

Stormwater Management Financing Case Study

Fort Collins, Colorado

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Fort Collins is located at the base of the Rocky Mountains between Denver, Colorado and Cheyenne, Wyoming. The city's population is currently approximately 109,000 residents and the area is one of the fastest-growing metropolitan areas in the country. Fort Collins is a historically flood-prone city that experiences intense storms during the summer months. Fort Collins experienced disastrous floods in 1864, 1902, 1904, 1938, 1949, 1951, 1976, 1982, and 1997. The city averages about 14 inches of rain each year and 51 inches of snow.

Stormwater Management History

Fort Collins, Colorado first established a stormwater management program in 1976 while the city was undergoing a period of rapid growth and the region was recovering from a large flood. The 1976 Storm Drainage Ordinance stated that since all real property within a drainage basin benefits from an adequate storm drain system, the costs of the construction of such a system should be borne by the property owners of the basin. The ordinance also established a Storm Drainage Board that would be responsible for the design of a comprehensive drainage program for the city. The Storm Drainage Board established storm design criteria for the City of Fort Collins, divided the city into drainage basins, and completed master plans for each basin. During the development of the comprehensive plan, the city attempted several times to create a special district to address stormwater management and failed.

Utility Creation

The Fort Collins stormwater utility fee was adopted by the Fort Collins City Council in 1980 with the passage of Article VII of the Fort Collins Municipal Code. The new utility fee allowed Fort Collins to consolidate its stormwater management efforts into one department. The department was charged with the operation and maintenance of the city's storm drain system and the development and implementation of a capital improvements program. The stormwater utility fee was vigorously promoted by the Fort Collins City Council. Council members realized that the city's stormwater system was in critical condition. Before the establishment of the stormwater utility fee, there was no staff or funding available to respond to drainage system problems reported by residents and the city was undergoing rapid development without a capital improvements budget that was able to keep up with the city's stormwater management needs. The historic method of financing stormwater improvements through taxes was failing due to competition for general fund money by more visible projects and the stormwater special district initiative had failed enough times to be discarded as a potential funding mechanism. The utility was created in 1980, the first bills were sent out in January 1981, and the program began assessing capital improvement and development fees in 1982.

Stormwater Program Objectives

The Fort Collins stormwater program's objective is to safeguard the health and welfare of the city's residents and their properties by providing stormwater facilities for drainage, flood control, and pollution reduction.

Stormwater Program Responsibilities

The City of Fort Collins Stormwater Department is responsible for the maintenance and repair of the city's storm drain system, improving water quality in the city's twelve basins, and reviewing development plans to ensure that all new construction within the city adheres to the design standards for stormwater and flood control. The department is also responsible for master planning for each of the city's basins, floodplain management, and the design and construction of stormwater capital improvement projects.

Stormwater Program/Utility Organization

The stormwater program is part of the Fort Collins Utilities department that is responsible for the city's light and power, water, wastewater, and stormwater utilities. The stormwater program shares some of its staff with the water and wastewater utilities but each program has its own primary staff and budget. The stormwater program employs approximately 25 full-time equivalent employees.

Rate Structure

The Fort Collins stormwater utility fees are based on the runoff coefficient of the property, the area of the parcel, the drainage basin the parcel is located in, and an onsite detention reduction factor (when applicable). The fee for each parcel is calculated by multiplying the runoff coefficient, the on-site detention reduction factor (when applicable), the basin fee base rate, and the gross area of the parcel.

Basin Fee = (runoff coefficient) x (on-site detention reduction factor) x (basin fee base rate) x (area)

Runoff Coefficients

The runoff coefficient of each parcel is calculated using the percentages of pervious, semi-pervious, and impervious areas of the parcel in the following formula, known as the rational method:

$$C = (\% \text{ impervious area}) \times (0.95\% \text{ pervious area} \times 0.20) + (\% \text{ semi-pervious area} \times 0.50)$$

Impervious areas are those surfaces that do not absorb stormwater including paved surfaces and buildings. Semi-pervious areas are surfaces like gravel that can absorb some stormwater but absorb it slowly. Pervious surfaces are surfaces that absorb stormwater under normal conditions. Pervious surfaces include lawns and undeveloped properties. The runoff coefficients for each

property are categorized by intensity of development into five categories. Each category is assigned a rate factor to use in the calculation of the stormwater utility fee (See Table 1).

