

CHAPTER 24

STORM WATER CONTROL

4-24-1: DEFINITIONS:

The following terms are defined for the use of this chapter as follows:

ALLOWABLE RELEASE RATE: The rate of storm water runoff that is allowed to be discharged from a development site into the city sewer system by means of the control system.

APPLICANT: Person(s) or agent(s) representing a property owner who desires to develop property in the city.

BULLETIN 70: A publication entitled "Frequency Distributions And Hydroclimatic Characteristics Of Heavy Rainstorms In Illinois", by Floyd A. Huff and James R. Angel, as published by the Illinois State Water Survey, Champaign, Illinois, 1989. The magnitudes of rainfall events having storm durations of twenty four (24) hours and frequencies from two (2) to one hundred (100) years are found in table 13 of said publication and are adopted by the city to be used by applicants for calculations necessary for compliance with this chapter.

CITY SEWER SYSTEM: The networks of closed pipes, conduits, and drainage structures within the city which consists of three (3) operational parts: the storm sewer system, which conveys storm water only; the combined sewer system, which conveys a combination of storm water and wastewater; and the relief combined sewer system, which conveys storm water during most ordinary rainfall events, until the combined sewer system capacity is reached, at which point the combined sewer system discharges into the relief combined sewer system.

CONTROL SYSTEM: Structures that contain restriction, backflow prevention, storage and conveyance features that are necessary for the safe, efficient control and discharge of detained storm water runoff from the development into the city sewer system at a rate no greater than the allowable release rate, up to the occurrence of the 100-year frequency rainfall (24 hour duration) event. This system should be located on the development property, must meet the city's current construction standards, and must be fully accessible to the city for inspection purposes and to the applicant for maintenance purposes.

DETAINED STORM WATER VOLUME: The volume of storm water that is tributary to the development site that exceeds the volume that is allowed to be discharged into the city sewer system at the allowable release rate. This volume is calculated by the applicant and submitted to the director for his review and approval. This volume accounts for rainfall that is infiltrated into the soil by virtue of the permeability of the surface and subsurface materials. Also called the "storm water detention volume".

DETENTION: The temporary storage of storm water runoff, typically in a closed or open detention basin or retention basin, or in oversized storm sewer pipes, followed by releasing the runoff gradually into an outlet waterway or the city sewer system. The discharge flow rate of storm water exiting the detention area is typically controlled by a control structure. Also called "storm water detention". For purposes of this chapter, the terminology "detention" shall mean either detention or retention, as appropriate.

DETENTION BASIN: A facility located within the development site that is designed to store storm

water runoff temporarily on, below, or above the ground surface, accompanied by the controlled release of the stored storm water runoff. The limits of the detention basin are to be depicted on the final development plans and designated thereon as the "detention basin" (or "retention basin", whichever is appropriate). Detention basins may be closed type (concrete vaults or oversized storm sewer pipes) or open type (having grassed, landscaped, bioengineered, or, when necessary to drain, paved bottoms). All detained storm water must be drained from the detention basin by gravity, by pumping, or by infiltration into the ground water, effectively draining the storage facility completely between rainfall events. For purposes of this chapter, the terminology "detention basin" shall mean either detention basin or retention basin or a combination of these, as appropriate.

DEVELOPMENT: Any activity, excavation or fill, alteration, subdivision or resubdivision, change in land use, or practice including, without limitation, redevelopment or rehabilitation. Development may be undertaken by private or public entities or a combination thereof. Development does not include maintenance of storm water control facilities; the maintenance of existing buildings; gardening or plowing that does not involve filling, grading, or the construction of levees; or the resurfacing of existing paved roads, drives, or parking lots.

DIRECTOR: Refers to the director of the public works department or his or her designee.

DISCHARGE: The rate at which storm water moves through an open channel or closed pipe, usually measured in cubic feet per second.

DRAINAGE AREA: The surface area from which storm water runoff originates at a given point or location on a stream, waterway, or within pipes or channels, usually measured in acres. Also called, "tributary drainage area" or "tributary area".

FLOOD FRINGE: That portion of the regulatory floodplain that is outside of the regulatory floodway.

IMPERVIOUS SURFACE: Natural or manmade materials through which water, roots, or air cannot penetrate. This type of material prevents the movement of surface water down to the water table.

INFILTRATION: The movement or passage of water into the soil from a surface that is permeable. Infiltration may be used as an alternative to the detention or retention of storm water runoff as a means to provide all or part of the required detained storm water volume. This is possible under natural or manmade conditions in which deep, permeable layers of sandy soils or other materials with voids are present.

100-YEAR FREQUENCY RAINFALL: A rainfall event that has a one percent (1%) probability of being equaled or exceeded in any given year. On average, an event of this size or larger will occur once every one hundred (100) years. It is also called the "design storm". The magnitude of this rainfall amount for a variety of frequencies and storm durations is found in table 13 of bulletin 70.

