



AURORA INFRASTRUCTURE STORMWATER  
PROGRAM MASTER PLAN

IMPERVIOUS AREA BASED RATE STRUCTURE  
OPTIONS REPORT

MARCH 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.	IMPERVIOUS AREA BASED RATE STRUCTURE OPTIONS FOR STORMWATER USER FEES, DEVELOPMENT IMPACT FEES, AND BUDGETING MAINTENANCE & CAPITAL ACTIVITIES	4
1.1.	INTRODUCTION	4
1.1.1.	Summary of Findings	4
1.1.2.	Additional Findings	5
1.2.	IMPERVIOUS AREA BASED RATE STRUCTURES FOR USER FEES	87
1.2.1.	Types of Rate Structures for User Fees	98
1.2.2.	Single Family Residential Detached Rate Structures	109
1.2.3.	Non-Single Family Residential Rate Structures	1244
1.3.	CURRENT RATE STRUCTURE AND OPTIONS FOR CONSIDERATION	12
1.3.1.	Aurora’s Existing Rate Structure	1342
1.3.2.	Implementation of Aurora’s Existing Rate Structure	14
1.3.3.	Pros of Current Implementation (Based on This Analysis)	1544
1.3.4.	Cons of Current Implementation (Based on This Analysis)	1544
1.3.5.	Three Options for Replacing the Existing Rate Structure	15
1.4.	Stormwater Impact Fees and Information Needs	2120
1.4.1.	Aurora’s City Code Regarding Impact Fees:	21
1.4.2.	Several Important Points about Development Impact Fees:	2224
1.4.3.	Information Needs for Development Impact Fees:	2322
1.4.4.	Impact Fee Incentives for Low Impact Development (LID) and Green Infrastructure (GI)	23
1.5.	Cost Allocation Within Maintenance Expenditures and Between Capital and Maintenance Expenditures	2423
1.5.1.	UDFCD Classification of Maintenance and Capital Activities	24
1.5.2.	UDFCD Maintenance Activities	2524
1.5.3.	UDFCD Capital Activities	2625
1.5.4.	Recommendations Based on UDFCD Methodology	26



2. BIBLIOGRAPHY & REFERENCES..... 28

3. APPENDICES..... 30

DRAFT

# 1. IMPERVIOUS AREA BASED RATE STRUCTURE OPTIONS FOR STORMWATER USER FEES, ~~AND~~ DEVELOPMENT IMPACT FEES, ~~AND BUDGETING~~ ~~MAINTENANCE & CAPITAL ACTIVITIES~~

**Commented [VJ"1]:** If you want to shorten the title, I would just leave this part out (and discuss in the text of course). I'm fine with the long title though since it's no longer the title of the whole document.

## 1.1. INTRODUCTION

The purpose of this memo is to (a) describe Aurora's existing stormwater rate structure, (b) develop, describe, and compare three new stormwater rate structure options, and (c) describe, in general terms, what information, processes, and staff would need to be set in place to implement the options. This memo also 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 stormwater development impact fee. An option for credits, against the stormwater user fee and/or the development impact fee, for developments implementing green infrastructure and Low Impact Development (LID) practices is presented. Finally, a section on cost allocation within maintenance expenditures and between capital and maintenance expenditures is included.

### 1.1.1. Summary of Findings

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.

The City's current rate structure is not equitable to multi-family residential (MFR) owners, who are paying more than they should, and to remaining rate payers who, as a result, are paying less than they should. 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 (See **Appendix A**), if 3 times the inside square footage of a building is greater than the outside hard surface, then the fee is based on the inside square footage of the building. In other words, buildings fitting the criteria are not charged for outside hard surfaces (impervious

area). However, if 3 times the building square footage is less than the outside hard surface, then fee is based on outside hard surface square footage less the building footprint (this rule may be referred to herein as the “3X rule”). The rationale for this has not been found.

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.

#### 1.1.2. Additional Findings

1. 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:
  - a. 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).*
  - b. Charge all properties, SFR and non-SFR, based only on measurement of the impervious area on each property.
  - c. 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 percent impervious 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).*
2. The information, processes, and staff needed to implement and manage any of the optional rate structures would include:
  - a. 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 need 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.

- b. 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).
  - c. 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.
  - d. 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.
  - e. 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.
3. 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.
  4. The Stormwater Fund currently has three sub-funds: (a) an Operating Sub-fund which is funded by user fees and used for maintenance and operation costs, (b) a System Improvement Sub-fund also funded by user fees and used for capital improvements for existing development, and (c) a Development Sub-fund used for new capital projects for new development and funded by development impact fees.
  5. It is suggested that a new sub-fund should be established for maintenance. The Operating Sub-fund **should** be used only for operations other than maintenance and capital and would include funding for the following programs: (a) Master Planning, (b) Regulatory, (c) Financial, (d) Data Management, and (e) Asset Management Administration and Tracking (it would not include maintenance and capital expenditures for Asset Management). The System Improvement Sub-fund and Development Sub-fund would remain as they are.
  6. 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:

