

# CITY OF URBANA STORMWATER UTILITY FEE CREDIT AND INCENTIVE MANUAL

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# CITY OF URBANA STORMWATER UTILITY FEE CREDIT AND INCENTIVE MANUAL

## 1 BACKGROUND

On-site stormwater management on private property utilizing green infrastructure and best management practices can reduce peak stormwater flow rates, total stormwater runoff, and stormwater pollution. To acknowledge the impact that on-site stormwater management can have on the City's stormwater management program costs, the City Council instructed the Department of Public Works to develop a system of credits and incentives for the stormwater utility fee.

Credit programs are a process through which a ratepayer can reduce their total stormwater user fee on a recurring basis, while incentives are one-time disbursements. Both programs are designed to promote on-site stormwater management and educational practices that will improve the function of the stormwater management program.

Ratepayers have an opportunity to reduce their stormwater utility fee amount by applying for the incentives and credits that are outlined in this manual. Incentives and credits are available to ratepayers who reduce the impact of the runoff from their properties by such methods as installing sustainable stormwater practices that allow stormwater to infiltrate into the ground. These practices offset the impact of some of the impervious surface on the property by reducing the rate and volume of runoff, and by improving water quality.

This document provides the details of the City of Urbana's stormwater utility fee credit and incentive program.

## 2 DEFINITIONS

The following definitions will assist the applicant understand the references in this manual.

**Applicant** - The property owner (or their agent or legal representative) requesting a stormwater utility fee credit or incentive.

**Best Management Practice (BMP)** - A stormwater control which, when properly installed and maintained, reduces runoff volume, runoff rate, and/or the concentration of typical stormwater pollutants discharged from a property.

**Bioswale** - Landscape elements designed to infiltrate runoff and remove silt and pollution from stormwater. They consist of a swaled drainage course with gently sloped sides and filled with vegetation, compost, mulch and/or riprap. The water's flow path, along with the wide and shallow ditch, is designed to maximize the time water spends in the swale, which aids the trapping of pollutants and silt and infiltration/evapotranspiration.

**Cistern** - A watertight receptacle for holding rainwater. Cisterns range in capacity from a few hundred gallons to thousands of gallons, effectively forming covered reservoirs. The water in cisterns can be used for irrigation or other types of reuse and infiltration practices. Cisterns are

typically gravity fed and capture runoff from surfaces at the same level or higher than the storage, typically from rooftops.

**City** - The City of Urbana, Illinois.

**Credit** - A conditional, recurring reduction in the amount of a stormwater user fee to an individual property based on City approved on-site stormwater volume reduction BMP, runoff rate reduction BMP, water quality BMP, approved stormwater educational program for students, or proof of direct discharge to a stream or creek not maintained by the City.

**Detention Basin (Dry Bottom)** - Privately-owned and maintained stormwater detention basin, constructed for the purpose of mitigating stormwater runoff from a developed site to control the peak discharge rates that is normally a dry basin between storms. Maintained by the property owner.

**Detention Basin (Wet Bottom)** - Privately-owned and maintained stormwater detention basin, constructed for the purpose of mitigating stormwater runoff from a developed site to control the peak discharge rates that normally has a permanent pool of water between storms. Maintained by the property owner.

**Drainage Easement** - The land required for the installation and maintenance of storm drainage facilities.

**Drainage Facilities** - All ditches, channels, conduits, retention-detention systems, tiles, swales, sewers, and other natural or artificial means of draining stormwater from land.

**Drainage System** - Any combination of surface and/or subsurface drainage components that collect, convey, store or treat stormwater runoff. This may include parking lots, streets, driveways and yards that convey storm runoff to a drainage swale, open ditch, or a storm sewer.

**ERU** - Equivalent Residential Unit, used as the basis for determining the stormwater service charge to a parcel. One ERU is Three thousand one hundred (3,100) square feet of impervious area. The number of ERU's attributed to a parcel is determined by dividing the total impervious area (square feet) of the parcel by three thousand one hundred (3,100) and rounding the result to the nearest tenth of an ERU. Rounding is down for fractional ERUs 0.05 or less, up for fractions greater than 0.05.

**Green Roofs** – A roof of a building that is partially or completely covered with vegetation and a growing medium, planted over a waterproof membrane. Green roofs serve several purposes for a building, such as absorbing rainwater, providing insulation, creating a habitat for wildlife, and helping to lower urban air temperatures and combat the heat island effect. There are two types of green roofs: intensive roofs, which are thicker and can support a wider variety of plants but are heavier and require more maintenance, and extensive roofs, which are covered in a light layer of vegetation and are lighter than an intensive green roof.

**Impervious Area** - Areas that prevent or impede the infiltration of stormwater into the soil. Common impervious areas include, but are not limited to; rooftops, sidewalks, walkways, patio areas, paved/gravel driveways, paved/gravel parking lots, paved/gravel storage areas, and permanent awnings.

**Incentive** - Stormwater management program incentives are one-time disbursements to a property owner for “partnering” with the city to achieve a stormwater management objective, such as the installation of a rain garden or rain barrel.

**Infiltration Basin** – A facility constructed within highly permeable soils that provides temporary storage of stormwater runoff. An infiltration basin does not normally have a structural outlet to

discharge runoff from the stormwater quality design storm. Instead, outflow from an infiltration basin is through the surrounding soil.

**Maintenance** – Activities included but not limited to vegetation management, sediment removal, debris removal, and making repairs in a drainage facility or BMP so that it will perform the function for which it was designed and constructed.

**Manufactured BMPs-** A family of BMPs that can be installed as standalone water quality treatments or can be used in conjunction with detention basins to pre-treat the inflow.

**NPDES** - National Pollutant Discharge Elimination System, a United States Environmental Protection Agency program (delegated to the Illinois Environmental Protection Agency) initiated to reduce and eliminate pollutants reaching water bodies of all types.