OUTFALL/OUTLET: The point, location, or structure where storm water runoff discharges from a storm water facility to a receiving body of water or into the city sewer system.

PERMEABLE: Having voids, pores, or openings through which liquids may pass.

PUBLIC WORKS STORM WATER CONTROL REGULATIONS: A document published by the Evanston public works department which outlines the methodology for calculating the detained storm water volume.

RECHARGE: Replenishment of ground water reservoirs by infiltration through permeable soils or other granular materials.

REGULATORY FLOODPLAIN: Lands that are adjacent to bodies of water (Lake Michigan or the North Shore Channel in the city) and that may be inundated by water up to the base flood elevation, as regulated by the federal emergency management agency ("FEMA"). The floodplain is mapped by FEMA as part of the national flood insurance program. The floodplains within the city are identified as special flood hazard areas ("SFHAs") on map numbers 17031C0253F, 17031C0255F, 17031C0260F, 17031C0265F, and 17031C0270, which are part of the series of flood insurance rate maps ("FIRMs") for Cook County, Illinois, having an effective date of November 6, 2000. Floodplains consist of two (2) parts: the floodway and the flood fringe.

REGULATORY FLOODWAY: That portion of the regulatory floodplain that is necessary for the conveyance of the base flood. The regulatory floodway is depicted on the FEMA FIRM maps (see definition of Regulatory Floodplain herein).

RELEASE RATE: A rate of storm water runoff that is being discharged from a development site into the city sewer system by means of the control structure, measured in cubic feet per second.

RUNOFF/STORM WATER RUNOFF: Water which moves through the landscape either as surface or subsurface flows. It originates from atmospheric precipitation in the form of rain or snow and does not recharge the ground water reservoirs.

WETLAND: An area that is inundated or saturated by surface water or ground water at a frequency and duration sufficient to support, and under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. The determination that an area is a wetland follows a procedure that is outlined by the U.S. army corps of engineers ("USACE"). No activity or development that will adversely impact a wetland is allowed by the USACE unless a permit from that agency is granted. (Ord. 65-0-07)

4-24-2: PURPOSES:

The purposes for this chapter are to: a) reduce the damaging effects caused by the uncontrolled release of storm water runoff from developments that include impervious areas, b) preserve the capacity and useful life of the city sewer system, c) enhance the separation of storm water runoff from wastewater, d) reduce the frequency and severity of the discharge of pollutant laden combined storm water runoff and wastewater into waterways, e) recharge ground water, f) enhance and help protect the public health and safety, and g) be consistent with the Cook County storm water management plan, as approved and the latest revision thereof. (Ord. 65-0-07)

4-24-3: OTHER AGENCY REQUIREMENTS:

All work related to this chapter shall be done in accordance with all other federal, state, county, or regional agencies having jurisdiction, including, but not limited to, the U.S. army corps of engineers ("USACE"), U.S. environmental protection agency ("USEPA"), Illinois department of natural resources ("IDNR"), Illinois environmental protection agency ("IEPA"), and metropolitan water reclamation district of greater Chicago ("MWRD"). (Ord. 65-0-07)

4-24-4: STORM WATER CONTROL REQUIREMENTS:

4-24-4-1: DEVELOPMENTS REQUIRING STORM WATER CONTROL:

All new developments shall provide storm water control for the entire property. Additionally, any development: a) where the final building footprint is greater than five thousand (5,000) square feet, and b) having construction costs greater than one hundred percent (100%) of the latest property value as published by the Cook County assessor's office for the existing tax parcel(s) affected by the development as of the effective date hereof shall provide storm water control for the entire property. This provision shall also apply to staged developments or multiple independent developments for which the aggregate construction costs exceed one hundred percent (100%) of the property value for the tax parcel(s) existing at the time of the initial development after the effective date hereof. Storm water control includes both: a) the need to detain a certain storm water volume, and b) the need to control the release rate of storm water as it is discharged from the development site and enters the city sewer system. (Ord. 65-0-07)

4-24-4-2: EXEMPT DEVELOPMENTS:

The following developments are exempt from the provisions of this chapter:

