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**City of Baxter, Minnesota
Storm Water Utility
Policy Manual**

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City of Baxter, Minnesota Storm Water Utility Policy Manual

As the City of Baxter continues to develop, the impact of urbanization on the City's storm water infrastructure continues to increase. In an effort to maintain and improve the existing drainage system infrastructure and mitigate the impact of future development, the City of Baxter plans to develop and implement a storm water utility.

Storm Water Program Costs (Budget)

Based upon input of Baxter City Administration, the forecasted 2008 storm water program budget is \$243,100

This budget is making a number of assumptions including that the City of Baxter will become a National Pollutant Discharge Elimination System (NPDES) Community within the next five years. NPDES is the enactment of the Clean Water Act and it requires Minnesota cities over a population of 10,000 persons or those communities on special or concern waters to obtain a NPDES Storm Water Permit. At this moment in time, the costs associated with becoming a NPDES Phase II Community are not included in the Storm Water Budget. This issue will need to be addressed in the year 2008 and the Storm Water Budget (and associated Storm Water Utility Rates) may need to be adjusted.

The City is also assuming a very low dollar estimate for storm water pond maintenance for this 5 year period due the fact that the City has few mature storm water ponds in it's stormwater infrastructure. As new ponds are added to the system from new development, this budget item will need to be reviewed and increased to allow for the increased maintenance costs of those ponds.

Storm Water Utility Revenue

Based on 100% financing of the current Storm Water Budget, the recommended storm water utility fee (or equivalent residential unit-ERU) for each residential household is \$2.10 per month and a rate of \$0.0105 per square foot of impervious surface for commercial parcels.

For this study the City used the data provided from the City of Baxter Utility Department and their Geographic Information System (GIS). The data is based upon current land use as shown in the City's GIS system.

Single-family homes are billed at a flat rate of the "equivalent residential units" or "ERU" of \$2.10 per home. This rate translates to \$0.00336 per square foot of impervious area for the "average" residential unit and \$0.0105 per square foot of imperviousness for the commercial land use. Please see the explanation(s) below on why there is a difference in the residential and commercial rates.

Revenue Estimate Calculations and Revenue Ratio

As discussed in this report, the rate of \$2.10 ERU would cover the City of Baxter's current identified storm water budget items and would generate approximately \$243,100. In the chart below, we show a Residential Rate of \$2.10 per household per month or \$25.20 per year and a rate of \$0.0105/sq. ft of impervious area for commercial properties.

The rationale behind the higher rate per sq. foot of impervious surface of the commercial properties is that these property types have a higher cost to address storm water issues than residential properties. These higher costs include:

1. Curb and Gutter: Commercial parcels in Baxter have a heavy utilization of curb and gutter to handle the large volumes of storm water associated with the large impervious areas (parking lots and large buildings). The use of curb and gutter in residential areas with Baxter is very rare, instead relying on infiltration swales along the roadways.
2. Pollutant Loadings: The pollutant loading from commercial properties is considerably higher than residential and will require additional treatment. The pollutants include:
 - a. Suspended Solids, especially from unpaved (gravel) parking lots
 - b. Oil from automobiles in the parking lots
 - c. Heavy metals and rubber particles from tires, large rooftops, trucks etc.
 - d. Increased storm water loads, both in volume and velocity due to the large paved parking areas and large expanses of rooftops.
 - e. Increased need for maintenance of storm water structures such as curb inlets, catch basins, retention ponds and manholes of sand and debris such as “floatables”.