Table 1: Fort Collins Development Categories and Rate Factors*

Development Category	Runoff Coefficient Range	Rate Factor
Very light	0- 0.30	0.25
Light	0.31- 0.50	0.40
Moderate	0.51- 0.70	0.60
Heavy	0.71- 0.90	0.80
Very heavy	0.91- 1.00	0.95

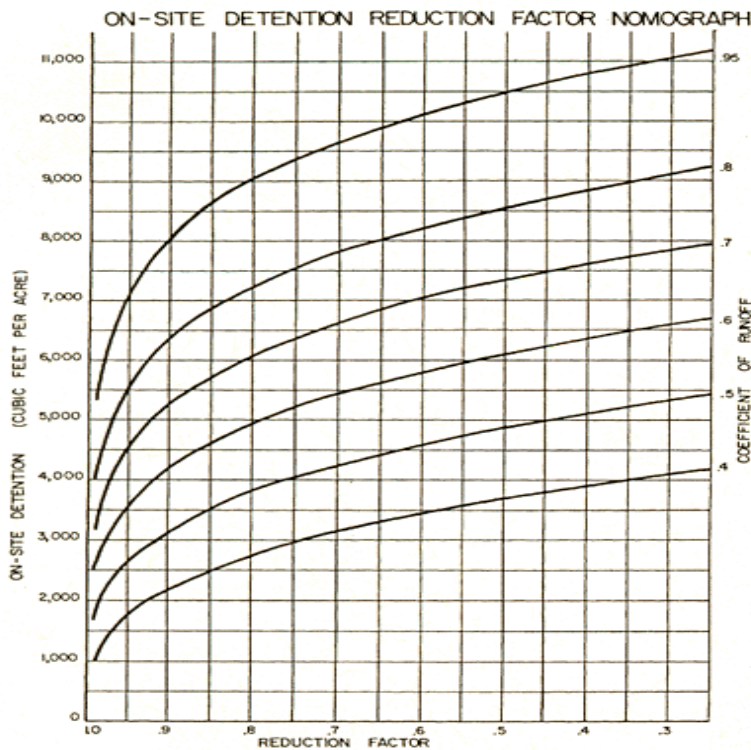
* adapted from Fort Collins Code, Article VII, page 1797

On-Site Detention Reduction Factor

The on-site detention reduction factor allows stormwater utility customers to get a reduction in their monthly stormwater bills by installing on-site stormwater controls. The factor is calculated using a nomograph that uses the volume of stormwater detention provided by the on-site control system and the property's runoff coefficient (See Figure 1). The nomograph was developed using the unique characteristics of the Fort Collins area's drainage basins and the city's design standards for stormwater management. Nomographs for other cities would vary with different topography and design criteria.

Figure 1: Detention/Reduction Factor Nomograph

The following is the nomograph used in this Article:



Parcels that are larger or smaller than those included on the nomograph have their factors calculated by using the following adjustment formula where V^1 is the volume, adjusted for area, of on-site detention provided in cubic feet per acre, V is the volume of on-site detention provided in cubic feet per acre, and A is the area of the parcel. V^1 can then be used in the nomograph to find the appropriate on-site detention reduction factor.

$$V^1 = V(1.2A^{-0.05})$$

Basin Fee Base Rates

Customers in each drainage basin are charged differently based on the needs of their basin as identified by the basin master plans. The basin fees range from a low of \$2,175 per gross acre to \$10,000 per gross acre (See Table 2). Two of the basins, Boxelder Creek and Cooper Slough, do not have base rates at this time.

