by allocating the system costs to units of impervious area (either in square feet, or acres, etc.). The entire goal of a cost-of-service study is to reasonably assign the system costs to classes of service based on actual cost causation principles. All this means is that customer usage of the system determines how the costs are allocated. In the case of stormwater, customer usage is best defined as the amount of impervious area. / As of the report date, Aurora was unable to provide total impervious areas for use in the study. As a result, we have recommended that Aurora obtain a GIS map of its stormwater system showing the impervious area for individual customers. This effort is now underway and the information will be available for future studies. / Due to the lack of impervious area data, we recommended that the City not proceed with a cost-of-service study at this time. We did not conduct a cost-of-service allocation for the storm drain system” (Page 27).*

A stormwater cost of service study is not dependent on impervious area data because stormwater rate structures in Colorado do not allocate stormwater costs differently to different classes of customers. A cost of service study would identify the total required revenue and revenue for each program (if desired). A rate structure study would determine options for allocating the cost of service to units of impervious area. The report did not give a reason for not proceeding with a cost-of-service study.

- 1.1.1.1.5. *“Future studies may determine that the existing rates need to be changed to reflect the differences in residential, commercial, and multi-family measurements of impervious area” (Page 28).*

This is true. Refer to report section 4.0 DESCRIPTION OF NEW RATE STRUCTURES AND NEW OPTIONS FOR CONSIDERATION.

1.1.1.2. Review of City's Existing Rate Structure

1.1.1.2.1. Changing the City's stormwater rate structure will have impacts on customers because most fees (assuming total revenues are the same under a new rate structure) will change to be either (a) more than they currently are under the existing rate structure or (b) less than they are under the existing rate structure. The customer classes that will have increased rates will not be known until an alternate rate structure is selected, due to the unique nature of Aurora's rate structure.

1.1.1.2.2. The City's current rate structure is not equitable to multi-family residential (MFR) owners, most of whom are paying more than they should be paying. Fees paid by MFR owners are also not fair within their class, if compared based on impervious area. The current rate structure for commercial, industrial, non-profit, and government properties includes a confusing clause that results in a different fee if a property is above or below a given ratio of outside impervious area to inside impervious area. According to Division 2, Sec. 138-396 of the City of Aurora Code, "Whenever the hard surface or paved area of a lot or parcel of land occupied by a commercial or industrial site exceeds three time the gross floor space of the building or group of buildings, such excess area shall be considered gross floor space for the purpose of computing the monthly usage fee assessed under this subsection."

However, if the authors understand the City's implementation of this rule correctly; if the hard surface or paved area of a lot or parcel of land occupied by a commercial or industrial site DOES NOT exceed three times the gross floor space of the building or group of buildings, such excess area shall NOT be considered gross floor space for the purpose of computing the monthly usage fee assessed under this subsection.

1.1.1.2.3. The City should provide a public information and education program to the customer class or classes that might experience increased rates according to any selected rate structure, and City Council and senior staff should have a good degree of comfort in the results of the public information and education program before implementing a change in the rate structure.

1.1.1.3. Comparison of Three New Rate Structure Options

Any of the three impervious area based rate structure options would provide better equity (when measured on a per-impervious-area basis)

than the existing rate structure. The three proposed rate structures are outlined below:

- 1.1.1.3.1. Charge all single-family residential (SFR) detached properties an equal fee, and charge all other properties (non-SFR) based on measurement of the impervious area on each property. *(Note: under the current rate structure, the commercial, industrial, non-profit, and government properties are not all charged for all of the impervious area due to the 3X rule above).*
- 1.1.1.3.2. Charge all properties, SFR and non-SFR, based only on measurement of the impervious area on each property.
- 1.1.1.3.3. Measure the impervious area and total area (in assessor's database) on all properties, SFR and non-SFR, and calculate the percent impervious on each property to determine the fee. Under this option, properties with a higher impervious area percentage would pay a higher rate per square foot of impervious area than properties with a lower percent impervious. *(Note: under option b, each property is charged a fee purely based on the square footage of impervious area, regardless of how large the remaining pervious area is. Under option c, each property is charged based on the amount of impervious area and the ratio of impervious to pervious area).*

1.1.1.4. Information, processes, and staff

The information, processes, and staff needed to implement and manage any of the optional rate structures would include:

- 1.1.1.4.1. Assessment of the existing measurements of impervious area of the commercial and industrial properties (1.a. above) or measuring all multi-family properties (1.b. and 1.c. above) and the commercial and industrial properties, if deemed necessary. While there are data sets from the City, DRCOG, and the County Assessor's Office that provide this information, and these might be useful in reducing the overall expense, the information that is currently available does not eliminate the labor intensive requirement to develop the data for properties in 1.b. and 1.c. above. The ability to calculate using the Planimetric data anticipated for Fall 2015 delivery will significantly reduce the cost.
- 1.1.1.4.2. Setting up a GIS database that includes the impervious area, a link to the owner's address, property address, and parcel boundary (for non-SFR's in 1.a. above and for all properties for 1.b. and 1.c. above).
- 1.1.1.4.3. Determining the stormwater billing address and person to receive the bill, if different from the water bill. This may involve setting up an additional billing group that receives a stormwater bill but does not receive water and sewer billings, if such a group is not already setup.

1.1.1.4.4. Determining how to incorporate the new database into the existing billing database, if necessary, and implementing the linkage so that the stormwater bill is added to the utility bill.

1.1.1.4.5. Setting up database management processes and staff to keep the stormwater database up-to-date with address and owner changes on existing properties and to add new properties and their impervious area, if necessary.

1.1.1.5. Public Knowledge and Stormwater Revenue

City Council and the Public should also understand how stormwater fee revenue is used. A proposal to change the existing rate structure may lead to questions about the stormwater utility (SWU) in general. A straightforward summary of expenditures and descriptions of the expenditures would be very useful. Such a summary would be a result of a cost of service study.

1.1.1.6. Stormwater Sub Funds

The Stormwater Fund currently has three sub-funds: (a) an Operating Sub-fund that is funded by user fees and used for maintenance, capital, and operation costs, (b) a System Improvement Sub-fund that is recommended to be discontinued, (c) a Development Sub-fund that is used for new capital projects for new development and that is funded by development impact fees.

1.1.1.7. Allocating costs

A review of how best to allocate costs within maintenance expenditures and between capital and maintenance expenditures, including a summary of UDFCD project budgeting, resulted in the following suggestions for cost allocation (*see Figure 1 at end of report*):

1.1.1.7.1. Maintenance- All maintenance activities should be funded out of the Operating Fund (user fees), as they are now. The following activities should be tracked:

- a. Routine maintenance activities per UDFCD definition and sub-classifications for channels, pipes, structures, and additional desired classifications.
- b. Flood maintenance.
- c. Restoration maintenance activities per UDFCD definition and Aurora's definition for asset management purposes and sub-classifications as above.

- d. Capital replacement activities that qualify for asset management purposes. These are capital projects that are for restoration of existing infrastructure.
- e. Restoration activities completed by UDFCD do not need to be tracked. UDFCD can provide the amount completed.

1.1.1.7.2. Capital- Capital projects should be accounted for from the Operating Fund and the Development Impact Fee Fund as follows:

- a. Operating Fund (user fee funded)
 - i. Track funds for 100% City funded projects.
 - New projects.
 - Replacement projects (Asset Management).
 - ii. Track funds for matching money for UDFCD projects.
 - New projects.
 - Replacement projects (Asset Management).

