

## **CHAPTER 26.**

### **STORM WATER AND FLOODPLAIN MANAGEMENT**

(Established by Ord. 90-40)

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- §26-129. Countywide Stormwater and Floodplain Ordinance Adopted.
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**Article I. General Provisions.**

**Sec. 26-101. Title.**

This Chapter shall be known, cited, and referred to as the "Addison Storm Water and Floodplain Management Ordinance."

**Sec. 26-102. Purpose and Intent.**

The purpose of this Chapter is to diminish threats to public health and safety caused by floodwaters; reduce economic losses to individuals and the community at large; enhance broader social and economic objectives; protect, conserve, and promote the orderly development of land and water resources; prevent victimizations and fraud; and to comply with the guidelines for the National Flood Insurance Program as published by the Federal Emergency Management Agency (FEMA). This Chapter is adopted to accomplish the following specific purposes:

- (A) To meet the requirements of 615 ILCS 5/18g, An Act in Relation to the Regulation of the Rivers, Lakes and Streams of the State of Illinois, approved June 10, 1911, as amended.
- (B) To assure that new development does not increase the flood or drainage hazards to others or create unstable conditions susceptible to erosion.
- (C) To protect new buildings and major improvements to buildings from flood damage.
- (D) To protect human life and health from the hazards of flooding.
- (E) To lessen the burden on the taxpayer for flood control projects, repairs to flood-damaged public facilities and utilities, and flood rescue and relief operations.
- (F) To make federally subsidized flood insurance available for property in the Village by fulfilling the requirements of the National Flood Insurance Program.
- (G) To comply with the rules and regulations of the National Flood Insurance Program codified as 44 CFR 59-79, as amended.
- (H) To protect, conserve, and promote the orderly development of land and water resources.

- (I) To prevent adverse impacts caused by increases in storm water runoff rates and quantities resulting from development and improvement of the land.

**Sec. 26-103. Definitions.**

- (A) The following words and terms are found in Title 44 of the Code of Federal Regulations (44 CFR), Section 59.1 and are incorporated in this Chapter by reference as though they were fully recited herein:

Agency, Appurtenant Structure, Area of Shallow Flooding, Area of Special Flood Hazard, Basement, Criteria, Critical Feature, Elevated Building, Flood Elevation Determination, Flood Insurance, Floodplain Management, Flood Protection System, Levee, Levee System, Lowest Floor, Person, Principally Above Ground, Variance, and Water Surface Elevation.

Two copies of said Title 44 CFR shall remain on file in the office of the Village Clerk for public inspection and in the office of the Village Engineer.

- (B) For the purposes of this Chapter, the following definitions are adopted:

**Act** - An Act in relation to the regulation of the rivers, lakes, and streams of the State of Illinois, 615 ILCS 5/4.9 *et seq.*

**Adverse impacts** - Any deleterious impact on water resources or wetlands affecting their beneficial uses, including recreation, aesthetics, aquatic habitat, quality, and quantity.

**Applicant** - Any person, firm, or governmental agency who executes the necessary forms to procure official approval of a project or permit to carry out construction of a project from the Village.

**Appropriate use** - Only uses of the regulatory floodway that are permissible and will be considered for permit issuance. The only uses that will be allowed are as specified in Section 26-15 of this Chapter.

**Base flood** - The flood having a one percent probability of being equaled or exceeded in any given year. The base flood is also known as the 100-year frequency flood event. Application of the base flood elevation at any location is as defined in Section 26-302 of this Chapter.

**Board** - The Village Board of Trustees of the Village of Addison, Illinois.

**Building** - A structure that is principally above ground and is enclosed by walls and a roof. The term includes a gas or liquid storage tank, a manufactured home, mobile home, or a prefabricated building. This term also includes recreational vehicles and travel trailers to be installed on a site for more than one hundred eighty (180) days.

**Bulkhead** - A retaining wall that protects waterfront property.

**Bypass flows** - Storm water runoff from upstream properties tributary to a property's drainage system but not under its control.

**Capacity of a storm drainage facility** - The maximum ability of a storm drainage facility to convey storm water flows without causing substantial damage to public or private property, and in the case of a pipe, without surcharging.

**Channel** - Any river, stream, creek, brook, branch, natural or artificial depression, ponded area, flowage, slough, ditch, conduit, culvert, gully, ravine, wash, or natural or man-made drainage way, which has a definite bed and banks or shoreline, in or into which surface or groundwater flows, either perennially or intermittently.

**Channel modification** - Alteration of a channel by changing the physical dimensions or materials of its bed or banks. Channel modification includes damming, riprapping or other armoring, widening, deepening, straightening, relocating, lining and significant removal of bottom or woody vegetation. Channel modification does not include the clearing of dead or dying vegetation, debris, or trash from the channel. Channelization is a severe form of channel modification typically involving relocation of the existing channel (e.g., straightening).