- a. Maintenance- All maintenance activities should be funded by user fees, as they are now, and accounted for from a new Maintenance Sub-fund. The following activities should be tracked:
    - i. Routine maintenance activities per UDFCD definition and sub-classifications for channels, pipes, structures, and additional desired classifications.
    - ii. Flood maintenance.
    - iii. Restoration maintenance activities per UDFCD definition and Aurora's definition for asset management purposes and sub-classifications as above.
    - iv. Capital replacement activities that qualify for asset management purposes (these are capital projects that are for restoration of existing infrastructure).
  - b. Capital- Capital projects should be accounted for from the System Improvement Fund and the Development Impact Fee Fund as follows:
    - 1. System Improvement Fund (user fee funded)
      - a. Track funds for 100% City funded projects.
        - i. New projects.
        - ii. Replacement projects (Asset Management).
      - b. Track funds for matching money for UDFCD projects.
        - i. New projects.
        - ii. Replacement projects (Asset Management).
    - 2. 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.
- Tracking capital expenditures by asset classifications, such as by channels, pipes, structures, and additional classifications may be desired by the City.
- 7. Credits to offset user fees and/or development impact fees are suggested to incentivize Low Impact Development (LID) and Green Infrastructure.

8. 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).

## 1.2. 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.

### 1.2.1. 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.

### **1.2.2. 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.

#### *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.

#### *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.

10

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.

#### *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 B**, 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).*

#### *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 1/8<sup>th</sup> 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.

### **1.2.3. Non-Single Family Residential Rate Structures**

#### *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.

#### *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.

## **1.3. CURRENT RATE STRUCTURE AND 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.

### 1.3.1. 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.”

### **1.3.2. 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.

1. If three times the impervious area (footprint) of a building is greater than the outside impervious area, then the fee is based on the impervious area of the building and the customer is not charged for the outside hard surfaces. This could be considered the inverse of the above clause where the customer is only charged for the outside hard surfaces if they exceed three times the inside square footage.
2. This implementation of the rate structure means that if the outside hard surfaces are less than three times the building square footage, the outside area is not

charged. This is an inequity in the rate structure because properties meeting that criteria are exempted from charges on their outside impervious area. (See discussion of development impact fee later in the document).

### 1.3.3. Pros of Current Implementation ~~(Based on This Analysis)~~

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 seems 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.

### 1.3.4. Cons of Current Implementation ~~(Based on This Analysis)~~

The existing process is inequitable for commercial and industrial properties because they are not treated consistently by calculating fees differently according to a ratio of building footprint area and outside area.

The existing process is inequitable because multi-family properties are not charged according to impervious area but by unit. Units themselves do not have an impact on stormwater runoff but the footprint of the building and hard surfaces do.

### 1.3.5. Three Options for Replacing the Existing Rate Structure

#### ***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.

*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.

*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.

*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.

***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.

***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.

*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.

*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.

***Option 3- Charge 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). 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.

***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.

***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.

*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.

## 1.4. 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, which 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 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).

#### 1.4.1. 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 in addition to Aurora include 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).

#### **1.4.2. Several Important Points about Development Impact Fees:**

1. Communities experiencing 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).
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.
3. 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.

#### **1.4.3. 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.

1. 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).
2. 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.
3. 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.
4. 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.

#### **1.4.4. 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.

## 1.5. 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 for the Asset Management, Maintenance, and Capital Program Elements.

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

### 1.5.1. 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 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.”

#### **1.5.2. 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 therefore are intended to benefit existing property owners who pay taxes. UDFCD does not need to make a distinction concerning the funding source for projects.

25

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.

### 1.5.3. UDFCD Capital Activities

The design and construction of master-planned projects is carried out through the Five Year Capital Improvement Plan (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.

### 1.5.4. 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, and 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:

1. Routine maintenance activities per UDFCD definition and sub-classifications for channels, pipes, structures, and additional desired classifications.
2. Flood maintenance.

3. Restoration maintenance activities per UDFCD definition and Aurora's definition for asset management purposes and sub-classifications as above.
4. Restoration activities from the System Improvement Fund.

All maintenance activities should be funded by user fees, 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:

1. Capital projects should be accounted for from the System Improvement Fund and the Development Impact Fee Fund as follows:
  - a. System Improvement 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.

Tracking capital expenditures by asset classifications, such as by channels, pipes, structures, and additional classifications may be desired by the City.

Figure 1 shows the suggested plan for tracking maintenance and capital expenditures based on the source of funding, existing and suggested stormwater sub-funds and classifications needed for City budgeting and tracking.

## 2. 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=PTIIC OOR\\_CH138UT\\_ARTVIISTDR\\_DIV2FE\\_S138-396DEFE](https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIIC OOR_CH138UT_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=PTIIC OOR\\_CH138UT\\_ARTVIISTDR\\_DIV2FE\\_S138-397MOUSFE](https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIIC OOR_CH138UT_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=PTIIC OOR\\_CH138UT\\_ARTVIISTDR\\_DIV2FE\\_S138-400DIFE](https://www.municode.com/library/co/aurora/codes/code_of_ordinances?nodeId=PTIIC OOR_CH138UT_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.

DRAFT

### 3. APPENDICES

DRAFT