- (A) Developments Prior To Ordinance: All developments that have been submitted to the city's plan commission or planning & development committee, approved and permitted for construction, or are under construction as of the effective date hereof. Such exempt developments must be in compliance with the city's department of public works "Administrative Policy 201, January 2000, Private And Public Development, Detention Requirements".
- (B) Residential Structures: Development of one-, two-, or three-family residential structures on one or two (2) adjacent parcels, provided that neither parcel is larger than one acre in area.
- (C) Paved Parking Lots: Existing paved parking lots that are resurfaced, or milled and resurfaced, where there is no change to existing drainage that increases runoff to the city sewer system. A paved parking lot is not exempt whenever parts or all of the lot is redeveloped for a different use or a parking structure is constructed, at which point storm water control is required for the entire development, including the parking lot.
- (D) New Development: Any new development for which the storm water control requirements under this chapter have been fully satisfied for the existing and proposed development conditions based on installation of all required storm water control during a prior development, and the storm water control facilities have been maintained and are fully functional and operating. The applicant shall demonstrate compliance with this chapter by submitting to the city's department of public works all calculations and documents in support of a finding that no additional storm water control facilities are required. (Ord. 65-0-07)

4-24-5: STORM WATER CONTROL FACILITIES:

4-24-5-1: GENERAL:

Control of the detained storm water volume must be provided by facilities that are entirely within the development property and are fully accessible for inspection by the city. These facilities shall be designed to store the required detained storm water volume temporarily on, below, or above the ground surface in a detention or retention basin, and to subsequently release the stored detained storm water volume at a rate no greater than the allowable release rate by means of a restrictor within the control structure for final discharge into the city sewer system. The storm

water control system shall be located such that: a) adjacent properties are not impacted by storm water from the development and b) facilities are accessible to the city for inspection and accessible to the applicant for maintenance.

The storm water control system must meet the city's current construction standards for storm water control structures having restriction, overflow, backflow prevention, and inspection/maintenance capabilities. (Ord. 65-0-07)

4-24-5-2: CALCULATIONS:

The storm water detention volume and the allowable release rate shall be calculated using the methodology described in the public works storm water control regulations available from the public works department. (Ord. 65-0-07)

4-24-5-3: MEANS FOR STORING RUNOFF:

The storage of detained storm water volume must be accomplished by any of the following means:

- (A) Open detention basin. The basin may be of any shape. The active storage depth of the detention basin is a maximum of two feet (2'), with an additional one foot (1') freeboard. The basin must be landscaped, or have a bioengineered surface. Side slopes must be no steeper than a four to one ratio (4:1) (4 horizontal to 1 vertical), and the bottom slope must be one percent (1%) to two percent (2%) to facilitate the complete drainage of all storm water runoff into the control structure by gravity, or by the use of pumps if a retention basin is proposed. Inflow pipes to the open detention basin must carry only storm water runoff, and a backflow preventing device, such as a flap gate, must be installed within a structure and must be provided on each inflow pipe to prevent basin storm water from flooding any development structures.
- (B) Reinforced concrete pipe or ductile iron pipe storage, constructed to the city's current construction standards.
- (C) Reinforced concrete vaults, constructed in accordance with the design by an Illinois licensed structural engineer.
- (D) Parking lot surface storage, with the depth of storm water storage limited to six inches (6") or less.
- (E) Rooftop storage, with the depth of storm water limited to six inches (6") or less, based on a determination by an Illinois licensed structural engineer that the roof is structurally adequate to resist all loading, including the additional water load (considered to be live load).
- (F) Infiltration of the detained storm water volume, provided that the applicant submits an engineered infiltration field design by an Illinois licensed professional engineer. The design must include the calculations and supporting documents necessary to demonstrate that the proposed infiltrated detained storm water volume meets the storage requirement.
- (G) Other means or combination of means which the applicant may use, subject to the approval by the director prior to the issuance of all necessary construction permits. (Ord. 65-0-07)

4-24-5-4: CONTROL SYSTEM:

(A)The control system must contain those restriction, backflow prevention, storage and conveyance features that are necessary for the safe, efficient control and discharge of detained storm water volume from the development into the city sewer system at a rate no greater than the allowable release rate, up to the occurrence of the 100-year frequency rainfall (24 hour) event. This system must be located on the development property unless waived by the director, must meet the city's current construction standards, and must be fully accessible to the city for inspection purposes and to the applicant for maintenance purposes. The system shall contain adequate provisions for the emergency release of storm water in excess of the required storage volume or runoff rate that may be associated with more extreme rainfall events or unforeseen debris or ice buildup within the structure. The emergency release shall commence only after the required detained storm water volume has been stored on the development site. The emergency release must discharge onto the development property. A backflow preventing feature, such as a flap gate, shall also be provided such that no storm water or wastewater from the city sewer system can flow back onto the development site. The backflow preventing device shall be installed in a structure located immediately outside of the structure containing the restrictor.

(B)Storm water control systems shall not be located within any part of a regulated floodplain, either the floodway or flood fringe, within the city, as depicted on the FEMA FIRM map panels for Cook County, Illinois. Any work in the floodplain or in wetlands requires the applicant to obtain all permits that may be required from the USACE, USEPA, IDNR, IEPA, MWRD, and any other federal, state, or regional agency as may be required. The applicant shall not begin construction until the applicant has applied for and obtained these permits. In the event that any of these permits include conditions that are more or less stringent than the provisions of this chapter, the more stringent of the permit conditions or ordinance provisions shall apply. (Ord. 65-0-07)

4-24-5-5: CONNECTION TO CITY SEWER SYSTEM:

The applicant is responsible for all construction and restoration work that is needed within the public right of way to achieve the connection to the city sewer system. This work shall be performed in accordance with the city's current construction standards.