**Owner** - The owner of land subject to the stormwater user fee.

**Pervious Pavement** – Pervious and permeable pavements are a range of materials and techniques for paving roads, parking lots and pavements that allow the movement of water and air around the paving material. Although some porous paving materials appear nearly **indistinguishable** from traditional nonporous materials, their environmental effects are qualitatively different. Whether pervious concrete, porous asphalt, paving stones or bricks, all these pervious materials allow precipitation to percolate through areas that would traditionally be impervious.

**Property** – Any parcel within the City of Urbana.

**Public Works Department** - The Public Works Department of the City of Urbana, the department that manages the stormwater utility.

**Qualified Professional** –An Illinois-registered Professional Engineer with experience in designing stormwater management BMPs.

**Rain barrels** - Structures designed to intercept and store runoff from rooftops. Typically, a rain barrel is a 55-gallon drum connected to a downspout. The stored water can provide irrigation for a garden or **can be released slowly to a lawn**.

**Rain gardens** - **Shallow depressions planted with native perennial plants that are either located near a downspout or that are in an area that sheds noticeable amounts of rainwater. Rain gardens reduce runoff**, absorb pollutants, and sustain some wildlife.

**Ratepayer** - The owner of land subject to the stormwater user fee.

**Stormwater Utility Fee** - Fee charged to owners of all developed residential and “other properties” within the City, based on impervious area, to fund the management of the stormwater program.

**Swale** - A natural or constructed waterway, usually broad and shallow, covered with erosion - resistant vegetation, used to convey surface water from a property to a stream, lake, detention basin or other outlet.

**Underdrain** - A drainage system below or near the bottom of a stormwater BMP whose purpose is to **dewater** the BMP by providing a connection to the local drainage system.

**Water Quality Detention Basins.** Water quality detention basins are extended wet bottom detention basins that are designed with two control volumes; one control volume is for flood management for the 50-year event as required by City stormwater management regulations, and the other is the water quality volume that is used to treat stormwater runoff prior to discharge from the detention basin.

### **3 STORMWATER UTILITY FEE**

A stormwater utility is different than other utilities in that there is no direct way to measure the “utility use” for each property, such as with a water or electric meter. Under a stormwater utility, the amount of utility use for each property is estimated based on the demand for service of the property. Due to the widely-documented relationship between intensity of development and stormwater runoff, the amount of impervious surfaces that exist on a property are used to estimate runoff potential of the developed property. The rationale behind this is that impervious surfaces don’t allow stormwater to penetrate into the ground and thereby generate more stormwater runoff that drains into the City’s stormwater infrastructure. The larger the impervious area on a property the more stormwater runoff may be generated by the property, which in turn increases demand on the City’s stormwater infrastructure. Examples of impervious surfaces include roof tops, driveways, pavements, walkways or any other hard surface that prevents the infiltration of stormwater into the ground.

It has been determined that the average single family residential property in Urbana has approximately 3,100 square feet of impervious surface on it. This amount is known as an Equivalent Residential Unit (ERU), which becomes the base unit for calculating stormwater utility fees for all properties.

In determining how the fee amount is calculated, the stormwater utility rate structure classifies properties into two general categories. The first category is “single family residential and duplex properties”. The second category includes all “other properties” that are not single family and duplex. Details for each category are provided below.

#### **3.1 Single Family Residential and Duplex Properties**

For single family residential and duplex properties, the stormwater utility fee structure is based on a flat rate as each single family residential and duplex property is assumed to be represented by the average imperviousness, or 1.0 ERU.

#### **3.2 Other Properties**

For all properties in the City that are not single family residential or duplex properties, the amount of the stormwater utility fee is the per month rate per ERU. For example, a property with 10,000 square feet of impervious area would have the following ERUs:

$$\text{Number of ERUs} = 10,000 \text{ square feet} \div 3,100 \text{ square feet} = 3.23 \text{ ERUs} \Rightarrow 3.2 \text{ ERUs}$$

### **4 CREDIT AND INCENTIVE POLICIES**

While serving similar purposes, credits and incentives have fundamental differences. As defined above, credits are recurring discounts against stormwater utility user fees that are granted because the ratepayer meets on-site stormwater management criteria specifically identified as reducing costs to the City’s stormwater management program. The qualifying activities typically provide either a reduction in peak discharge, a reduction in stormwater runoff volume, a water quality benefit, or some combination of the three. Incentives on the other hand are typically one time disbursements that fully or partially compensate a property owner for partnering with the City to achieve a stormwater management objective. Incentive programs are

sometimes available to any property owner, and other times they are open only to single family residential and other properties that may not be eligible to participate in a credit program.

The single family and duplex properties are eligible only for incentives. Credits will not be available to the individual detached single family residential and duplex properties because it is difficult for these individual properties to have a measurable impact on a city’s level and cost of service for stormwater management. Incentive programs that target homeowner control of stormwater runoff using sustainable practices are a reasonable alternative to credit eligibility for those individual ratepayers.

For all other properties, credits and/or incentives may be available.

The following sections provide policies regarding incentives, credits, and the general administration of the City of Urbana’s stormwater utility fee credit and incentive program.

#### 4.1 Incentives

Incentives are available for residential and small business properties in the City of Urbana that install specific types of sustainable stormwater management features. Participation in the credits and incentives programs are mutually exclusive; credits and incentives will not be awarded to the same property. Those properties that are eligible for credits and incentives will have to choose between the two programs. Table 1 summarizes the types of stormwater management features that qualify for incentives and the maximum incentive amounts available.