**Commission** - The Plan Commission of the Village of Addison, Illinois.

**Compensatory storage** - An artificially excavated, hydraulically equivalent volume of storage within the special flood hazard area (SFHA) used to balance the loss of natural flood storage capacity when artificial fill or structures are placed within the floodplain. The uncompensated loss of natural floodplain storage can increase off-site floodwater elevations and flows.

**Comprehensive Plan** - The Official Plan of the Village adopted September 8, 1970, as amended.

**Conditional approval of a regulatory floodway map change** - Preconstruction approval by Illinois Department of Transportation, Division of Water Resources (DWR) and the Federal Emergency Management Agency of a proposed change to the floodway map. This preconstruction approval, pursuant to this Part, gives assurances to the property owner that once an Appropriate Use is constructed according to permitted plans, the floodway map can be changed, as previously agreed, upon review and acceptance of as-built plans.

**Conditional Letter of Map Revision (CLOMR)** - A letter which indicates that the Federal Emergency Management Agency will revise base flood elevations, flood insurance rate zones, flood boundaries or floodway as shown on an effective Flood Hazard Boundary Map or Flood Insurance Rate Map, once the as-built plans are submitted and approved.

**Conduit** - Any channel, pipe, sewer, or culvert used for the conveyance or movement of water, whether open or closed.

**Control structure** - A structure designed to control the rate of flow that passes through the structure, given a specific upstream and downstream water surface elevation.

**Dam** - All obstructions, wall embankments or barriers, together with their abutments and appurtenant works, if any, constructed for the purpose of storing or diverting water or creating a pool. Underground water storage tanks are not included.

**Detention basin** - A facility constructed or modified to restrict the flow of storm water to a prescribed maximum rate through a controlled release by gravity, and to concurrently detain the excess waters that accumulate behind the control structure.

**Detention storage** - The temporary detaining or storage of storm water in storage basins, in streets, school yards, parks, open space, or other areas under predetermined and controlled conditions with the rate of drainage therefrom regulated by appropriately installed devices.

**Detention time** - The mean residence time of storm water in a detention basin.

**Development** - Any man-made change to real estate, including:

- (1) Construction, reconstruction, repair, or placement of a building or any addition to a building.
- (2) Installing a manufactured home on a site, preparing a site for a manufactured home, or installing a travel trailer on a site for more than one hundred eighty (180) days.
- (3) Drilling, mining, installing utilities, construction of roads, bridges, or similar projects.
- (4) Demolition of a structure or redevelopment of a site.
- (5) Clearing of land as an adjunct of construction.
- (6) Construction or erection of levees, walls, fences, dams, or culverts; channel modification; filling, dredging, grading, excavating, paving, or other non-agricultural alterations of the ground surface; storage of materials; deposit of solid or liquid waste.
- (7) Any other activity of man that might change the direction, height, or velocity of flood or surface water, including extensive vegetation removal.

Development does not include maintenance of existing buildings and facilities such as re-roofing or re-surfacing of roads when there is no increase in elevation, or gardening, plowing, and similar agricultural practices that do not involve filling, grading, or

construction of levees or improvements to existing structures and or accessory buildings located on lots of less than one third (1/3) acre, where the improvements do not exceed six hundred (600) square feet in area, or pavement for driveways accessing detached garages. (Ord. 99-65)

**Discharge** - The rate of outflow of water from detention storage.

**Drainage area** - The area from which water is carried off by a drainage system; a watershed or catchment area.

**Drainage plan** - A plan, including engineering drawings and supporting calculations, which describes the existing storm water drainage system and environmental features, as well as the drainage system and environmental features which will be in place after development of a property.

**Dry bottom detention basin** - A detention basin designed to drain completely after temporary storage of storm water flows and to normally be dry over the majority of its bottom area.

**Dwelling** - Any building or portion thereof which is designed and used exclusively for residential purposes.

**DWR** - Illinois Department of Transportation, Division of Water Resources.

**Elevation Certificates** - A form published by the Federal Emergency Management Agency that is used to certify the elevation to which a building has been elevated.

**Erosion** - The general process whereby soils are removed by flowing water or wave action.

**Excess storm water runoff** - The volume and rate of flow of storm water discharged from an urbanized drainage area which is or will be in excess of that volume and rate which pertained before urbanization.

**Exempt organization** - Organizations which are exempt from this Chapter per the Illinois Compiled Statutes, including state, federal or local units of government.

**FEMA** - Federal Emergency Management Agency and its regulations at 44 CFR 59-79 effective as of October 1, 1986. This incorporation does not include any later editions or amendments.