Table 2: Fort Collins Drainage Basin Base Fees per Gross Acre*

Drainage Basin	Fee per Gross Acre
Foothills	\$6,525
Fox Meadows	\$6,468
McClelland/Mail Creek	\$3,717
Spring Creek	\$2,175
Canal Importation	\$6,181
Dry Creek	\$5,000
West Vine	\$7,004
Evergreen/Greenbriar	\$10,000
Fossil Creek	\$2,274
Old Town	\$4,150
Average	\$5359.40

* adapted from Fort Collins Code, Article VII, page 1795

Base Utility Rates

The stormwater utility fee base rates are currently \$0.0006831 per square foot per month for operations and maintenance and \$0.0012820 per square foot per month for capital improvements. The monthly operations and maintenance fee for each parcel is calculated by multiplying the parcel's area by the runoff coefficient rate factor and the operations and maintenance base rate. The monthly capital improvement fee is calculated by multiplying the parcel's area by the runoff coefficient rate factor and the capital improvements base rate. Single-family parcels with an area of greater than 12,000 square feet have their base rates calculated differently than the other types of parcels. Single-family parcels larger than 12,000 square feet are charged using the above formulas for the first 12,000 square feet and then are charged one-fourth of the regular rate for all square footage above 12,000 square feet (See Example). The minimum base charge for any parcel in the Fort Collins stormwater utility service area is sixty-two cents per month.

Example:

A single-family residential parcel with an area of 14,000 square feet and a runoff coefficient rate factor of 0.40 (light) would pay \$3.42 as the monthly base rate for operations and maintenance and \$6.41 as the monthly base rate for capital improvements.

1) Calculate the base rates for the first 12,000 square feet.

$$\text{O\&M base rate} = 12,000 \text{ ft}^2 \times 0.40 \times \$0.0006831 = \$3.28$$

$$\text{CIP base rate} = 12,000 \text{ ft}^2 \times 0.40 \times \$0.0012820 = \$6.15$$

2) Calculate the base rates for the remaining 2,000 square feet.

$$\text{O\&M remaining base rate} = 2,000 \text{ ft}^2 \times 0.40 \times \$0.0006831 \times 0.25 = \$0.14$$

$$\text{CIP base rate} = 2,000 \text{ ft}^2 \times 0.40 \times \$0.0012820 \times 0.25 = \$0.26$$

3) Add the base rate components together

$$\text{O\&M rate} = \$3.28 + \$0.14 = \$3.42$$

$$\text{CIP rate} = \$6.15 + \$0.26 = \$6.41$$

Development Charges

Developers are responsible for providing stormwater facilities to meet the needs of newly developed parcels as stated in the Fort Collins Code, Article VII, Division 3. Developers will not receive final approval for construction until a construction plan for needed stormwater improvements has been prepared and approved by the city. If the stormwater improvements to be constructed will handle a greater capacity than the development requires, the developer may be reimbursed for the additional costs through a cash repayment or a stormwater fee credit after the completion of the stormwater facilities. The developer reimbursement program allows the city to develop more rapidly since developers do not have to wait for the city to install needed stormwater improvements before construction can commence.

The City of Fort Collins stormwater program also charges development fees to all newly developed parcels or additions in the service area that result in an impervious area greater than 350 square feet. The one-time fee helps to cover the costs of the design and construction of needed stormwater facilities and helps the city obtain needed rights-of-way for the storm drain system. Development fees are assessed based on the basin the parcel is located in, the gross area of the parcel, the percent of the parcel that is covered by impervious surfaces, and the amount of on-site detention or reduction that is provided by the development. The per acre development fees for the twelve drainage basins in the stormwater program's service area range from \$2,175 to \$10,000 depending on the construction needs of each basin (See Table 3). Two of the Fort Collins drainage basins do not charge development fees at this time.

Table 3: Fort Collins Stormwater Utility Development Fees by Basin*

Basin	Development Fee per Acre
Spring Creek	\$2,175
Fossil Creek	\$2,274
McClelland/Mail Creek	\$3,717
Old Town	\$4,150
Dry Creek	\$5,000
Canal Importation	\$6,181
Fox Meadows	\$6,468
Foothills	\$6,525
West Vine	\$7,004
Evergreen/Greenbriar	\$10,000

*adapted from City of Fort Collins web site

Credits and Exemptions

Fort Collins stormwater utility customers are able to obtain on-site detention reduction credits as described above in the rate structure discussion. City streets and railroad rights-of-way are exempt from stormwater charges. Properties that have a total impervious area of less than 350 square feet of the total parcel's area are also exempt from stormwater charges.