**Table 1 Maximum Available Stormwater Management Incentives**

Incentive Type	Maximum Amount
Rain Barrel <sup>1</sup>	\$50
Rain Garden <sup>2</sup>	\$250
Runoff Rate Reduction <sup>2,3</sup>	\$250
Runoff Volume Reduction <sup>2,3</sup>	\$250
Runoff Water Quality <sup>2,3</sup>	\$250
<b>Total Incentive Available</b>	<b>\$300</b>

Notes:

- 1) Incentive is limited to two rain barrels per property once every 10 years
- 2) Only one of these practices may earn the \$250 incentive every 10 years
- 3) Incentives are paid for 25% of the stormwater management practice construction cost, up to the indicated maximum amount

The maximum incentive amount available per property is \$300 every 10 years; \$50 for up to 2 rain barrels and \$250 for no more than one of the other types of stormwater management practices shown in Table 1. Properties would be eligible for additional incentives after 10 years had passed from hitting the initial \$300 incentive limit. The \$300 maximum limit would apply to each ten year period of eligibility for a property to receive incentives. Specific guidelines for the incentive program are provided in Section 4.3.



Since funds are limited each year, the incentive payments shall be made only in the order in which they are determined to be eligible.

## 4.2 Credits

The City of Urbana has adopted a credit program policy that has identified a total of 5 categories of credits. These categories include: 1) rate reduction credits; 2) volume reduction credits; 3) water quality credits; 4) direct discharge credits, and 5) education credits. Table 2 summarizes the credits and the applicable credit limit for each category.

**Table 2 Stormwater Utility Fee Credits**

Credit Type	Credit Amount	
	Single Family / Duplex	Other Properties
Runoff Rate Reduction	NA	20% max.
Runoff Volume Reduction	NA	20% max.
Runoff Water Quality	NA	10% max.
Direct Discharge	NA	50% max.
Education	NA	\$5/student, 50% max.

Participation in the credits and incentives programs is mutually exclusive; credits and incentives will not be awarded to the same property. Those properties that are eligible for credits and incentives will have to choose between the two programs.

## 4.3 General Administrative Policies

### 4.3.1 Eligibility for Credits and Incentives

The following policies apply to eligibility for participation in the City of Urbana credit and incentive programs:

- a) The incentive program is available for participation by any property in the City of Urbana that is not participating in the credit program.
- b) Owners of properties other than single family residential or duplex are eligible to apply for rate reduction, volume reduction, water quality, education, or direct discharge credits when qualifying conditions are met.

### 4.3.2 Credit / Incentive Determination

It is the intent of the City to process applications within thirty (30) working days of submittal of a complete and correct application package. Billing adjustments required to implement credits shall be applied retroactively to the date of receipt of the customer's complete application. A pending application for credit shall not constitute a valid reason for non-payment of the currently assessed stormwater utility fee by the customer. If an application is denied, a letter explaining reason(s) for the denial will be provided to the applicant. The applicant has the right to appeal this decision in accord with the procedures outlined in Article VIII of Chapter 24 of the Urbana City Code.

### **4.3.3 Maintenance Required**

All stormwater management facilities require maintenance in order to perform as designed. Stormwater detention facilities are required to be maintained as prescribed in Article III, Section 21-42, Part E (2) of the Urbana Subdivision and Land Development Code. Proof of maintenance is required annually in the form of an annual report submitted to the Public Works Department in accordance with the inspection form included in the stormwater detention facility maintenance agreement. Failure to maintain stormwater management facilities will result in the loss of stormwater utility fee credits.

### **4.3.4 Term of Credit**

All stormwater utility credits must be inspected and approved by Public Works Department Staff annually.

### **4.3.5 Indemnification**

By applying for permission to construct, install, or modify a stormwater management facility or BMP, and by nature of applying for a stormwater utility fee credit, the applicant is hereby legally acknowledging and agreeing to the following:

- a) After completion of the construction, modification, or installation by the Owners and approval by the City, the stormwater management facility or BMP shall remain a privately owned and maintained stormwater management facility /BMP, shall not be regarded as owned by the City, and shall not become a part of the maintenance program of the City. All maintenance responsibility and liability shall be and remain with the Owners, their personal representatives, heirs, grantees, successors and assigns.
- b) Owners, their personal representatives, heirs, grantees, successors and assigns shall indemnify and hold harmless the City, its officers agents and employees from any and all claims, actions, causes of action, judgments, damages, losses, costs, and expenses (including attorney's fees) arising out of or resulting from the construction, modification, installation, maintenance, or operation of the stormwater management facility / BMP.
- c) Owners, their personal representatives, heirs, grantees, successors and assigns acknowledge that credits are not perpetual and that both maintenance of stormwater management facilities and annual reporting of maintenance activities may be required in order to maintain all approved credits.
- d) Participation in the credit or incentive program grants the City and its representatives Right of Entry to inspect and/or monitor the performance of stormwater management facilities.
- e) Once approved, credit shall continue to be applied to the parcel(s) after the transfer of ownership under the same terms and conditions of inspection and continued maintenance of the BMP.

### **4.3.6 Suspended / Terminated Credits**

If the terms of the credit are not met, particularly in regard to annual reporting and maintenance when required, the property owner will be notified and will have 30 days to come into compliance before the credit will be terminated. Once a credit is terminated a complete application must be submitted and approved in order to restore the credit.

#### **4.3.7 Credit Limit**

Because the property owner's stormwater utility fee is based on not only the direct impact of their discharges, but also the common impacts on the citywide system that is used by the entire community, it has been determined that the maximum credit that will be available to any individual property will be 50% of the stormwater utility fee for that property. The 50% maximum may be reached in a number of ways utilizing the five categories of credits.

## **5 INCENTIVE CRITERIA**

Incentives are available to any residential or small business property in the City of Urbana that installs specific types of sustainable stormwater management features. It should be noted that the credit and incentive programs are mutually exclusive and that credits and incentives will not be awarded to the same property. Those properties that are also eligible for credits will have to choose between the two programs.

The following sections describe the requirements for participation in the City of Urbana's stormwater management incentive program.

### **5.1 Incentive Application Process**

The following process should be followed to submit an application for a stormwater management incentive.