Example Chart:

Residential						
# of Households	Lot Min. Sq Ft. per Ordinance	% Impervious *	Total of Sq.Ft. Impervious	ERU	Yearly Revenue Residential	Yearly Revenue/Sq.Ft. Impervious
2200	15,000	0.5	16,500,000	\$2.10	\$55,440.00	\$0.00336
* % Impervious was based upon approximately 50% of the residential properties in the City of Baxter with a maximum of 75% impervious per ordinance and 50% of the properties are lakeside and have 25% impervious per ordinance.						
Commercial						
# of Impervious Acres	Conversion Sq Ft/Ac.	Total Sq.Ft.	Rate/Sq. Ft.		Revenue CML	Revenue/Sq. Ft. Impervious
302	43560	13,155,120	\$0.01050		\$138,128.76	\$0.01050
Gross SWU Revenue \$193,568.76						
Credits Allowance \$15,000.00						
Net SWU Revenue \$178,568.76						

Utilizing the Methodology of the Hydrologic Formulas & CN				Ratio
Land Use	Curve Runoff Index (CN)	Retention (inches) (S)	Rainfall = 2" Runoff Depth (inches) (Q)	
R1	74	3.51	0.35	3.1
C11	90	1.11	1.09	
Baxter SWU Ratio 0.3				
Commercial Rate \$0.0105				
Residential Rate \$0.00336				
Note: An ERU of \$2.10 calculates to a rate of \$0.00336 per sq.ft.				
Comparison Revenue Ratios				
Grand Rapids 2.8				
Alexandria 3.3				
Maplewood 3.3				

When comparing the Revenue Ratio of the proposed Baxter SWU rates of commercial to residential we see from the example chart above that the Baxter Ratio is 3.1:1. That means that the commercial properties are paying 3.1 times more per acre than the Residential properties. When we compare the Baxter Revenue Ratio of 3.1 to Grand Rapids, MN (2.8), Alexandria, MN (3.3) and Maplewood, MN (3.3) we see that the Baxter Ratio is consistent. Also supporting this ratio is the Hydrologic Formula Methodology that is often utilized in SWU projects where a standardized Curve Number (CN) is utilized to determine the amount of runoff by land use. The results of this process, yields the same recommendation of a ratio of 3.1 to 1.

The revenue equation follows the Natural Resources Conservation Services (NRCS - previously SCS) storm water runoff methodology outlined in the SCS National Engineering Handbook,” Section 4 - Hydrology (Mockus, 1969).

The general runoff equation is:

$$Q = \frac{(P - 0.2S)^2}{P + 0.8S}$$

- Q = Actual Runoff
- P = Potential Maximum Runoff
- S = Potential Maximum Retention and initial rainfall abstraction

The “S” term can be expressed in terms of the runoff index, or curve number (CN).

$$S = (1000/CN) - 10$$

The Financing Dilemma

The cost of constructing, operating, and maintaining storm water facilities continues to increase along with other municipal costs. In fact, the storm drainage system is often the last and possibly the most expensive public utility for cities to develop due to increased land costs and limited ability to acquire property within the built out sections of the community.

Traditional methods of financing storm water improvements have become more complex in recent years due to these very high costs and increasing State and Federal demands associated with the enactment of the Clean Water Act and the associated National Pollutant Discharge Elimination System (NPDES) program. Faced with increasing costs and continuous pressure to minimize property taxes, cities may lack the financial resources to undertake a multi-year storm water management program.

City general funds and special assessments have typically financed most of the necessary improvements in the past. Consequently, many communities lack the proper funding to address the increasing costs related to storm water drainage, water quality management, and wetland protection.

The storm water utility is an increasingly common funding source that can address the financing dilemma without increasing property taxes. Service charges, which have been used by communities to finance sanitary sewer and water utilities, are now being applied to storm water management (Jouseau, 1983). The storm water utility approach is gaining recognition as the most equitable way to finance storm water management activities (Honchell, 1986) and is in use by dozens of communities around the State.

What is a Storm Water Utility?