Stormwater Program/Utility Budget

The Fort Collins stormwater management program budget for the year 2000 shows revenue of \$5,625,140 from utility fees, \$800,000 from development fees, \$725,000 from earnings on investments, and \$7,250 in miscellaneous revenue (See Table 4). The stormwater utility also issues revenue bonds to pay for larger projects. The utility issued \$19.98 million in revenue bonds in 1999.

Table 4: Fort Collins Stormwater Utility Revenue, 2000 Budget*

Revenue Source	Amount
Monthly User Fees	\$5,625,140
Development Fees	\$800,000
Earnings on Investments	\$725,000
Miscellaneous Revenue	\$7,250
Total	\$7,157,390

*adapted from Bob Smith, personal communication

The Fort Collins stormwater program's largest expenses are related to capital projects. The program budgeted \$2,778,596 for bond principal and interest, \$961,433 for minor capital projects, and \$970,000 for capital projects. The program also spends large portions of its budget on public education, customer service, and personal services (See Table 5).

Table 5: Fort Collins Stormwater Utility Expenses, 2000 Budget*

Expense	Amount
Bond Principal and Interest	\$2,778,596
Capital Projects	\$970,000
Minor Capital Projects	\$961,433
Customer Service and Administration (includes public education)	\$911,647
Personal Services	\$843,194
Other O&M (includes water quality)	\$408,580
Payments to City for Administrative Services	\$183,895
Contingency	\$100,000
Total	\$7,157,345

*adapted from Bob Smith, personal communication

Public Information

The City of Fort Collins stormwater management program maintains a website, sends information concerning the stormwater program to residents, offers presentations to the community, and funds a watershed education program in the area school systems to educate the public about the need for stormwater and flood management. The stormwater program's staff has written articles for local, regional, and national publications concerning the need for stormwater management and flood control. Articles about the Fort Collins stormwater program have been published in professional journals and presented at conferences around the country.

The program sends information to its customers concerning its status in a newsletter that is published by the Utilities Department and sent out with monthly bills. Fort Collins residents have also received pamphlets and brochures outlining the stormwater program's goals and accomplishments. Program staff is available to present information concerning the city's stormwater and flood control efforts to community groups, schools, neighborhood associations, and other local associations that would like to learn more about the city's stormwater management efforts.

The City of Fort Collins stormwater program has information posted on the city's website at <http://www.ci.fort-collins.co.us/UTILITIES/WATER/stormwtr/>. The website explains the need for a comprehensive stormwater management and flood control program in Fort Collins, outlines the goals of the stormwater program, and lists the responsibilities of the program. The website discusses the drainage basin master plans, what the city has done to reduce flood hazards, and how the stormwater program is working to improve water quality. The stormwater program website also lists the development fees for each drainage basin, explains the monthly stormwater service fees, and discusses the operation, maintenance, and capital improvement activities of the department.

Finally, the Fort Collins stormwater utility fee funds a watershed education program in the local elementary schools called WaterSHED. WaterSHED stands for Water Stormwater Habitat Education Development. The WaterSHED program teaches children in kindergarten through sixth grade about the importance of water and how their activities can change the habitats of plants and animals that depend on the community's water supply. The stormwater utility fee

provides a variety of equipment to each elementary school in the local school district and funds an education coordinator who is responsible for the development of outdoor educational activities for the elementary school children and the training of the local teachers who wish to be involved in the program. The stormwater program staff worked closely with state and local educational authorities to make the WaterSHED program consistent with state and local requirements for elementary school science education so that the local teachers could use the program to achieve mandated learning goals by utilizing the program. The stormwater program has also partnered with other area organizations like the city public library and the city's master naturalist volunteer program to provide further opportunities for children and adults to learn about watershed management.