- a) Download current Incentive Application Form from the City website or obtain the form from the City of Urbana Public Works Department (706 S. Glover Avenue). Forms included in Appendices.
- b) Prepare Incentive Application Form
- c) Submit form and attachments (if required) to the Public Works Department
- d) City will check to insure submittal is complete and notify applicant
- e) City will review application within 30 working days and notify applicant of incentive determination, including identification of deficiencies if the application is not approved
- f) If the incentive is denied applicant may address identified deficiencies and resubmit a revised application
- g) If an incentive is denied applicant may appeal the determination following guidelines in Article VIII of Chapter of the Urbana City Code

### **5.2 Rain Barrels**

The City will subsidize a purchase of up to two (2) rain barrels per household at \$25/barrel. The rain barrels must be purchased from a pre-approved supplier located in Urbana. The suppliers are identified on the City's website and the rebate is applied at the time of purchase. Eligible property owners may take advantage of this incentive program once every 10 years.

Rain barrels purchased prior to the implementation of the stormwater utility fee on July 1, 2013 are not eligible for this incentive.

### 5.3 Rain Gardens

The City will reimburse qualifying property owners up to \$250 for a rain garden that has a minimum surface area of 100 square feet and has at least 500 square feet of impervious area draining into it. Reimbursement for smaller rain gardens shall be prorated based on the square footage of the rain garden. The minimum rain garden eligible for an incentive shall be 50 square feet.

The rain garden should be designed with a ponding area to capture and infiltrate the runoff from one inch of rainfall on the contributory impervious area within 24 hours. The property owner will need to determine whether or not soil amendments are necessary in order for the water to infiltrate in 24 hours.

The City will pay the incentive to the property owner after construction has been completed and the construction has been inspected and approved by the City.

If an incentive is granted for a rain garden no other incentive, other than the rain barrel incentive is available to the property for 10 years.

### 5.4 Other Incentives

Eligible properties in the City may apply for incentives for installing and/or implementing activities that provide either a reduction in peak discharge, a reduction in stormwater runoff volume, a water quality benefit, or some combination of the three. The property owner is required to submit a plan to the City for review and approval prior to construction or installation of the stormwater management practice or facility. The amount of the incentive will be 25% of the construction cost for the activity up to a maximum incentive of \$250. The City will pay the incentive to the property owner after construction has been completed and the installation has been inspected and approved by the City. All costs for the construction of the stormwater management feature(s) must be documented and submitted to the City before payment of the incentive. Table 3 lists some typical stormwater features that would qualify for incentive payments under this section.

**Table 3 Other Stormwater Features That Qualify for Incentives**

<b>Stormwater Management Activity</b>	<b>Incentive Category</b>
Permeable Pavement	Peak Discharge/ Water Quality
Cistern	Volume Reduction
Green Roof	Volume Reduction/ Peak Discharge /Water Quality
Bioswale/Rain Garden	Peak Discharge/Volume Reduction/Water Quality
Detention Basins	Peak Discharge/ Water Quality
Manufactured BMPs	Peak Discharge/Volume Reduction/Water Quality
Infiltration Basins	Peak Discharge/Volume Reduction/Water Quality

These incentives are earned individually. The property owner may earn up to a \$250 maximum incentive for installing one of the stormwater management practices identified in Table 3. The maximum incentive amount that a property owner is eligible to receive for practices described in this section or for a rain garden is \$250 every 10 years (does not include the rain barrel incentive).

Incentives are subject to the following: 1) the stormwater management feature must treat the runoff from a minimum of 500 square feet of impervious area; 2) the amount of the incentive is 25% of the construction cost, up to a maximum incentive of \$250, and; 3) each property is eligible for no more than one incentive disbursement for either a rain garden or Table 3 activity every 10 years.

Eligible construction costs for calculation of the incentive payment must be directly related to the costs associated with the stormwater management feature. Stormwater features constructed for new homes are eligible for the incentives.

## **6 CREDIT CRITERIA**

The City of Urbana has adopted a credit program policy that has identified a total of 5 categories of credits. These categories include: 1) rate reduction credits; 2) volume reduction credits; 3) water quality credits; 4) direct discharge credits, and 5) education credits. It should be noted that single family residential and duplex properties are not eligible for credits. In the following sections the credits available to properties in Urbana are discussed, including the specifics of how to apply for the credits.

### **6.1 Credit Application Process**

The following process should be followed to submit an application for a stormwater utility fee credit.

- a) Download current credit application forms from City website or obtain the form from the City of Urbana Public Works Department (706 S. Glover Avenue). Form provided in Appendices.
- b) Prepare general credit application form.
- c) Prepare credit-specific application form(s).
- d) Prepare or locate required site drainage plan showing topography, drainage patterns, and contributing area to each stormwater management structure
- e) Prepare technical calculations required to determine applicability of credit(s)
- f) Obtain appropriate signatures on forms
- g) Submit forms and required attachments to the Public Works Department.
- h) City will check to insure submittal is complete and notify the applicant
- i) City will review application within 30 working days and notify the applicant of credit determination, including identification of deficiencies if the application is not approved
- j) If credit is denied applicant may address identified deficiencies and resubmit the revised application
- k) If credit is denied applicant may appeal the determination following guidelines in Section 24-204 of the Urbana City Code

The process may vary depending on the type of credit being applied for. Specific criteria are provided in the following sections.

## **6.2 Rate Reduction Credit (Maximum 20%)**

A rate reduction credit is available to properties that install and maintain stormwater rate reduction devices that control stormwater flow rates from sites to a level that is lower than what is required by the City stormwater management regulations. To qualify for this credit the property owner must design the basin, device, or BMP to control both the runoff from a 100-year rainfall event and the runoff for smaller, more frequent events. The property owner is required to submit a plan for the rate reduction stormwater management device to the Public Works Department for review and approval. The property owner's plan must be prepared and certified by a professional engineer registered in the State of Illinois with stormwater management experience. The rate reduction achieved by the stormwater management device must meet or exceed the requirements of the City's stormwater management regulations as established in the Urbana Subdivision and Land Development Code. The rate reduction device or BMP can earn up to a maximum credit of 20 percent depending on the reduction of flow rate for the specified design storms. In order to achieve the full 20% credit the rate reduction device or BMP, 100% of the site or property area must be tributary to the device or BMP. A prorated credit is available based on the percentage of total site area that is tributary to the device or BMP.

