

## **City of Ottawa, Kansas Storm Water Management Policy**

### **1.0 Introduction**

The Storm Water Management Criteria contained in this policy sets forth the minimum technical criteria for the analysis and design of Storm Water Detention Facilities in Ottawa, Kansas. The purpose and intent of these criteria are to provide for the proper design of storm water appurtenances and to enhance the harmonious development of the City.

### **1.1 Applicability**

These criteria are applicable to all residential, commercial and industrial development. Storm Water Detention Facilities shall be required where hydraulic calculations indicate an increase in storm water runoff due to proposed development.

### **2.0 Determining the Need for Detention**

An engineering study as outlined in section 6 of these criteria will be required for all locations to determine the impact of the proposed development on the existing drainage system and the need for detention. The study shall be submitted to the City with the preliminary plat or site plan for proposed development. The timing of the submittal will be determined by the City depending upon the scope and nature of the project. The City encourages as few detention facilities as possible in order to meet the requirements of this policy. The study shall be prepared under the direct supervision of a professionally licensed engineer.

### **2.1 Exceptions Requiring a Study**

- A) Detention will not be required when the engineering study indicates that construction of a detention facility will increase the downstream system's peak discharge by delaying the peak from the proposed development so that it coincides with the peak discharge from upstream area.
- B) Detention will not be required where site discharge occurs within the limits of the Special Flood Hazard Area inundated by the one percent annual chance (100-year) flood as defined by the Federal Insurance Study current at the time the development is proposed.
- C) Requirements may be waived if the drainage study, provided by the Developer and prepared by a registered professional engineer, quantifies the problems and adequately demonstrates to the City Engineer that a waiver of a specific requirement is appropriate.

### **2.2 Exceptions not requiring an Engineering Study or Detention Facility**

- A) Detention will not be required for additions to, improvement and repair of existing single family and duplex dwellings.
- B) Detention will not be required for developments of less than one-half acre.
- C) Detention will not be required for modifications to sites that result in an increase of less than 10% in impervious area. This one time allowance may not be applied to multi-phase development.
- D) Detention will not be required for construction of any one new single family or duplex dwelling unit.

**3.0 Hydrological Criteria and Methods**

This section sets forth the hydrological method and general parameters to be used for computations of storm water runoff and peak rates for storm water detention.

**3.1 Hydrograph Method**

The application of a hydrograph method is required for all detention facilities. Computer models or manual methods are permissible as approved by the City Engineer. The following is a list of acceptable computer models:

- 1) SCS Technical Release No. 55 (TR-55) – “Urban Hydrology for Small Watersheds”
- 2) SCS Technical Release No. 20 – “Project Formulation – Hydrology”
- 3) US Army Corps of Engineers, Hydrologic Engineering Center – “Hec-1 Flood Hydrograph Package”
- 4) US Environmental Protection Agency “Storm Water Management Model” (SWMM)
- 5) Calculations generated in accredited engineering software programs utilizing one or a combination of the above methods will be accepted.

**3.2 Design Storm**

The rainfall intensities used shall be from the current KDOT rainfall intensity tables for Franklin County. The following is a general guide to be used to determine the appropriate design storm for a given watershed:

<u>Tc (minutes)</u>	<u>Time Step (minutes)</u>	<u>Storm Duration (hours)</u>
1 to 12	1	3
12 to 18	2	6
18 to 24	3	12
24 to 30	4	12
>30	5	24 Type II

### **3.3 Runoff Coefficients**

Storm water runoff coefficients or curve numbers shall be determined for proposed land use in modeling. Standard coefficients from an accredited engineering publication will be accepted for use in analysis. Existing runoff coefficients shall be determined but in no case shall existing unpaved areas be analyzed with a curve number exceeding 69, 79 and 84 for Hydrologic Soil Groups B, C and D, respectively.

### **3.4 Time of Concentration**

The time of concentration shall be calculated as the sum of overland flow time, the shallow concentrated flow time and the concentrated system flow time. Accredited engineering guides utilized shall be provided for support of analysis.

### **4.0 Easements**

In all new developments, developers shall dedicate (plat) easements for all public drainage system components. In all existing developments, easements shall be acquired from the property owners at no cost to the City before drainage system improvements are made.

### **4.1 Maintenance Responsibility**

The city shall be responsible for maintenance of enclosed drainage system components within public street rights-of-way only. Maintenance of all improved or natural channels, all overflow channels, detention facilities and enclosed drainage system components within public easements and all easements associated with drainage system components shall be the responsibility of the individual property owner or development association.

The city will conduct periodic inspections of above systems. In the event that maintenance concerns are identified but left unresolved by the responsible property owner or association, the City shall resolve those concerns and seek compensation from the responsible property owner or association.

### **5.0 Storm Water Detention Facility Requirements**

- A) Detention facilities shall be sized to provide for no increase in runoff for the proposed development conditions. Proposed detention shall provide control of increased runoff for the 2, 10 and 100-year frequency storms.
- B) Public and private detention may be accomplished with either wet or dry bottom basin facilities. Public safety shall be addressed in the study if joint uses, such as parking or recreation, are proposed.
- C) Wet bottom basins shall require additional storage volume to accommodate 5 years of sediment and storage volume necessary to maintain a minimum water depth of 3 feet.

- D) Erosion control into and out of the proposed detention facilities shall be addressed in the study and provided as necessary.

## **6.0 Drainage Study Requirements**

Storm water drainage studies shall contain the following general information, supporting calculations and drainage map.

### **6.1 Required Report Content**

- A) Names and addresses of the development team including but not limited to the landowner, developer, architect and engineer.
- B) Date of submittal.
- C) A list of all permits required by local, state and federal agencies.
- D) General summary discussion regarding the proposed development land use and facilities proposed for storm water management.
- E) General discussion regarding the impact of proposed storm water flow to adjacent properties and the downstream system.
- F) Any special consideration items addressed in the study.
- G) Supporting calculations and design guides utilized in analysis including but not limited to:
  - 1) A contour map indicating on and off site drainage areas to the development used in analysis along with a summary of areas, curve numbers and flow rates.
  - 2) Proposed location and type of detention facility to be provided along with stage-storage and stage-discharge curves.
  - 3) Proposed size and type of control structure along with velocity calculations and erosion control proposed.
  - 4) Existing and proposed 2, 10 and 100 year hydrographs for each sub-watershed along with discharge rates.
  - 5) A summary table tabulating the total discharge for the site, existing and proposed, for the 2, 10 and 100 year storms.

## **7.0 Storm Water Pollution Prevention Plan**

A complete Notice of Intent (NOI) shall be submitted to KDHE prior to construction. The Storm Water Pollution Prevention Plan (SWPPP) shall meet the known requirements of the National and Kansas General Permit. A copy of the signed and dated copy of the authorized NOI shall be provided to the City prior to any disturbance of soil on the construction site. The Kansas Department of Health and Environment does not review or approve the SWPPP. The Owner and Operator of the site should satisfy themselves that the requirements of the National and Kansas General Permit and the NOI are being met by the erosion and sediment controls that are being placed on the site. The developer shall be responsible for maintenance of storm water pollution prevention/control measures according to standards current at the time of development.