Whenever more than one of the city's sewer system components is adjacent to, or in close proximity to the development, the applicant's storm water control system shall discharge detained storm water into that component which is both feasible and most advantageous to the city. Generally, but not always, the storm sewer system is the most advantageous outlet, followed by the relief combined sewer system, followed by the least advantageous combined sewer system. The use of a particular outlet city sewer system component may not be possible due to circumstances such as the presence of other conflicting utilities or if the component is buried deep below the surface. Applicants shall work with the city's department of public works to ascertain which one of the city sewer system components shall be used as the outlet from the development. (Ord. 65-0-07)

4-24-6: FEE IN LIEU OF STORM WATER CONTROL:

In the event that an applicant cannot physically provide all the necessary control of the required detained storm water volume on the development property, the applicant shall:

- (A) Provide proof that is satisfactory to the director that the development site conditions limit his capacity to fully meet the detained storm water volume, and
- (B) Provide storm water control for that volume of detained storm water which the applicant is able to provide in accordance with the requirements of this chapter, and
- (C) Pay a fee in lieu of providing the balance of the excess storm water control volume that the applicant cannot provide on site. The fee in lieu of providing storm water volume shall be initially set at twelve dollars (\$12.00) per cubic foot of required detained storm water volume; however the total fee shall not exceed five percent (5%) of the construction costs of the development. The fee in lieu shall increase each January thereafter by the percent increase indicated for the year ending in January by the United States department of labor bureau of labor statistics consumer price index ("CPI") for the Chicago metropolitan area (Chicago-Gary-Kenosha). The city will use this fee for any of the purposes served by this chapter that the director deems suitable in furthering the city's interest in providing for storm water control. (Ord. 65-0-07)

4-24-7: CITY REVIEW AND INSPECTION:

4-24-7-1: REVIEWS:

The director shall review all elements of the storm water control facilities, drawing plans, sketches, details, calculations and any other evidence and supporting documents that are submitted by the applicant for the proposed development. The director must review all developments, regardless of whether physical storm water control facilities or fees in lieu of storm water control facilities are being requested by the applicant. The director may meet with the applicant to discuss the proposed storm water facilities and/or prepare written review comments regarding the applicant's submittal when the submittal has not satisfied all appropriate provisions of this chapter. The applicant shall respond to the director's review comments and perform the necessary design changes, then submit the revised submittal documents for further review by the director. This process of submittals, review, and revisions shall continue until all provisions of this chapter are met to the satisfaction of the director. The applicant shall not receive a building permit for the proposed development until all provisions of this chapter are met. (Ord. 65-0-07)

4-24-7-2: INSPECTION DURING CONSTRUCTION:

The director may inspect the applicant's storm water control system during the construction to ascertain whether the applicant is constructing or has constructed the system in accordance with the approved plan. Any deficiencies in the construction shall be corrected by the applicant at his expense, regardless of when the director determines that such deficiencies exist. (Ord. 65-0-07)

4-24-7-3: CERTIFICATE OF OCCUPANCY:

The storm water control system must be installed and functioning before the certificate of occupancy for the development will be issued. (Ord. 65-0-07)

4-24-7-4: MAINTENANCE:

The storm water control system shall be maintained by the applicant or current owner in a fully functioning and operating condition. (Ord. 65-0-07)

4-24-8: INSPECTION FEE:

All developments that are required to provide storm water control shall pay to the city an initial inspection fee of one hundred fifty dollars (\$150.00) and thereafter, an annual inspection fee of one hundred fifty dollars (\$150.00). (Ord. 65-0-07)

4-24-9: PENALTY:

If the director determines that any storm water control system required by this chapter does not comply with the provisions of this chapter, the director shall notify the applicant or current owner in writing of such noncompliance. The applicant or current owner shall have thirty (30) calendar days from the date of receipt of such notice to comply with the provisions of this chapter. If at the end of the thirty (30) calendar days the applicant or current owner is not in compliance with the provisions of this chapter, a two hundred fifty dollar (\$250.00) fine shall be imposed and the applicant or current owner shall have an additional thirty (30) calendar days to comply. If at the end of the thirty (30) additional days for compliance, the applicant or current owner is not in compliance with the provisions of this chapter, a fine of not less than two hundred fifty dollars (\$250.00) shall be imposed for each day thereafter in which the applicant or current owner is not in compliance. (Ord. 65-0-07)