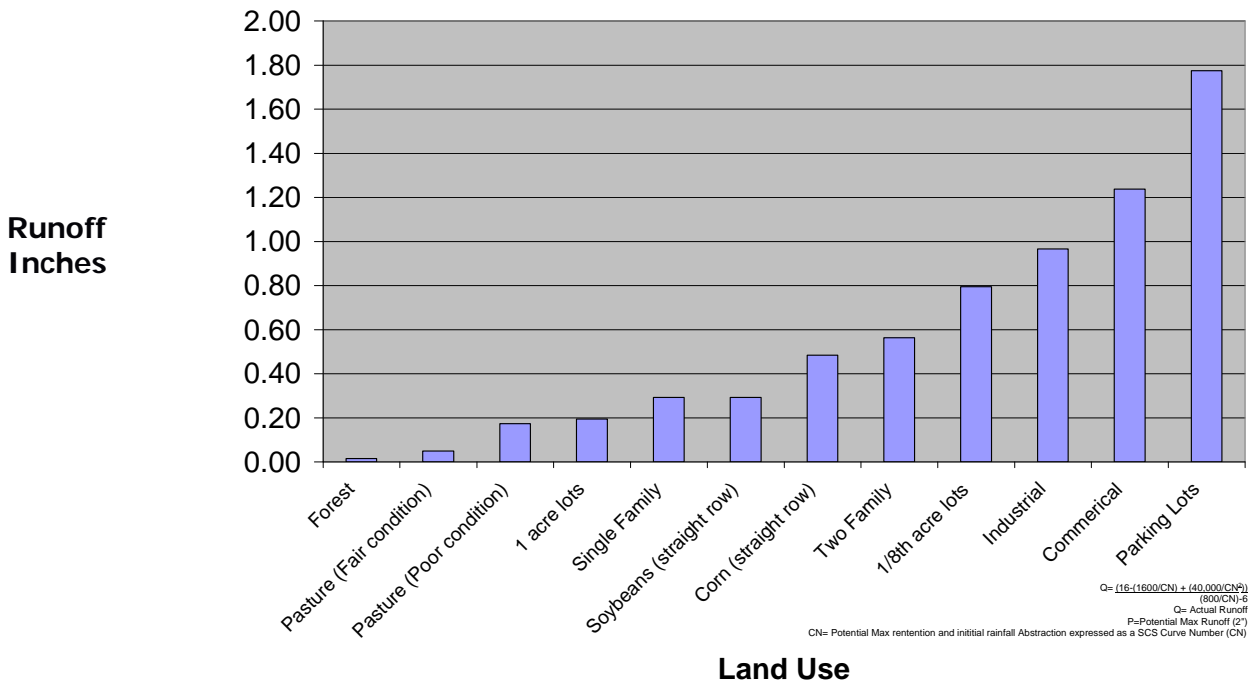
A storm water utility is simply a method of financing the administration, planning, implementation, and maintenance of storm water management programs. This utility does not replace existing funding sources—it complements them.

The storm water utility is a service charge or fee. A storm water utility fee is typically charged against all developed parcels within a City based on the premise of “contributors pay.” Where land is in a natural state, most rain soaks into the ground or is retained in small depressions. Where development has been prevalent, rooftops, driveways, and parking lots prevent rainfall from soaking into the ground. The rain runs off into streets, ditches, ponds and lakes, creating the need for drainage systems and to protect the quality of our water resources.

This consistent, dependable revenue source provides a dedicated fund to manage the drainage system and water quality improvements without increasing property taxes or using assessments. A storm water utility also provides the means to handle the increasing costs through small adjustments in the storm water utility charges.

Rate Structure

The storm water utility approach is based on the concept “contributors pay.” The rate structure is based on land use type, density, parcel size, and the amount of runoff and/or pollution load contributed by a particular parcel. As parcels are developed from *pervious surfaces* (where storm water soaks into the ground) to *impervious surfaces* (where storm water runs off into the storm water system) the amount of storm water contributed to the City’s storm water system increases, thus creating additional expense for the City to manage. These expenses include such items as larger storm water pipes, increased maintenance of storm water drainage infrastructure such as swales, curb inlets, catch basins, retention ponds and manholes.



How Will the Utility Benefit the Community?