1.1.1.7.3. Projects that primarily benefit new development, funded mostly by development impact fee funds.

- a. Track funds to fund projects 100% from development fee fund.
- b. Track funds to finance portions of projects for new development prior to collection of adequate development fees to fund the entire project (loan from user fee fund). This funding should be used to fund the remaining costs of a project when the first developers in a basin are required to build a regional facility and the remaining portion of the project funding will be paid back by the remaining future developers in the basin.

1.1.1.7.4. Credits to offset user fees and/or development impact fees are suggested to incentivize Low Impact Development (LID) and Green Infrastructure.

1.1.1.7.5. Information needs for a revised stormwater impact fee may include the following:

- a. A projection of the dollar amount of major stormwater capital projects attributable to new development in each basin containing realistically developable land (should be available in drainage planning studies).
- b. A projection of the planned impervious area of realistically developable land in each basin using the same criteria for measuring impervious area as for the user fee.
- c. A calculation that determines the dollars per acre of impervious area for new development. This can be for each basin, a group of basins, or citywide.
- d. The impervious area (and percent impervious if necessary) of the development owing the development fee. (NOTE: This may require a change to the timing/method that the City uses to apply

the impact fee. Discussion of this type of in-depth analysis is not covered within the scope of this document but may be undertaken by the City during a later phase).

2. REVIEW OF RATE STUDY

2.1. Review of Funds Described in Rate Study

2.1.1. Storm Drain Fund

The report found that the storm drain fund consisted of three sub-funds: an operating fund, a system improvement fund, and a development fund:

2.1.1.1. Operational Fund

“The operating fund accounts for the revenue earned from normal operations, including the user charges, and all of the operating expenditures.” (Page 26).

Operating fund expenditures include such things as capital, maintenance, asset management, planning, regulatory compliance, financial administration, data management, technical operations, and similar costs. Operating fund expenditures do not include funds for new development projects.

2.1.1.2. System Improvement Fund

“The system improvement fund accounts for capital expenditures and development fee income with the normal renewal and replacement of the existing stormwater assets” (Page 26).

It is suggested, this fund can be eliminated. The operating fund and development fund are sufficient for accounting purposes.

2.1.1.3. Development Fund

“The development fund accounts for the capital expenditures and development fee income for stormwater system expansions” (Page 26).

This is correct. However, the term “system expansions” is not normally used in stormwater. Instead, the term “development projects” is used and indicates projects required because of the stormwater impacts of new development. It is suggested the development fund be described

as “accounting for development fee income and new capital projects that are required because of the stormwater impacts of new development.”

2.1.2. Summary of Expenditures and Revenues for Each Fund

The table below summarizes projected expenditures and revenues for each fund from the financial plan, year 2010, presented in *Appendix A* of the Rate Study.

Summary of Projected Expenditures and Revenues for Stormwater Sub-Funds for 2010				
Fund	Expenditures	Expenditure Description	Revenues	Revenue Source
Operating (and Maintenance) Fund	\$9,293,679	Operations and Maintenance	\$14,626,214	User Fees
System Improvement Fund	\$3,201,142*	Capital Projects		
Development Fund	\$0.00		\$5,354	Development Fees
TOTALS	\$12,494,821		\$14,631,568	

* Capital amounts vary by year according to project implementation schedules and budgets.

2.1.2.1. Operating Fund

Operating and maintenance expenditures are listed under the following categories in the rate study (*See Appendix A, Table 20*):

Summary of Operating and Maintenance Expenses Budgeted for 2010	
1.) Ops Compliance- Storm	\$5,060
2.) Storm Administration	\$119,497
3.) Department Wide- Storm	\$409,381
4.) Customer Billing- Storm	\$582,619
5.) Plans Review- Storm	\$328,109
6.) WW Ops Admin- Storm	\$0.00
7.) Storm Drainage	\$4,691,778
8.) Clean H2O Program- Storm	\$860,379
9.) CIP Admin- Storm	\$457,724
10.) AW Ops Admin- Storm	\$339,620
11.) Business Services Admin- Storm	\$322,476
12.) AW Service- Storm	\$479,517

13.) Technical Ops- Storm	\$556,077
14.) Household Chem Roundup	\$141,442
TOTAL	\$9,293,679.

It is unknown why the above expenditure categories were used. Some categories appear useful and others do not.

Several of the line items listed are difficult to distinguish from one another. For example, it is difficult to ascertain the difference between Storm Administration, Department Wide Storm, WW Ops Admin- Storm, AW ops Admin- Storm, and AW Service- Storm. In addition, several line item descriptions are not sufficiently explanatory. For example, under item 7, Storm Drainage, actual expenditures for 2009 were \$2,989,968. This appears to be maintenance because it is the largest expenditure listed. This also applies to several of the Admin categories.

It is suggested the City consider including sufficient expenditure information to summarize costs by the 8 Program Elements established for this study with additional categories under each Program Element for desired management purposes. For suggested additional categories for the Maintenance Program, please refer to the report titled *“Impervious Area Based Rate Structure Options for Stormwater User Fees, Development Impact Fees, and Budgeting Maintenance and Capital Activities.”*

2.1.2.2. Capital (System) Improvement Fund

Capital improvement costs are summarized from the Rate Study in *Appendix A*, Table 21 as follows:

Summary of Capital Improvement Costs Budgeted for 2010 and Beyond	
Project Type	Number of Projects
SDSI Projects	17 Projects
Rehab Projects	6 Projects
SDDV Projects	19 Projects
Upgrade / Mod	2 Projects
Projects with no Project Type listed	16 Projects

Urban Drainage Commitments	Dollar amount only, by year.
TOTAL PROJECTS	60
TOTAL AMOUNT	\$3,201,142.*
* This amount is the expenditure for those projects listed for funding in 2010	

The capital costs listed in Table 21 of *Appendix A* are accounted for under the System Improvement Fund described above. It is recommended this fund be discontinued. Table 21 lists capital projects alphabetically with an abbreviation that appears to be for project type, such as SDSI (possibly System Development System Improvement), SDDV (possibly System Development Development), Rehab Projects (possibly rehabilitation of existing projects or asset management), and Upgrade / Mod (possibly an increase in capacity, which would make it a new capital project or a modification).

2.1.2.3. Development Fund

As discussed above, it is suggested the development fund be described as: accounting for development fee income and new capital projects that are required because of the stormwater impacts of new development.

In budget year 2010 of the Financial Plan, development fees were projected to be \$5,354.

Suggested sub-categories for the development fund are listed below:

1. The name and location of the developments that paid development fees into the fund.
2. The name and location of the capital projects funded with development fee revenue.

3. IMPERVIOUS AREA BASED RATE STRUCTURES FOR USER FEES

Impervious area (IA) has been extensively utilized by Colorado stormwater utilities (SWU) as a measurement of a property’s impact on city stormwater systems for both water quality and quantity. Impervious area consists of rooftops, driveways, parking lots, and other “hard surfaces”. Impervious area on a developed property significantly increases peak stormwater

runoff and stormwater pollutants in the runoff, from original undeveloped conditions. In addition, IA significantly increases the total volume of runoff from a property.