The City will apply the credit after the City approved rate reduction plan has been constructed and inspected and approved by the City.

To qualify for the Rate Reduction Credit a pond or other stormwater management facility must control runoff from the 100-year and first flush events as described in the following sections.

### **6.2.1 100-year storm discharge**

The discharge from the stormwater management facility resulting from the 100-year design storm must be controlled to the pre-development discharge rate for a 5-year design storm.

### **6.2.2 First flush rainfall discharge**

To qualify to receive the Rate Reduction Credit the property owner must also control the runoff from small frequent storm events. The first flush storm event has been chosen for this purpose. The first flush storm for Urbana is estimated to be a 1.0 inch storm. The storm volume must be released over a 24 – 48 hour period. The property owner's engineer must provide calculations that show the runoff volume from the first flush rainfall event will be managed in the stormwater management facility. The calculations must be accompanied by the output from pond routing as is required by Article III, Section 21-42, Part C (5 & 6) of the Urbana Subdivision and Land Development Code.

The total runoff volume from the first flush storm can be calculated as follows:

$$V_{ff} = 3,630 * C * A$$

Where:

$V_{ff}$  = First flush volume, post-development (in cubic feet)

C = Post-development runoff coefficient

A = Site drainage area (in acres)

Runoff rate reductions achieved using this methodology may also qualify for the Water Quality Credit (see Section 6.4).

### **6.2.3 Permeable Pavement**

To qualify for the Rate Reduction Credit the permeable pavement must meet the first flush requirements of Section 6.2.2.

The credit may be prorated based on the fraction of 1 inch of rainfall that moves through the pavement and on the fraction of the total impervious area of the property.

Permeable pavement system must be designed with an under drain system.

### **6.2.4 Rate Reduction Credit Application Process**

To receive this credit the applicant must provide the following information:

- a) A completed general credit application form
- b) A completed rate reduction credit application form
- c) A copy of the site drainage plan, showing drainage areas tributary to the detention basin
- d) Copies of technical calculations showing the computation of the design capacity of the detention basin or other qualifying stormwater management facility
- e) Copies of detention basin modeling output for the appropriate runoff volumes, outlet discharge rates, and retention times
- f) Design drawings

To qualify to receive the maximum 20 percent Rate Reduction Credit, the stormwater management facility must meet the criteria of Sections 6.2.1 and 6.2.2 of this manual. The property owner's designer must show that the stormwater management facility is properly designed to reduce the runoff rate for first flush, 50-year, and 100-year rainfall events for the entire contributing drainage area, including any offsite areas. To confirm that this criteria was met for an existing detention basin, calculations, based on the criteria in Article III, Section 21-42, Part C (6) of the Urbana Subdivision and Land Development Code, must be provided. Built out conditions must be assumed for the entire contributing areas.

### **6.3 Volume Reduction Credit (Maximum 20%)**

Volume reduction credits are available for those activities that reduce the total volume of runoff from a property. A volume reduction credit requires the implementation of a stormwater infiltration or reuse practice. Many of these practices are also referred to as rainfall or stormwater harvesting practices, as rather than allowing the rainfall to simply runoff into a drainage system or receiving water body, the rainfall or runoff is intercepted and stored for a beneficial use, such as irrigation of lawns or plantings, or for non-potable uses such as toilet flushing.

Volume reduction practices can earn up to a 20 percent credit, depending on the fraction of the total impervious area served and the equivalent depth of rainwater or runoff that is either infiltrated or reused. The full 20 percent credit will be issued to all volume reduction practices that capture and store a 1-inch rainfall from the entire impervious area present on a property. For volume reduction practices that capture and store less than a 1-inch of rainfall from the

entire impervious area on a property, credit will be prorated based on the fraction of rainfall, as shown on Table 4, and the fraction of the total impervious area on the property that drains into the volume reduction device.

**Table 4 Rainfall Proration Table**

Rainfall Depth	Proration
0.00 – 0.19	0%
0.20 – 0.39	20%
0.40 – 0.59	40%
0.60 – 0.79	60%
0.80 – 0.99	80%
1.00 & over	100%

Volume reduction practices also provide a water quality benefit. A practice designed to capture 1.0 inch of rainfall in Urbana, Illinois will capture almost all of the runoff for 90% of the annual rainfall events, meaning 100% capture of suspended and many dissolved stormwater pollutants for most events, and a significant capture and removal for events exceeding 1.0 inches of rainfall. Therefore, a Volume Reduction Credit in all likelihood will also qualify for at least a partial Water Quality Credit.

Stormwater controls that are constructed with underdrains do not qualify for this credit.

Stormwater controls must be drained within 72 hours to qualify for a Volume Reduction Credit.

The following sections define a variety of rainfall harvesting and reuse techniques that would qualify for a Volume Reduction Credit. The City is willing to consider other techniques not listed here for Volume Reduction Credits.

### **6.3.1 Cisterns**

The Volume Reduction Credit for a cistern requires that the cistern capture and store 1 inch of rainfall from the impervious area contributing runoff. The credit may be prorated based on the fraction of the total impervious area of the property that provides water to the cistern and the fraction of rainfall depth that can be stored. The volume reduction plan must explain how the captured rainwater will be used so as to empty the stored water within 72 hours.

### **6.3.2 Green Roofs**

The Volume Reduction Credit for a green roof requires the roof to capture and infiltrate 1 inch of rainfall. The credit may be prorated based on the fraction of 1 inch of rainfall that is retained and on the fraction of the total impervious area of the property that the green roof represents.