The storm water utility benefits the community by providing a dedicated fund for storm water management activities. Benefits associated with storm water management include:

- Flood protection
- Water quality improvements
- Wetland protection
- Erosion and sediment control
- Drainage system construction and maintenance
- Community education
- Improved fish, wildlife, and recreational opportunities

Selecting the Best Option

In evaluating financing options, the following criteria should be considered:

- Fair
- Dependable
- Acceptable
- Simple and Flexible

The storm water utility is favored because it is:

- **Considered fair;** charges are based on the quantity of runoff rather than property value, as is the case with general taxes.
- **It is dependable;** the storm water utility is self-financing. It does not compete with other governmental services for general revenues and it provides consistent funding which is kept in separate dedicated funds. The SWU can also be used for debt services.
- **It is acceptable;** no increase in property tax is required, a regular small service charge is typically more acceptable to residents than a large one-time assessment, and the program is in use around the country.
- **It is simple and flexible;** storm water utility charges are similar to water and sewer charges, the fee system is adaptable to local situations and credits for Best Management Practices (BMPs) can be built in.

Credits

Storm Water Utility fees may be adjusted under the conditions stated below. It shall be the responsibility of the property owner to provide justification for the fee adjustment. The City may at any time modify the Credit Policy and the appropriate application forms to include storm water “Best Management Practices” (BMPs) that the council or the City’s consultant deem appropriate. Consideration for these BMPs should include water quantity and water quality effectiveness and the appropriateness of the BMP for the soils of the parcel.

Storm Water Best Management Practices Credit Policy

Commercial properties that can demonstrate the use of storm water best management practices (such as a storm water pond) that meet the city’s storm water policy are eligible for a credit of 10%, 20% or 30%.

5- Year Storm Event: 10% Credit

10-Year Storm Event: 20% Credit

100-Year Storm Event: 30% Credit

Note: All new commercial properties that are constructed in the City of Baxter must meet the 100-year storm event and therefore maybe eligible for the 30% credit if the 100 year storm event is maintained by the owner on site.

A commercial property stormwater conveyance that discharges to a private regional pond detention system will not be eligible for stormwater credits and a regional pond or storm event BMP will need to be submitted for review by the Public works Director for approval.

Application for the credit is the responsibility of the property owner. Credit applications will be reviewed within 30 days of submission, and credit will be applied within 90 days of application if the application is approved. There will be no retroactive credits.

Adjustment of Fees

Storm Water Utility Fees will be adjusted under the following conditions.

Revision of Storm Water Utility Revenue - the estimated expenditures for the management of storm water (the Storm Water Budget) shall be revised at a frequency determined by City Council. The SWU fees will be adjusted accordingly and will follow established City procedures for this adjustment of utility (water and sewer). The adjustments of the Storm Water Fees are adjusted by policy.

Application for Credit - The City shall establish and utilize a credit application form for consideration of fee reduction. It is the responsibility of the property owner to apply for a credit and no retroactive credits will be granted.

Change in Developed Condition of Parcel - In the case of residential property, the revised utility rate will take effect immediately following occupancy of the dwelling. With all other development, the revised utility rate will be applied as soon as drainage/water quality features are developed.

Impervious Surfaces

Impervious surface coverage is defined by the City of Baxter under ordinance 8-4-3 as:

“IMPERVIOUS. A hard surface area that either prevents or retards the entry of water into the soil. Examples of impervious surfaces include, but are not limited to: roofs, storage areas, walkways, sidewalks, patios, driveways, parking lots, concrete paving, bituminous/asphalt paving, gravel roads or parking areas, and other packed earthen materials.”

This definition is intended to include all surfaces that impede the natural infiltration of stormwater. This definition does not include landscaped areas.

When the City used the aerial photo imagery to determine the amount of impervious surface on a property, we included everything that showed up as impervious and met the definition of “impervious surface” given above. The 2006 Aerial photography to distinguish impervious from pervious surfaces. Compacted soils or graveled areas that have been used as driveways or parking lots, for example, show up in the imagery and are defined as impervious surface. Storage containers or extended eaves or coverings are considered impervious surface.