Other factors also influence the increase in runoff when a property is developed. These factors include slope, soil type and compaction, pervious area ground cover, and disconnected impervious area. However, most of these other methods are difficult to economically gauge and track from year to year. Therefore, impervious area is often used to represent a development's impact on the stormwater system because the measurement for impervious area is a good indicator of runoff and relatively economical to measure and track. Methods to mitigate peak runoff and water quality, such as best management practices (BMPs) and Low Impact Development (LID), can reduce runoff, and properties are, in certain cases, granted credits for these practices.

It should also be noted that by taking into account LID or other runoff reducing/water quality improvement measures, the City would be encouraging developers and land owners to implement better stormwater management practices.

3.1. Definitions and Types of Rate Structures for User Fees

When discussing rate structures, a few definitions are helpful:

1. Rate structures are the method by which the user fee for each property is calculated.
2. Rates are the cost per square foot of impervious area or another unit of measurement.
3. Fees are the amount of the user fee charged to each property based on the rates and rate structure.
4. Property classifications or categories are the different types of properties that comprise the customers of a stormwater utility. An understanding of property classifications is helpful when discussing rate structures.

Most SWU property classifications in Colorado break out SFR detached separately and classify multi-family under commercial, as shown below. However, some SWUs have a residential class and a non-residential class (such as Aurora). Property classifications will be discussed more when rate structure options are discussed. A typical breakdown of property classifications with SFR detached in a standalone category and multi-family residential under the commercial category is shown below and discussed/analyzed herein:

- Single Family Residential (SFR) Detached
- Non-Single Family Residential (SFR) Detached
 - Commercial

- Multi-family
 - Apartments
 - Condominiums
 - Townhouses
 - Patio Homes
- Retail
- Office
- Other business
- Industrial
- Agricultural
- Tax-Exempt (from property taxes)
 - Churches
 - Non-Profit
 - Local, State, Federal and Other Governmental Entities
 - Other Tax-Exempt Properties

When reviewing the above classifications, it can be seen that the SFR and Non-SFR are the two major classes and that many different types of properties fall under the Non-SFR class.

3.2. Single Family Residential Detached Rate Structures

Many rate structures treat SFR detached properties one way and Non-SFR properties (all other properties) another way. Single Family Residential properties are similar (relatively, compared to non-SFR properties) in size and in the percentage of the property that is impervious. This relative consistency allows rate structures to group SFR properties together. Non-SFR properties vary widely in size and in percent impervious. Therefore, a rate structure based on an assumed consistency of impervious area is not usually used for non-SFR properties.

3.2.1. Charging the Same Fee for All SFRs

The percent impervious for SFRs can be determined by choosing a random sample, measuring each property in the sample, and subsequently determining a mean or median percent impervious. This method has been used by Lakewood, Westminster, Pueblo, and others and is basically considered fair. However, it does have inequities between the large SFRs and small SFRs.

3.2.2. Charging by Residential Unit

Another approach is to bill by residential unit. This approach may bill the same for SFR detached as it does for each unit in a multi-family building. Aurora currently uses this approach. The City may be using this approach because the City's billing system for water is set up this way. This method is fair for SFR detached because it is essentially the same as the "Charging the Same Fee for All SFRs" method above. However, this method is not always equitable for apartments, condominiums, townhouses, duplexes, and four-plexes.

Additionally, the residential unit approach assumes that an apartment, condominium, townhouse, or a unit in a duplex or four-plex has the same impact on a city's stormwater system as a detached SFR. Considering the parking lots and interior roads associated with multi-family developments, this may sometimes be the case. However, when considering multi-story apartment and condominium buildings, it is doubtful that an individual apartment or condominium, even with the associated parking structures and interior roads, would have as much impact on a city's stormwater system as an SFR. The more stories that a building has, the less impact each unit has on the stormwater system. Therefore, this method has the potential for large inequities for multi-story residential buildings. The inequity is that the apartments and condominiums pay more than their fair share.

3.2.3. Charging Detached SFR's Based on Measured Impervious Area

As the cost of GIS procedures has decreased, a recent trend in Colorado is to measure the impervious area on every SFR. Arvada was among the first to use this method, and it is also the method used by SEMSWA. This method provides acceptable equity across the SFR billing group. If the method is also used for non-SFRs, there is excellent equity in the non-SFR group, as well as between the two customer classes. Note that SEMSWA's SFR rate per square foot for the five categories of SFRs decreases as the impervious area increases and increases as the impervious area decreases. This was done to recognize the fact that properties with larger impervious areas have more pervious area and vice-versa. An analysis was completed for SEMSWA that showed this to be accurate. Refer to Appendix A, which shows the rates for SEMSWA and Calibre Engineering's added analysis of the average impervious area and rate per square foot. *(NOTE: this strategy could contradict the City's expressed desire to reduce turf grass as a water conservation measure. However, most alternative landscaping methods would also be considered pervious if the landscaping methods allow the infiltration of stormwater through any barrier that is part of the landscaping, such as weed control fabric).*

3.2.4. Charging Detached SFRs Based on Measured Impervious Area and Percent Imperviousness

The City and County of Denver has taken measuring impervious area a step farther by billing SFRs based on the percent impervious for each SFR. As discussed above, SEMSWA uses a method that approximates percent impervious for the five categories of SFRs. Measuring impervious area and percent impervious is the most equitable method used today because it accounts for the relative impact that each SFR has on the system by billing at a higher rate per square foot of imperviousness for SFRs that have a high percent impervious area and at a lower rate per square foot for SFRs that have a lower percent impervious area. Following are examples that illustrate this method.

Example 1- An SFR with a 1-acre lot, an impervious area of 2,500 square feet, has a percentage of impervious area of 5.74%. The large lot allows for more of the runoff to soak into the ground, and it is, therefore, more equitable to charge this SFR less per square foot of impervious area than may be charged to a SFR with 2,500 square feet of impervious area on a smaller lot.

Example 2- An SFR with a 1/8th acre lot, an impervious area of 2,500 square feet, has a percent impervious area of 46%. The small lot does not have as much pervious area for the runoff to soak into the ground (these lots usually discharge directly into the street), and it is, therefore, more equitable to charge this SFR more per square foot of impervious area than would be charged for the larger lot.

3.3. Non-Single Family Residential Rate Structures

3.3.1. Charging All Non-SFRs Based on Measured Impervious Area

Almost all SWUs in Colorado treat non-SFR properties individually because there is a wide range of property sizes and percent imperviousness of the properties. The use of GIS, along with digitized parcel boundaries, aerial imagery, and ownership data, has enabled cities to measure each non-SFR parcel's impervious area and assign the charge (based on the impervious area) to the owner of the property. Lakewood, Arvada, Westminster, Pueblo, and other Colorado cities use this method.

3.3.2. Charging All Non-SFRs Based on Measured Impervious Area and Percentage

Imperviousness

As with SFR rate methods, this method is equitable for non-SFRs. This method is actually more equitable for non-SFRs because of the high variability of non-SFR properties in terms of both size and percent impervious. In recognition of this, the City of Denver and SEMSWA both use this method. The rate schedules for these two SWU's are included in the *Appendix A – Stormwater Fee Schedules for SEMSWA and City and County of Denver*.