### **6.3.3 Infiltration Basins and Bioswales**

The Volume Reduction Credit for an infiltration basin or bioswale requires the basin or bioswale to capture and infiltrate 1 inch of rainfall. The credit may be prorated based on the fraction of 1 inch of rainfall that is retained and on the fraction of the total impervious area of the property that the basin or bioswale captures.



#### 6.3.4 Volume Reduction Credit Application Process

To qualify for the Volume Reduction Credit, the property owner would need to submit their volume reduction plan to the City for review and approval. The property owner's plan must be prepared and certified by a professional engineer registered in the State of Illinois with experience in stormwater management. The City would apply the credit after the approved volume reduction plan has been constructed and inspected by the City.

To receive this credit the applicant must provide the following information:

- a) A completed general credit application form
- b) A completed volume reduction credit application form
- c) A copy of the site drainage plan, showing drainage areas tributary to the volume reduction control(s)
- d) A copy of calculations of the impervious areas of the site and of the contributing drainage area to each volume reduction control
- e) Copies of technical calculations showing the computation of the design capacity of the volume reduction control(s)
- f) Design drawings

#### 6.4 Water Quality Credit (Maximum 10%)

Properties that provide measures to improve the quality of stormwater runoff that leaves the property may be eligible to receive a Water Quality Credit. For those properties that are granted either a rate or volume reduction credit, the Water Quality Credit may be added to those credits.

A credit may be provided to those applicants' properties that discharge a portion or all of their impervious area runoff to structural or non-structural best management practices (BMPs). The water quality credit will be granted if the applicant can demonstrate that the BMPs are designed to provide a minimum of 75 percent reduction in total suspended solids (TSS) in the stormwater runoff, as measured on an annual basis. Engineering calculations and, if applicable, vendor specifications for manufactured BMPs shall be submitted to demonstrate the minimum 75 percent TSS removal efficiency of the BMPs.

The maximum amount of Water Quality Credit that will be provided is 10 percent. The final credit can be prorated based on the fraction of the total impervious surfaces on site that flows through the BMP.

To qualify for the Water Quality Credit, the property owner is required to submit their water quality plan to the City for review and approval. The property owner's plan must be prepared and certified by a professional engineer registered in the State of Illinois with stormwater management experience. The City will apply the credit after the approved water quality plan has been constructed and inspected by the City.

The following sections define a variety of BMP's that qualify for Water Quality Credits. The City is willing to consider other techniques that are not listed that can demonstrate the ability to achieve 75 percent total suspended solids removal from the runoff.

- a) *Water Quality Detention Basins.* Water quality detention basins are efficient at sediment removal and for that reason their design often includes a pretreatment area (forebay) or device that promotes sediment removal in an area of the detention basin that can easily be cleaned. The water quality storage volume is typically computed based on the volume of runoff generated by the "first flush" depth of runoff, assumed to be 1.0 inches

in Urbana. The water quality, or first flush volume can be computed by the following equation

$$V_{ff} = 3,630 * C * A$$

Where:

$V_{ff}$  = First flush volume, post-development (in cubic feet)

C = Post-development runoff coefficient

A = Drainage area tributary to detention basin (in acres)

In order to qualify for the maximum 10 percent credit, water quality detention basins must be designed to the  $V_{ff}$  volume for the entire property and must demonstrate a 75 percent removal of TSS.

- b) *Bioswales*. The water's flow path, along with the wide and shallow ditch, shall be designed to maximize the time water spends in the swale, which aids the trapping of pollutants and silt. Biological factors also contribute to the breakdown of certain pollutants. A common application of vegetated swales is around parking lots, where substantial automotive pollution is collected by the paving and then flushed by rain. The bioswale, or other type of biofilter, wraps around the parking lot and treats the runoff before releasing it to the storm sewer.

In order to qualify for the maximum 10 percent credit, bioswales must be designed to collect and treat a 1-inch rainfall from all of the total impervious area on a property. Partial credits are available based on the fraction of total impervious area on the property served by the bioswales.

- c) *Manufactured BMPs*. Some of these devices are considered hydro-dynamic separation units, others use micro-screening techniques, and others provide biofiltration in a closed environment. Manufactured BMPs qualify for the Water Quality Credit if properly sized to remove 75 percent TSS.

In order to qualify for the maximum 10 percent credit, a manufactured BMP must be designed to collect and treat a 1-inch rainfall. Partial credits are available based on the fraction of total impervious area on the property served by the manufactured BMP. The BMP must treat runoff from at 20 percent of the total impervious area on a property to be considered for this credit.

To receive this credit the applicant must provide the following information:

- a) A completed general credit application form
- b) A completed water quality application form
- c) A copy of the site drainage plan, showing drainage areas tributary to the water quality BMP
- d) Copies of technical calculations showing the computation of the water quality storage required
- e) A copy of calculations of the impervious areas of the site and of the contributing drainage area
- f) Copies of detention basin modeling output for the appropriate runoff volumes and retention times for water quality detention basins
- g) Design drawings if retrofit or new construction

## 6.5 Educational Credits (up to 50%)

This credit is only applicable to local K-12 education institutions. National studies have shown that programs targeted at these students can be very effective at spreading the messages throughout a household.