Compacted soils. Research has shown that highly compacted soils, even for sandy or sandy loam soils like we have in the City of Baxter, can be nearly as impervious as paved surfaces. In many cases, these compacted surfaces are a serious sediment pollution problem.

Soil compaction can largely be prevented during development or redevelopment or it can be restored after development. The NAHB'S Model Green Home Building Guidelines (3) contains several suggestions for preventing compaction. The Natural Resources Conservation Service (4) and Sound Native Plants (5) provide guidance on how to restore compacted soils.

Disputed Impervious Surface Calculations.

Should you feel that the City erred in determining the amount of impervious surface on site, given the definition above, follow the instructions below and complete the attached form. A City staff person will set up a site visit to verify your calculations and concerns.

INSTRUCTIONS

If you believe the City has incorrectly estimated the impervious area on your property, or if you have removed impervious surfaces or restored compacted soil, please measure the area and submit your data to the City of Baxter. If the data is convincing, we will make the appropriate adjustment.

Owners must submit adequate documentation to illustrate the total amount of impervious surface coverage on site after the reduction.

- Should you feel that the original designation made by the City is incorrect, include your calculations of the revised total coverage for City consideration. Include copies of any backup drawings/sketches or construction plans to support your calculations. If you have removed impervious surfaces from your site in a manner that the site remains in compliance with City codes and ordinances, provide the square footage of impervious surfaces removed and a description of the location on the site where they were removed. Include copies of any backup drawings/sketches or construction plans to support your calculations. Land owners must remain in compliance with applicable land use requirements, and may need to obtain a land use permit from the City of Baxter Planning Division prior to removing any impervious surface from their site. If your site has never been disturbed per the City's impervious surface definition, indicate "completely natural state" under the description of the problem.
- If you have restored compacted soils on the site to make them permeable, include the depth of tillage, the amount and type of soil amendments added, the number and type of vegetation planted, and information on any soil infiltration tests performed, along with a description of the location of the restored compacted soils and any other erosion control measures taken. Include copies of any sketches as appropriate.
- Provide any additional comments that you feel are important for your appeal, using the back for additional room as necessary. Include a map or drawing of your site to illustrate your case.

PROCESS

Should you have any questions while preparing your application or in general, please call the Public Works Department at 454-5115. Upon preparing your application packet, send the information to:

City of Baxter
Public Works Department
Attn: Stormwater Utility—Appeals
PO Box 2626
Baxter, MN 56425

Or email: cityhall@baxtermn.gov

City staff will review your information, and will coordinate with you should a confirmation site visit be necessary. Upon making a determination on the appeal, City Stormwater staff will work with City Finance staff to ensure the corrections are made to the bill. Afterwards, City staff will follow-up with the determination and a formal correspondence letter to the applicant when the changes take place. Completed appeals received in calendar year 2007 will have any changes taken place backdated to the July 1, 2007 utility service charge start date. Completed appeals received on January 1, 2008 or thereafter will have any modifications backdated to the date the appeal application was received, and will be refunded as appropriate to that date.

REFERENCES

Pitt, Robert, P.E.* Shen-En Chen, P.E.** and Shirley Clark, P.E.**Compacted Urban Soils Effects on Infiltration and Bioretention Stormwater Control Designs Presented at the 9th International Conference on Urban Drainage. IAHR, IWA, EWRI, and ASCE. Portland, Oregon, September 8-13, 2002.

Center for Watershed Protection, Watershed Protection Techniques, The Compaction of Urban Soils, Article 36 Technical Note #107. 3(2): 661-665, The Practice for Watershed Protection, 2000.

National Association of Home Builders, NAHB's Model Green Home Building Guidelines, www.NAHB.org, 2006.

Natural Resource Conservation Service, Soil Quality-Urban Technical Note No. 2, Urban Soil Compaction.

Sound Native Plants—Restoring compacted soil. (www.soundnativeplants.com), 2007.