4. DESCRIPTION OF CURRENT RATE STRUCTURE AND NEW OPTIONS FOR CONSIDERATION

Three rate structure options have been prepared for City consideration. There are other possible rate structure combinations, but three are discussed to illustrate the range of possibilities. The other rate structures could be considered by future planning projects.

A new rate structure could be constructed to be revenue neutral, but some rates would go up and some would go down. Customers' reactions to the potential rate structure change could become a significant public issue. Therefore, City Council should also have an understanding of both rate structures and why a change is needed. City Council and the Public should also understand how the stormwater fee revenues are used. A straightforward summary of expenditures and descriptions of the expenditures would be very useful. Such a summary is usually the result of a cost of service study.

Understanding the existing rate structure is a good place to start before presenting new impervious area based rate structures. Changing the rate structure would have an impact on customers, and customer understanding of the existing and proposed rate structures is very important.

4.1. Aurora's Existing Rate Structure

Aurora's rate structure is defined according to City Code Sec. 138-397, as listed below (monthly usage fee):

- (a) There is imposed on each and every lot or parcel of land within the City a monthly usage fee for storm drainage service. This fee shall be used to pay for the operation, maintenance, improvement and replacement of drainage facilities.

(b) The basis for computing the amount of the monthly usage fee shall be the extent of the use, as determined by the city, which each lot or parcel of land within the city makes of drainage facilities, together with the amount of stormwater runoff from such lot or parcel, including the normal stormwater runoff of such lot or parcel in an undeveloped condition.

(1) The monthly usage fee will not be levied or assessed upon undeveloped land which has been left in its natural state.

(2) The monthly usage fee for land which has been altered by the works of man shall be as follows:

- a. Single-family detached and individually metered single-family attached users shall be assessed a monthly usage fee in the amount of \$8.16 effective January 1, 2010, per dwelling.
- b. Multifamily and master metered single-family attached users shall be assessed a monthly usage fee in the amount of \$8.16 for the first unit served under a billing account, plus \$6.42 for each additional unit or space occupied or intended for occupancy (effective January 1, 2010).
- c. Commercial and industrial users shall be assessed a monthly usage fee in the amount of \$8.16 (effective January 1, 2010) for the first 2,500 square feet of gross floor space of a building or group of buildings or fraction thereof which are occupied or used for storage or are intended to be used for such purposes. A fee in the amount of \$6.42 will be assessed (effective January 1, 2010) for each additional 2,500 square feet of gross floor space of the building or group of buildings or fraction thereof. Whenever the hard surface or paved area of a lot or parcel of land occupied by a commercial or industrial site exceeds three times the gross floor space of the building or group of buildings, such excess area shall be considered gross floor space for the purpose of computing the monthly usage fee assessed under this subsection.

A distinguishing feature of the existing rate structure (as currently practiced) is the classification of all types of residential properties into residential units. Residential units include, single-family detached, townhouses, condominiums, apartments, duplexes and fourplexes. Most of the rate structures used by Stormwater Utilities in Colorado classify multi-family residential (apartments, condominiums, and townhouses) as commercial properties, but Stormwater Utilities in Colorado vary in their classification of duplexes and fourplexes. The existing Aurora rate structure charges the same rate for detached SFRs as for the first unit in multi-family properties. The second unit and beyond are charged a slightly lower rate as described above.

The rate structure for commercial, industrial, and other non-residential properties is the same as the SFR detached fee for the first 2,500 square feet of impervious area and is a slightly lower fee for each additional 2,500 square feet. As stated in the code:

“Whenever the hard surface or paved area of a lot or parcel of land occupied by a commercial or industrial site exceeds three times the gross floor space of the building or group of buildings, such excess area shall be considered gross floor space for the purpose of computing the monthly usage fee assessed under this subsection.”

This last paragraph is another distinguishing feature of Aurora’s rate structure and the authors of this report could not determine why the code is written this way. It is unusual in Colorado, but there may have been a reason it was structured as it is. The code does not state how the fee is calculated whenever the hard surface or paved area of a lot or parcel of land occupied by a commercial or industrial site DOES NOT exceed three times the gross floor space of the building or group of buildings. However, discussions with the Finance Department resulted in an understanding of how the rule is implemented as described below.

4.2. Implementation of Aurora’s Existing Rate Structure

Actual implementation of the commercial properties rate structure is as follows. Note that for all residential properties, the user fee is implemented according to code.

4.2.1. Outside Hard Surface Exceeds Three Times Gross Floor Space of Building:

In this situation, the fee is determined as stated in the City Code: “Whenever the hard surface or paved area of a lot or parcel of land occupied by a

commercial or industrial site exceeds three times the gross floor space of the building or group of buildings, such excess area shall be considered gross floor space for the purpose of computing the monthly usage fee assessed under this subsection.”

4.2.2. Outside Hard Surface DOES NOT Exceed Three Times Gross Floor Space of Building:

In this situation the property owner is not charged for the outside hard surfaces.

4.2.3. Pros of Current Implementation

The billing staff did not indicate that complaints had been received about the existing system. Therefore, the question becomes: why change something that is accepted by the public?

The existing system has historically provided seemingly adequate revenue for the stormwater program (based on historic budget information). However, projected budget information and the state of the City’s current system seem to imply that the revenue obtained through the existing rate structure will not be adequate for the City’s future needs.

The existing system provides some equity between SFR and commercial and industrial by using the same fee for the assumed SFR impervious area of 2,500 square feet. This square footage is similar to the average SFR impervious square footage of other cities.

4.2.4. Cons of Current Implementation

The existing process is inequitable for commercial and industrial properties because they are not treated consistently. Fees are calculated differently according to a ratio of building gross floor space area and outside hard surface area. In some cases, the outside hard surfaces are charged and in other cases outside hard surfaces are not charged.

The existing process is also inequitable for multi-family properties because they are not charged according to impervious area but by unit. Units themselves don’t always have an impact on stormwater runoff, but the footprint of the building comprising the units does. Under the current process a single story condominium building with 100 units could be charged the same fee as a 10 story building with 100 units. Whereas the stormwater impact of the single story building would be much greater than the 10 story building because of its much greater impervious area of rooftop. In addition, under the existing

system, the outside hard surfaces are not charged for any of the multi-family properties. These surfaces can vary significantly in the amount of impervious area and the resulting fees.

4.3. Three Options for Replacing the Existing Rate Structure

4.3.1. Option 1- Charge the Same Fee to All SFR Detached Properties and Measure the Impervious Area of Non-SFR Properties.

Because of the relative homogeneity of SFR properties compared to non-SFRs, many Stormwater Utilities (SWUs) in Colorado utilize rate structures that charge the same fee to all SFR properties. An average impervious area can be determined from a random sample of measured SFR's.

Option 1 includes measuring each Non-SFR property and charging for the amount of measured impervious area.

The rate per square foot for SFR properties and Non-SFR properties would be the same.

4.3.1.1. Option 1: Pros Based on This Analysis

- This option is easy for the public to understand since all SFR detached properties pay the same fee, just as they do now.
- It would be easy for the City to manage the SFR customer class because when a new home is added, the same fee is used and no calculations or measurements are necessary.

4.3.1.2. Option 1: Cons Based on This Analysis

- Large SFR properties pay the same fee as small a SFR property, which introduces an inequity within the SFR customer class. Properties with relatively small areas of impervious area pay a much higher rate per square foot than do properties with larger impervious areas. This is also the case for the City's existing rate structure.
- All of the Non-SFRs would require a check of their impervious area calculation. Those with outside areas less than three times the building area would pay for their outside impervious area, which they don't pay for now. Those with outside areas greater than three times the building area would be charged for the same amount of impervious area.