1. The City will provide a credit to educational institutions on an annual basis at a rate of \$5.00 per student for providing instruction in accordance with an approved curriculum. Education credits are based on the number of students actually participating in the education curriculum in a school year. There are numerous water quality-based education programs that may be adopted by local school systems. The curricula for which credit applications are to be submitted must be approved by the City, whether it is a nationally accepted program or a program written by the institution. Examples of qualifying curricula are available at the websites of the United States Environmental Protection Agency (<http://cfpub.epa.gov/npdes/stormwater/menuofbmps/index.cfm?action=browse&Rbutton=detail&bmp=8&minmeasure=1>) and American Cities Foundation (<http://www.amcities.org/files/learning-stormwater.pdf>)

To remain eligible for this credit, the applicant shall, on an annual basis, provide a copy of the lesson plan(s), demonstrate that the lesson plan(s) is (are) consistent with the educational content deemed appropriate by the U.S. EPA for stormwater education, and provide documentation of the number of students taught that year. This credit is limited to the number of children enrolled in the applicant's school and in the target audience grade at the time of the application

To receive this credit the applicant must provide the following information:

- a) A completed general credit application form
- b) A completed education credit application form
- c) A copy of the proposed curriculum and identifying the target audience (i.e.; 5<sup>th</sup> graders)

## 6.6 Direct Discharge Credit (up to 50%)

Properties that discharge directly to stormwater facilities or conveyances that are not maintained by the City and that do not eventually re-enter City-maintained drainage systems or streams, exert a lower demand for service on the City's stormwater program than do properties whose runoff must be accommodated by drainage system capacity, planning, and floodplain management. In recognition of that reduction in demand, the City will provide up to a 50 percent credit to those qualifying properties.

Credit amounts are based on the amount of area that does not directly discharge into City stormwater infrastructure. For properties that partially drain into City infrastructure, a prorated credit amount will be determined based the area that does not directly discharge into City stormwater infrastructure.

To receive this credit, the applicant must submit site plans for the property demonstrating which portion(s) of the parcel qualify for this credit and the credit will be prorated accordingly. This credit is not available for single family or duplex properties. The Saline Branch, McCullough

Creek, and Saint Joseph Drainage District Ditch east of High Cross Road are the creeks or streams not maintained by the City.

To receive this credit the applicant must provide the following information:

- a) A completed general credit application form
- b) A completed direct discharge credit application form
- c) A copy of the site drainage plan, showing delineated drainage areas that discharge to receiving waters outside the City of Urbana and all of the impervious area on the property
- d) A copy of calculations of the impervious areas of the entire property and of the non-contributing drainage area

## 7 EXAMPLES

The following example applications of the City of Urbana Stormwater Utility Credit and Incentive Manual are intended to provide guidance on the process of determining and applying for credits and incentives. The examples are not intended to cover all possibilities for credit applications. Any questions or uncertainties should be addressed to the Stormwater Coordinator at the City of Urbana Public Works Department for answers. These examples are fictitious and any resemblance to actual situations is merely coincidental. The following credit and incentive scenarios are reviewed:

- Rain Garden Incentive – single family residential property
- Runoff Volume Reduction Incentive / credit – small business property
- Runoff Rate Reduction – commercial site
- Water Quality / BMP Credit - big box site
- Direct Discharge Credit – mini-storage facility

### 7.1 Example 1. Rain Garden Incentive

A homeowner decides to build a rain garden as part of a front yard landscaping project. The house has 2,000 square feet of roof evenly distributed between front and back. There is a downspout on each corner of the house. The homeowner can build either a single rain garden to capture the runoff from one downspout, thus having a contributing area of 500 square feet (1/4 of the roof area), or may have a rain garden for each of the front yard downspouts fed by the runoff from 1,000 square feet of roof top, or she may have a single rain garden that captures the runoff from both downspouts. She decides to build a single rain garden that will capture the runoff from the entire front side of the house.

In the design the homeowner reports that she has evaluated the soils and determined that she will have to amend them to increase the infiltration in the rain garden. The homeowner decides that she will design the rain garden to have a 5 inch ponding depth. She calculates the size of the rain garden to be:

$$\begin{aligned}\text{Rain Garden Area} &= \text{Contributing Area} / \text{Ponding Depth} \\ &= 1,000 / 5 \\ &= 200\end{aligned}$$

Where: Areas are in square feet  
Ponding depth is in inches

On a drawing of her front yard she approximates the shape of the garden as 10 feet wide by 20 feet long, running parallel to the house and located slightly further from the foundation of the house than the minimum distance of 10 feet. She develops a planting plan with the assistance of a local nursery utilizing predominantly native plants.

The Incentive Application Form, including the Rain Garden Incentive section is completed and submitted along with the rain garden plan for consideration by the City of Urbana Public Works Department. Once approval is received from Public Works the homeowner can install the rain garden. When the rain garden is complete the homeowner should notify the Public Works Department the installation is confirmed the incentive disbursement will be approved.

## 7.2 Example 2. Runoff Volume Reduction Incentive / Credit

A local florist has decided to capture and reuse rainwater from a portion of the roof on the shop. The shop is on a half-acre lot. The total impervious area is 20,000 square feet, which is 6.5 ERUs. The portion of the roof from which the rainwater will be harvested is calculated to be 1200 square feet. The owner decides that an above ground cistern is the best solution since the property is built out and cost is a concern.

The criteria to qualify for the incentive are capturing and reducing the volume of a 1 inch rainfall event and that the contributing area be at least 500 square feet. The calculations for the cistern are as follows:

$$\begin{aligned} \text{Volume} &= 7.48 \times \text{Contributing Area} \times \text{Rainfall Depth} / 12 \\ &= 7.48 \times 1200 \times 1 / 12 \\ &= 748 \text{ gallons} \end{aligned}$$

Where: Areas are in square feet  
Rainfall depth is in inches  
Volume is in gallons  
7.48 = conversion factor for cubic feet to gallons  
1 / 12 = conversion factor for inches to feet

A volume reduction plan is developed that details how the captured water volume will be utilized within a 72 hour period so as to maximize the rainfall harvesting capacity of the cistern.

The costs are estimated as:

Tank (750 gal)	\$700
Pump and piping	\$200
Tank stand	\$100
Delivery and setup	\$100
<b>Total cost</b>	<b>\$1,100</b>

The analysis of whether to apply for credit an incentive is next. For the incentive approach 25% of the project cost is \$275, so the incentive would be the maximum, or \$250.