- The Non-SFR customer class whose outside area is less than three times the building area would begin paying for their outside area, which may become a public relations issue.

4.3.1.3. Option 1: Implementation Needs

- Develop a comprehensive CIP, Asset Management Needs Assessment, and Operations Cost Study to define funding needs.
- The City should set-up a public education and involvement program, especially for the Non-SFR class who are not paying for outside impervious area.
- The City would continue using the same methods to add SFR detached to the billing database.
- The City would reclassify apartments, condominiums, and townhouses as Non-SFRs and calculate the impervious area of the structures and outside impervious areas. The fees would most likely go down. *(NOTE: this may impact other feeds, other billing/management systems, or AMANDA fields. This would need to be studied to determine impact).*
- The most recent aerial photography, parcel boundary maps, and related address files would need to be compiled as they are now (and maintained).
- The City would need to check the billing records and impervious area calculation methods for commercial and industrial properties (impervious areas are calculated for new buildings, but it is unknown how older buildings were done). Or the City could measure the impervious area on all commercial and industrial properties using the new planimetrics dataset.
- The City would confirm that its existing database and programs will meet the needs of the new rate structure. Some modifications may be necessary. *(NOTE: potential modifications are outside the scope of this memo).*
- The existing billing database may have to be revised because the bills for stormwater may not go to the same address and people that the current utility bill goes to. There will also be stormwater customers who do not receive utility bills, one category of these customers is parking lot owners.
- Staff needs may increase for implementation but probably not for maintenance of the stormwater billing database.

4.3.2. Option 2- Charge SFR and Non-SFR Fees Based on Measured Impervious Area

As the cost of GIS measurements become lower and because of its more widespread use, as well as being fundamentally more equitable and defensible than existing rate structure data sources, many newer stormwater utilities in Colorado have measured each SFR property's impervious area and charged each property a fee according to the amount of impervious area. The rate per square foot of impervious area would be the same for SFR and Non-SFR's. The City of Arvada utilizes this rate structure and experienced good public acceptance when it was implemented.

4.3.2.1. Option 2: Pros Based on This Analysis

- There would be equity across the SFR customer class because large and small properties would be charged for the amount of impervious area on their properties.
- There would be equity across all the customers because SFRs and Non-SFRs would be charged the same rate per square foot of impervious area.
- This rate structure is easy for the public to understand.
- Some properties' fees, such as multi-family residential, may go down.

4.3.2.2. Option 2: Cons Based on This Analysis

- All detached SFRs and multifamily would need to have their impervious area measured.
- The SFR customer class would experience a new rate structure and there could be a large number of inquiries to the customer service office.
- The Non-SFR customer class would also experience a new rate structure, and special customer representatives would need to be trained to deal with the business owners.
- Some fees would go up, such as commercial/industrial properties who are not currently paying for the outside hard surfaces greater than three times the building area.
- When new customers are added, measurements of impervious area would be required for all customers.

4.3.2.3. Option 2: Implementation Needs

- The City should set-up a public education and involvement program for all property owners prior to the change. This could include

announcements and explanations of the change in utility bill inserts, as well as a customer service number to call when customer service representatives are trained.

- Approximately 3 months before the change, customer service representatives should be trained and then go “online” to deal with questions and concerns via phone and email.
- The City would reclassify apartments, condominiums, and townhouses as Non-SFR’s.
- The City would need to check the existing billing records and impervious area calculation methods for commercial and industrial properties (impervious areas are calculated for new buildings but it is unknown how older buildings were done). Or, the City could measure the impervious area on all commercial and industrial properties using the new planimetrics dataset.
- The City would measure the impervious areas of all SFR’s and non-SFR’s within the parcel boundaries of each property. The new planimetrics data, most recent aerial photography, parcel boundary maps, and related address files would be utilized.
- The City would build a new GIS database of the above information. The GIS database would be linked to the billing database in place of the current Non-SFR data. (NOTE: if all the Non-SFRs need to be re-measured, a new database would allow the City to start with a new record).
- The existing billing database may have to be revised because the bills for stormwater may not go to the same address and people that the current utility bill goes to. There will also be stormwater customers who currently do not receive utility bills, one category of these customers is parking lot owners.
- Staff needs may increase for implementation but probably not for maintenance of the stormwater billing database.

4.3.3.Option 3- Charge SFR and Non-SFR Fees Based on Impervious Area and Percent Impervious

This Option takes Option 2 one step further and charges based on the amount of impervious area and the percentage of each property that is impervious. This option is the most accurate and equitable of the options because it accounts for the ratio of impervious area to pervious area. The benefit ratio may vary widely

depending on configuration, but this is the most accurate method for predicting runoff based on impervious area. For example, if two properties have the same amount of impervious area but one has a much larger amount of pervious area, the later would pay a lower fee. The City and County of Denver and SEMSWA use this rate structure for non-SFR parcels. SEMSWA uses an SFR rate structure that approximates Option 3 by tiering detached SFRs according to the amount of impervious area, which was found to relate well to the size of the property (see *Appendix A – Stormwater Fee Schedules for SEMSWA and City & County of Denver*). Denver changed from a different rate structure a number of years ago. The primary public education for Denver’s change was an explanation of the rate change on an insert in the annual stormwater invoice.

4.3.3.1. Option 3: Pros Based on This Analysis

- This rate structure most accurately charges property owners for their impact on the City’s stormwater system.
- The rate structure provides equity within customer classes and across different customer classes.
- When people understand the system, they will like it because it is the one that is most fair to all properties.

4.3.3.2. Option 3: Cons Based on This Analysis

- It is the most difficult rate structure for customers to understand.
- All SFRs and Non-SFRs would need to have their impervious area and parcel area measured.
- The SFR customer class would experience a new rate structure and there could be a large number of inquiries to the customer service office.
- The Non-SFR customer class would also experience a new rate structure and special customer representatives would need to be trained to deal with the typically more knowledgeable business owners.
- When new customers are added, measurements of impervious area and parcel area would be required for all customers.

4.3.3.3. Option 3 Implementation Needs (The same as for Option 2)

- The City should set-up a public education and involvement program for all property owners prior to the change. This could include announcements and explanations of the change in utility bill inserts, as well as a customer service number to call when customer service representatives are trained.

- Approximately 3 months before the change, customer service representatives should be trained and then go “online” to deal with questions and concerns via phone and email.
- The City would reclassify apartments, condominiums, and townhouses as Non-SFR’s.
- The City would need to check the existing billing records and impervious area calculation methods for commercial and industrial properties (impervious areas are calculated for new buildings but it is unknown how older buildings were done). Or, the City could measure the impervious area on all commercial and industrial properties using the new planimetrics dataset.
- The City would measure the impervious areas of all SFR’s and non-SFR’s within the parcel boundaries of each property. The new planimetrics data, most recent aerial photography, parcel boundary maps, and related address files would be utilized.
- The City would build a new GIS database of the above information. The GIS database would be linked to the billing database in place of the current Non-SFR data. *(NOTE: if all the Non-SFRs need to be re-measured, a new database would allow the City to start with a new record).*
- The existing billing database may have to be revised because the bills for stormwater may not go to the same address and people that the current utility bill goes to. There will also be stormwater customers who currently do not receive utility bills, one category of these customers is parking lot owners.
- Staff needs may increase for implementation but probably not for maintenance of the stormwater billing database.

5. STORMWATER DEVELOPMENT IMPACT FEES AND INFORMATION NEEDS

Stormwater impact fees are popular with growing communities in Colorado where elected officials have the idea that “new development should pay its own way.” Impact fees are generally calculated in such a manner that a city can recoup the costs of providing major drainage projects that mitigate the expected increase in runoff from new and future developments. It is important that the definition of major drainage projects and minor drainage projects is understood in the context of each city’s development fees. For UDFCD and many

entities within its boundaries, major drainage projects are those that are/were planned in UDFCD planning studies (the studies usually consider major drainage as having a tributary area greater than 160 acres), and minor drainage projects (on-site projects) are projects for which the developer is responsible within the development (specified in the subdivision code and usually have a tributary area less than 160 acres).

5.1. Aurora's City Code Regarding Impact Fees:

Section 138-396 Development Fee: "A drainage basin development fee shall be levied and assessed upon each vacant and undeveloped lot and parcel of land within the city for the purpose of funding certain major facilities, the construction and installation of which the city is responsible under subsection 138-66 (*This appears to be a mistake, the subsection is 138-366*) (a). The amount of such fee shall be...\$2,818 per acre effective January 1, 2008." (Code 1979, § 17-20(a); Ord. No. 2002-66, § 1, 11-18-2002; Ord. No. 2005-02, § 3, 2-7-2005; Ord. No. 2005-74, § 1, 10-10-2005; Ord. No. 2006-16, § 3, 3-20-2006; Ord. No. 2006-65, § 5, 11-13-2006)

Section 138-366 Construction of Major Facilities: "major facilities consist of grade control structures and regional detention ponds required for the adequate drainage, control, and conveyance of stormwater generated within a subdivision, including the drainage, control, and conveyance of stormwater generated outside of such subdivision as though such water was generated from land in its fully developed state. It shall be the responsibility of the subdivider, at his or her sole expense, to provide for earthwork, erosion protection and revegetation associated with stream channelization required for the adequate drainage, control and conveyance of such water."

Several of the Colorado entities that have development impact fees for stormwater include Aurora, SEMSWA, the City of Longmont, City of Boulder, El Paso County, and Colorado Springs. (*NOTE: items that are paid for by user fees versus impact fees are discussed later in this report*).

5.2. Important Points about Development Impact Fees:

5.2.1. Communities experiencing significant growth

Communities experience significant growth are more likely to have development fees in order to fund the stormwater improvements necessary to deal with the expected increase in future discharges. Several methods are in use and include charging new development by: house, commercial development, gross acre, or impervious acre. For such charges, there should be

a rational nexus or logical connection between the fee and the impact that the new development causes. In addition to the nexus, there should be a defensible method for determining the amount of the fee. One of the most defensible types of fees is one based on planning studies that identifies the additional discharges caused by new development, the major drainage improvements necessary to deal with the discharges, and the cost of new developments' share of the improvements. The cost should then be allocated to new development based on the impervious area of the new development. If the entity has a SWU, the same rate structure and method for measuring impervious area should be used as is used for the user fee. *(NOTE: it is not necessary that the rate structures be the same. For example, if an impact fee is charged when a parcel is platted, the city may not know the impervious details. However, basing the rate structure on impervious area is more defensible than basing the rate structure on gross acres, due to the varying level of impact that would occur with different types of developments).*

5.2.2. Impact fees can be the same citywide, for groups of basins, or for individual basins.

Citywide fees are the easiest for a community to manage and can be used if the fees calculated for each basin are relatively consistent. If fees are not consistent, then groups of basins can have the same fee (SEMSWA uses this method). Finally, if fees are significantly different for each basin, basin specific fees may be necessary. However, the more fees that a city has, the more difficult the program is to manage.

5.2.3. For more mature communities

For more mature communities (communities that are over about 75% built-out), a “buy-in” fee is often used, similar to those fees used for water and wastewater. To calculate a stormwater buy-in fee, the total value of a community’s stormwater infrastructure needs to be calculated. The total acres of impervious area, for the same area as for the infrastructure, also needs to be calculated. The division of the total value of infrastructure by the total impervious area equals the buy-in fee per impervious acre of new development. Boulder uses this method for their stormwater development, or buy-in, fee.

5.3. Information Needs for Development Impact Fees:

The information and processes necessary for a stormwater impact fee depend on the type of fee, but the following information and processes would be necessary for the most common types of fees implemented by growing communities in Colorado.

5.3.1. Projection of stormwater capital projects

A projection of the dollar amount of major stormwater capital projects attributable to new development in each basin containing realistically developable land (should be available in drainage planning studies).

5.3.2.A projection of the planned impervious area

A projection of the planned impervious area of realistically developable land in each basin using the same criteria for measuring impervious area as for the user fee.

5.3.3.Dollars per acre

A calculation that determines the dollars per acre of impervious area for new development. This can be for each basin, a group of basins, or citywide.

5.3.4.Impervious area owing development fee

The impervious area (and percent impervious if necessary) of the development owing the development fee. *NOTE: Aurora now collects development fees at the time of platting and the fees are based on gross acres being developed. If the City were to change to an impervious area based fee, the fee would have to be collected differently because the impervious area is not known at the time of platting. Perhaps a best estimate of impervious area could be made at the time of platting and the fee collected. After the development is complete and the impervious area is calculated for the user fee, this number could be used to calculate the final development fee and adjust the payment made at the time of platting.*

5.4. Impact Fee Incentives for Low Impact Development (LID) and Green Infrastructure (GI)

It is possible to encourage or reward landowners who apply LID and GI practices to their land development. Aurora has indicated a desire to be a leader in the implementation of these practices. To do so, incentives or credits can be used to promote the use of the practices to make it worthwhile for existing and new developments to incorporate the desired techniques.

This can be done as a one-time reduction in the development fee for a new development and/or as a continuing credit off the monthly user fee. For example, if a new development has an opportunity to expand an existing wetland on its property, a credit could be granted off of the development fee. This should only be allowed if it goes above and beyond the existing subdivision requirements for the development. Another example would be the incorporation of LID/GI in the planning stages of the development. Not only would the landowner benefit from a lower monthly user fee because of less impervious

area and/or a lower percent impervious, a credit may be available if the LID/GI provides more water quality improvement than required.

The timing of the payment of the development fee would also be an issue here (as explained above) for the payment of an impervious area based development fee. The same method as described above could be used to finalize the fee and the credit.

6. COST ALLOCATION WITHIN MAINTENANCE EXPENDITURES AND BETWEEN CAPITAL AND MAINTENANCE EXPENDITURES

This section focuses on the cost allocation, budgeting, and tracking between maintenance expenditures and between capital and maintenance expenditures.

The allocations are important because there are several categories of maintenance and capital expenditures that need to be tracked according to suggestions in the *Gap Analysis Technical Memorandum* for the Asset Management, Maintenance, and Capital Program Elements.

City staff are interested in how UDFCD distinguishes between these program elements. A review of the UDFCD process begins this discussion and advises the ultimate suggestions.