For a credit the area would be prorated by dividing 1,200 square feet of rooftop by the total site impervious area of 20,000 square feet. The proration factor would be 6%. The maximum credit is 20%, therefore the credit for 6% of the impervious area would be 1.2%. At a rate of \$4.94 per month per ERU, the monthly charge to the property would be \$32.11. The credit for the cistern would be \$0.39 per month, or \$4.68 a year. The 10 year credit would be \$46.80 as compared to \$250 for the incentive, so the decision of the shop owner would be to apply for the incentive.

### **7.3 Example 3. Runoff Rate Reduction Credit**

A local property management firm is the owner / operator of a large commercial development in Southeast Urbana. When the property was first developed a large detention basin was built to comply with local regulations. Because of the amount of impervious area that would be built on the site and the proximity of the site to a portion of the City's stormwater drainage system that is already at or near capacity, the developer designed and built the basin with excess storage that would provide control of events larger than the design rainfall. The property owner believes that the additional storage he provided in the detention basin may be capable of controlling the runoff rate of the 100-year storm and has decided retain a qualified professional and apply for the Rate Reduction Credit.

To qualify for this credit the qualified professional must review the detention basin's design and determine the volume of detention storage that would be required to control the discharge rate for the 100-year rainfall event. The discharge rate would be limited to the discharge rate of an uncontrolled 5-year storm event. If the amount of excess detention storage that has been provided is at least as large as the volume required for the 100-year design storm the engineer will design modifications to the outlet structure that would allow the discharge rate of the 100 year storm and the first flush (1.00 inch) rainfall to be properly controlled and the property would qualify for the Rate Reduction Credit. If the excess storage is not large enough a valuation will need to be made of the practicality of retrofitting the storage volume of the pond to satisfy these requirements.

When the general credit application and rate reduction credit application forms are completed and certified they will be submitted to the City of Urbana Public Works Department accompanied by a copy of the required maintenance report.

### **7.4 Example 4. Water Quality Credit**

A big box development in Southeast Urbana has a detention basin that was built to the City's current standards. The basin captures the runoff from 20 acres of building rooftop and pavement. The basin has a surface area of 1 acre and was not designed to provide any storage above that required for permitting. The owner is interested in finding out whether the basin can cost effectively be modified to qualify for credits. A qualified professional has been retained to evaluate the feasibility of retrofitting the basin so that it would qualify for the Water Quality Credit.

After reviewing the information from the design and construction of the existing detention basin the evaluation for the Water Quality Credit is performed. With the entire 20 acres of impervious surface on the site contributing runoff to the detention basin, the water quality storage volume, or first flush storage volume that would need to be added to the detention basin is calculated as:

$$\begin{aligned}V_{ff} &= 3,630 * C * A \\ &= 3,630 * 0.95 * 20 \\ &= 68,970 \text{ cubic feet}\end{aligned}$$

where the runoff coefficient, "C", is assumed as 0.95

In order to accommodate the addition of 69,000 cubic feet of storage the pond would need to be enlarged by:

- a) increasing its footprint,
- b) by increasing the depth – in this case by 1.6 feet, or
- c) some combination of a & b.

In addition, the outlet would need to be modified to insure the proper retention time for the water quality volume and a maintenance plan would need to be developed for periodic removal of accumulated sediment. The qualified professional next prepares a cost/benefit analysis of the retrofit costs and the cost recovery through credits.

An alternative method of total suspended solids control could be provided by installing flow-through manufactured BMPs at the inlet(s) to the basin. As in the example above, the appropriate sized unit must be determined for each detention basin inlet and the total retrofit cost calculated and compared to the cost recovery through credits to determine the feasibility of this option.

If the owner elects to retrofit the detention basin as described in the two options above it would qualify for the entire 10 percent Water Quality Credit because all of the site's impervious areas discharge to the detention basin.

The submittal for this credit based on the detention basin retrofit includes the completed and certified General Credit Application and Water Quality Credit Forms, the model results, and the design for the outlet retrofit. If the manufactured BMP alternative is proposed the submittal would require the completed and certified General Credit Application and Water Quality Credit Forms, the BMP sizing results, and the design for the inlet retrofit(s).

## **7.5 Example 5. Direct Discharge Credit**

ABC Mini Storage has built a facility in Northeast Urbana that discharges directly out of the city to the Saline Branch. The facility has a 20,000 square foot building and approximately 16,000 square feet of paved area and sidewalks.

After examining topographic maps the owners feel that they may be eligible for a Direct Discharge Credit of up to 50% for a portion of their property and decide to hire a qualified professional to prepare a Direct Discharge Credit Application.

The first step for the qualified professional is to confirm that the property qualifies for the credit. The professional reviews maps showing the topography, drainage, and the City's corporate boundaries in the immediate vicinity and downstream of the owners' property. It is determined that the runoff from a portion of the property does indeed discharge outside the city limits without entering any city owned or operated drainage infrastructure.

The qualified professional next delineates the impervious surface areas on the site and determines which portions of those areas directly discharge away from the city's drainage infrastructure. The qualified professional should obtain the impervious surface coverage from the City and update the information to reflect any recent changes. The impervious surfaces should then be overlaid on the topographic map of the site to determine which surfaces drain to / away from the city's storm drainage infrastructure. This information may already exist in a site drainage plan. Upon completion of the map investigations the qualified professional determines that 17,000 square feet of the building and 8,000 square feet of the paved areas discharge directly outside of the City limits. The available credit would be calculated as 25,000 square feet divided by 36,000 square feet (69.4 percent) times the maximum available credit of 50 percent, or an available credit of 34.7 percent.

The submittal for this credit includes the completed and certified General Credit Application and Direct Discharge Credit Forms, and the delineated impervious areas on topographic maps.

## **8 FORMS**

Application forms for participation in the City of Urbana's Stormwater Utility Fee Credit and Incentive Program are provided on the following pages. If there are any questions related to the content of the forms or process for completion and submittal to the City please call the City of Urbana Public Works Department (217- 384-2342) and ask for the Stormwater Coordinator.