6.1. UDFCD Classification of Maintenance and Capital Activities

Cost allocation within maintenance expenditures and between capital and maintenance expenditures is something UDFCD has been dealing with for a number of years. It is helpful to start out reviewing the method that UDFCD (District) uses to allocate costs. This is explained on the UDFCD website and confirmed by Dave Bennetts, Manager of Capital and Maintenance Programs, as follows:

“All of the Program’s activities are outlined in three work plans (routine maintenance, restoration maintenance, and capital projects) that are developed on a calendar year basis. Each work plan has a separate funding authorization set up to fund those activities.”

An important distinction that UDFCD makes between maintenance and capital activities is stated on their website as follows:

“In general, maintenance activities are those that do not change the capacity of a drainage facility and capital activities increase the capacity to that of the design in the planning study.”

6.2. UDFCD Maintenance Activities

Maintenance work is divided into two types of activities: routine and restoration. These activities are described in greater detail on the UDFCD website as follows:

“Routine maintenance consists of limited mowing of native vegetation, trash and debris cleanup, trash rack cleaning, control of weeds and noxious vegetation, tree thinning, sediment removal, revegetation, and other minor drainageway maintenance activities. Private contractors are hired each year to perform the routine maintenance activities on a unit price basis.”

NOTE: It is the consultant’s understanding that UDFCD has staff who monitor the work of the contractors.

“Restoration work involves site-specific construction activities intended to rebuild and reestablish existing drainage facilities, which have been neglected or damaged such that structural problems have developed. Examples include reconstructing or replacing grade control structures, box culverts, retaining walls; establishing or repair of maintenance access; local channel grading, stabilization, and revegetation. Private contractors are hired to provide these services through a public selection process. Restoration work would be similar to what Aurora calls Asset Management.”

In addition to the above maintenance activities, UDFCD authorizes funds for flood repair when significant flooding occurs within the District.

It should be noted that UDFCD does not generally own flood control facilities but designs and constructs them for local jurisdictions, and the jurisdictions then assume ownership. UDFCD does not have an asset management program because they do not own these facilities. Nor does the UDFCD field public complaints concerning maintenance. UDFCD’s funds for maintenance and capital all come from the same source (property taxes), and the funds are intended to benefit existing property owners who pay taxes. UDFCD does not need to make a distinction concerning the funding source for projects. UDFCD funds 100% of its maintenance activities (which must be carried out on approved projects) and funds 50% of capital projects (which also must be approved projects).

Aurora, on the other hand, owns its flood control facilities and, therefore, is engaged in asset management activities to optimize its investment. The City is responsible for addressing public comments about maintenance and uses several funding sources to fund capital projects.

6.3. UDFCD Capital Activities

The design and construction of master-planned projects is carried out through the Five Year Capital Improvement Plan (Five Year CIP). Work included on this plan must meet the following requirements:

1. Proposed improvements must be requested by local governments.
2. Proposed improvements must be master planned as defined and identified by UDFCD.
3. District funds must be matched by local governments at a level determined by UDFCD.
4. Local governments must agree to own the completed facilities and must accept primary responsibility for their maintenance.
5. District tax revenue received from each county will be spent for improvements benefiting local governments in that county.

Each year the Board adopts a Five Year CIP, which lists projects and District participation by county, from the current year to four years into the future. This plan forms the basis for District participation in design and construction projects.

Aurora, on the other hand, keeps an annual log of capital projects: a 5-year list of capital projects and a 20-year list of capital projects.

6.4. Recommendations Based on UDFCD Methodology

Coordination of the methodology used by the District with the methodology suggested for Aurora makes sense because the District provides maintenance and capital funding for Aurora using District criteria. Using the same criteria simplifies the accounting. Based on the District's method and Aurora's needs, a good method for the City to use for maintenance budgeting and tracking would be, at a minimum, use of the following categories (*refer to Figure 1 – Storm Drain Fund*):

1. Routine maintenance activities per UDFCD definition and sub-classifications for channels, pipes, structures, and additional desired classifications. These may or may not be classified as Asset Management Program expenditures.

2. Flood maintenance activities. These may or may not be classified as Asset Management Program expenditures.
3. Restoration maintenance activities per UDFCD definition and Aurora's definition for asset management purposes and sub-classifications as above.
4. Capital Replacement projects from Capital Budget.
5. Restorative Capital projects completed with UDFCD.

All maintenance activities should be funded by user fees, operating sub-fund, as they are now.

Based on the UDFCD process and the needs of Aurora, the following suggestions for **capital projects budgeting and tracking** would be, at a minimum, the following (*refer to Figure 1 – Storm Drain Fund*):

1. Capital projects should be accounted for from the Operating Sub-Fund and the Development Sub-Fund as follows:
 - a. Operating Sub-Fund (user fee funded)
 - i. Track funds for 100% City funded projects.
 1. New projects.
 2. Replacement projects (Asset Management).
 - ii. Track funds for matching money for UDFCD projects.
 1. New projects.
 2. Replacement projects (Asset Management).
 - b. Projects that primarily benefit new development, funded mostly by development impact fee funds.
 - i. Track funds to fund projects 100% from development fee fund.
 - ii. Track funds to finance portions of projects for new development, prior to collection of adequate development fees, to fund the entire project (loan from user fee fund). This funding should be used to fund the remaining costs of a project when the first developers in a basin are required to build a regional facility and the remaining portion of the project funding will be paid back by the remaining future developers in the basin.
 - iii. Tracking capital expenditures by asset classifications, such as by channels, pipes, structures, and additional classifications, may be desired by the City.

7. BIBLIOGRAPHY & REFERENCES

US Environmental Protection Agency (EPA). (12 February 2015). Low Impact Development (LID). In United States Environmental Protection Agency>Water>Pollution Prevention & Control>Low Impact Development (LID). Retrieved from:
<http://water.epa.gov/polwaste/green/>

US Environmental Protection Agency (EPA). (12 February 2015). Green Infrastructure (GI). In United States Environmental Protection Agency>Water>Water Infrastructure>Green Infrastructure. Retrieved from:
<http://water.epa.gov/infrastructure/greeninfrastructure/index.cfm>

Municipal Code Corporation and the City of Aurora, Colorado. (1996). Date of Access: 03 March 2015. Chapter 138 (Utilities), Article VII (Storm Drainage), Division 2, Section 138-396 (Development Fee). *City Code of the City of Aurora, Colorado, Volume 1*. Retrieved from:
https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIICOOR_C H138UT_ARTVIISTDR_DIV2FE_S138-396DEFE

Municipal Code Corporation and the City of Aurora, Colorado. (1996). Date of Access: 03 March 2015. Chapter 138 (Utilities), Article VII (Storm Drainage), Division 2, Section 138-397 (Development Fee). *City Code of the City of Aurora, Colorado, Volume 1*. Retrieved from:
https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIICOOR_C H138UT_ARTVIISTDR_DIV2FE_S138-397MOUSFE

Municipal Code Corporation and the City of Aurora, Colorado. (1996). Date of Access: 03 March 2015. Chapter 138 (Utilities), Article VII (Storm Drainage), Division 2, Section 138-400 (Development Fee). *City Code of the City of Aurora, Colorado, Volume 1*. Retrieved from:
https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIICOOR_C H138UT_ARTVIISTDR_DIV2FE_S138-400DIFE

Urban Drainage and Flood Control District (UDFCD). Date of Access: 03 March 2015. Retrieved from:
<http://www.udfcd.org/>

StepWise Utility Advisors, LLC. (2011). Final Report: Wastewater and Stormwater Rates.

8. APPENDICES & FIGURES

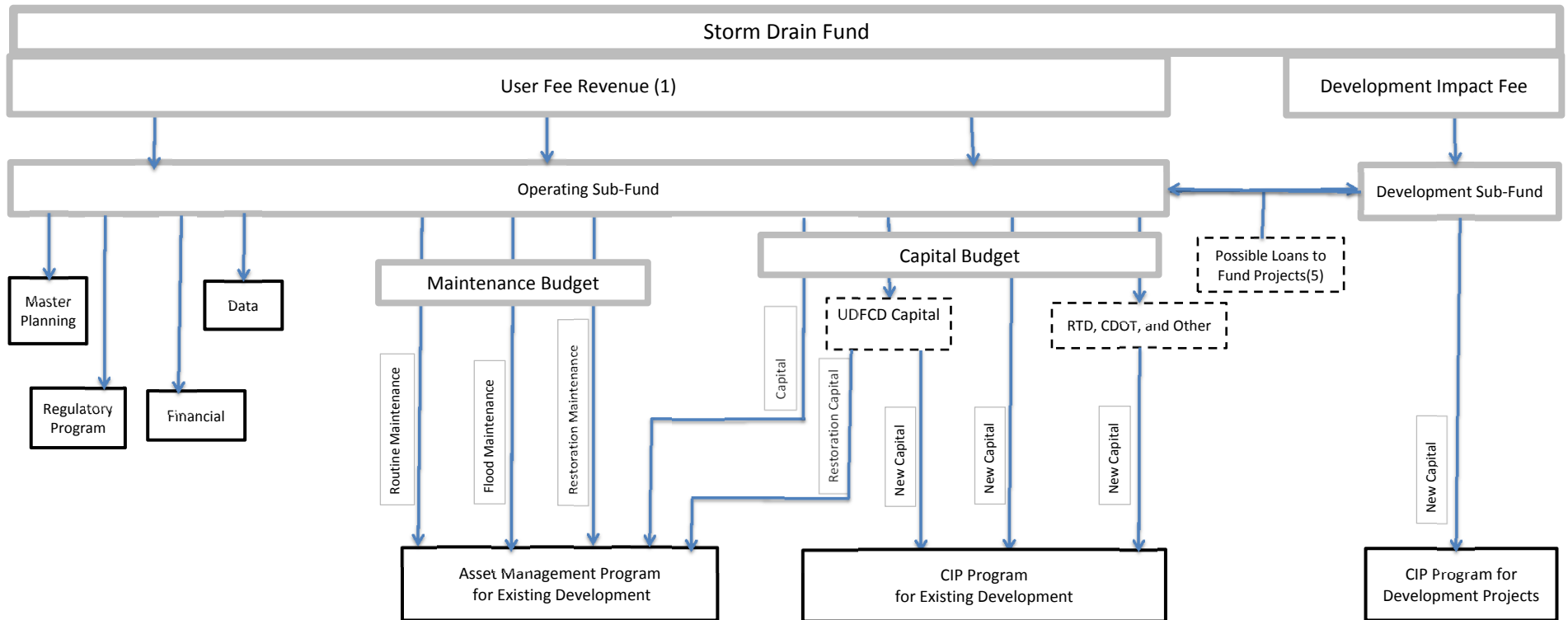
APPENDIX A

Stormwater Fee Schedules for SEMSWA and City and County of Denver

SEMSWA			
From SEMSWA's Website:			
Annual Fees for Single Family Detached Residences			
A detached residence is a stand-alone home, and does not include condos or townhomes.			
The 2014 stormwater rate structure is as follows:		Calibre Engineering Calculations Showing Rate per Sq. Ft.	
Impervious Area (Sq. Ft.)	2014 Annual Fee	Avg. Imp. Area	Rate per Sq. Ft.
100 - 2,000	\$52.40	1,050	\$0.049905
2,001 - 2,900	\$70.24	2,451	\$0.028658
2,901 - 3,900	\$91.42	3,401	\$0.026880
3,901 - 7,500	\$122.62	5,701	\$0.021509
7,501 - 50,000	\$266.41	28,751	\$0.009266
Fees for Non-single Family Detached: Commercial / Governmental / Non-Profit / Condo & Townhome Properties			
Fees are based on the equation below. Fees range from about \$50 per year for small properties to over \$10,000 per year for properties with large areas of impervious surface. Condos and townhomes may pay a prorated share of the cost due to the entire condo/townhome complex (including common area impervious surfaces).			
% Impervious of Property	2014 Annual Rate / 1,000 Sq. Ft. of Impervious Area	Calibre Calculations Showing Rate per Sq. Ft.	
		Avg. % Impervious of Property	Rate per Sq. Ft.
Less than 2%	No Fee		
2% - 40%	\$17.98	21.00%	\$0.017980
41% - 70%	\$27.66	55.50%	\$0.027660
71% - 100%	\$37.34	85.50%	\$0.037340

City and County of Denver			
From an Invoice for the Annual Storm Drainage Service Charge:			
How is my storm charge calculated?			
Your storm drainage service charge is calculated on the percentage of your total property that is impervious. An impervious surface is a man-made area that inhibits the absorption of water into the ground. This includes driveways, sidewalks, buildings (measured to the rooflines), etc. To calculate the annual charge for a property:			
Step 1: Divide the impervious area by the total area = ratio.			
Step 2: Go to the rate table below, find the proper ratio group and corresponding rate.			
Step 3: Multiply the rate times the impervious area, and divide by 100, which equals the annual charge.			
Rate Table for bill cycle dates of July 1, 2013 through June 30, 2014			
Ratio Group	Rate*	Ratio Group	Rate*
0 to .10	\$1.80	.51 to .60	\$3.93
.11 to .20	\$2.25	.61 to .70	\$4.17
.21 to .30	\$2.72	.71 to .80	\$4.64
.31 to .40	\$3.22	.81 to .90	\$5.11
.41 to .50	\$3.68	.91 to 1.00	\$5.60
*Rate per 100 Square feet. Minimum charge is \$12.81/parcel per year. There is no charge for unimproved land.			
The Following Table is by Calibre Engineering and Converts the Rate to \$ per Sq. Ft.			
Ratio Group	Rate per Sq. Ft.	Ratio Group	Rate per Sq. Ft.
0 to .10	\$0.0180	.51 to .60	\$0.0393
.11 to .20	\$0.0225	.61 to .70	\$0.0417
.21 to .30	\$0.0272	.71 to .80	\$0.0464
.31 to .40	\$0.0322	.81 to .90	\$0.0511
.41 to .50	\$0.0368	.91 to 1.00	\$0.0560

Figure 1



- (1) User fee revenue is collected from existing development (rate payers) and should be used to benefit existing development.
- (2) Development impact fee revenue is collected from new land owners and should be used to benefit new development.
- (3) UDFCD pays for 50% of joint capital projects and the City pays 50% for joint capital projects (some of these projects can be classified as Asset Management).
- (4) There may be a cost share on these projects
- (5) The User Fee Fund may loan the Development Impact Fee Fund money to initiate projects and visa-versa.