**Flood** - A general and temporary condition of partial or complete inundation of normally dry land areas from overflow of inland or tidal waves, or the unusual and rapid accumulation or runoff of surface waters from any source.

**Flood frequency** - A period of years, based on a statistical analysis, during which a flood of a stated magnitude may be expected to be equaled or exceeded.

**Flood fringe** - That portion of the floodplain outside of the regulatory floodway.

**Flood Insurance Rate Maps (FIRM)** - A map prepared by the Federal Emergency Management Agency that depicts the SFHA within a community. This map includes insurance rate zones and floodplains and may or may not depict floodways.

**Floodplain** - That land typically adjacent to a body of water with ground surface elevations at or below the base flood or the 100-year frequency flood elevation. Floodplains may also include detached SFHA's, ponding areas, etc. The floodplain is also known as the SFHA. The floodplains are those lands within the jurisdiction of the Village that are subject to inundation by the base flood or 100-year frequency flood. The SFHA's of the Village are generally identified as such on the FIRM of the Village prepared by the Federal Emergency Management Agency (or the U.S. Department of Housing and Urban Development) and dated January 18, 1987 and such amendments to such study and maps as may be prepared from time to time. The SFHA's of those parts of unincorporated DuPage County that are within the extraterritorial jurisdiction of the Village or that may be annexed into the Village are generally identified as such on the FIRM prepared for DuPage County by the Federal Emergency Management Agency (or the U.S. Department of Housing and Urban Development) and dated October 18, 1988 and such amendments to such study and maps as may be prepared from time to time.

**Flood of Record** - An actual historical flood event for which sufficient records are available to establish its extent. No uniform probability of occurrence is associated with floods of record. However, the probability of occurrence may be determined for the event at specific locations.

**Floodproofing** - Any combination of structural and nonstructural additions, changes or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

**Floodproofing Certificate** - A form published by the Federal Emergency Management Agency that is used to certify that a building has been designed and constructed to be structurally dry floodproofed to the flood protection elevation.

**Flood Protection Elevation (FPE)** - The elevation of the base flood or 100-year frequency flood plus one foot of freeboard at any given location in the SFHA.

**Freeboard** - An increment of elevation added to the base flood elevation to provide a factor of safety for uncertainties in calculations, unknown localized conditions, wave actions, and unpredictable effects such as those caused by ice or debris jams.

**Hydraulic characteristics** - The features of a watercourse which determine its water conveyance capacity. These features include but are not limited to size and configuration of the cross-section of the watercourse, texture of materials along the watercourse, alignment of

watercourse, gradient of watercourse, amount and type of vegetation within the watercourse, and size, configuration, and other characteristics of structures within the watercourse.

**Hydrograph** - A graph showing, for a given point on a stream or conduit, the runoff flow rate with respect to time.

**Hydrologic and hydraulic calculations** - Engineering analysis which determine expected flood flows and flood elevations based on land characteristics and rainfall events.

**Infiltration** - The passage or movement of water into the soil surfaces.

**Lag** - The elapsed time between the center of mass of a rain event and the center of mass of the resultant hydrograph at a specific site.

**Letter of Map Amendment (LOMA)** - Official determination by FEMA that a specific structure is not in a 100-year flood zone; amends the effective Flood Hazard Boundary Map or FIRM.

**Letter of Map Revision (LOMR)** - Letter that revises base flood or 100-year frequency flood elevations, flood insurance rate zones, flood boundaries, or floodways as shown on an effective FHBM or FIRM.

**Major drainage system** - That portion of a drainage system needed to store and convey flows beyond the capacity of the minor drainage system.

**Manufactured home** - A structure, transportable in one or more sections, which is built on a permanent chassis and is designated for use with or without a permanent foundation when connected to the required utilities. The term manufactured homes also includes park trailers, travel trailers, and other similar vehicles placed on site for more than one hundred eighty (180) consecutive days.

**Manufactured home park or subdivision** - A parcel (or contiguous parcels) of land divided into two or more manufactured home lots for rent or sale.

**Minor drainage system** - That portion of a drainage system designed for the convenience of the public. It consists of street gutters, storm sewers, small open channels, and swales and will be designed to handle at a minimum the 10-year, 24-hour runoff event or more.

**Mitigation** - Mitigation includes those measures necessary to minimize the negative effects which floodplain development activities might have on the public health, safety, and welfare. Examples of mitigation include compensatory storage, floodproofing, soil erosion and sedimentation control, and channel restoration.

**Natural** - Conditions resulting from physical, chemical, and biological processes without intervention by man.

**NGVD** - National Geodetic Vertical Datum of 1929. Reference surface set by the National Geodetic Survey deduced from a continental adjustment of all existing adjustments in 1929.

**One hundred year event** - A runoff, rainfall, or flood event having a one percent (1%) chance of occurring in any given year.

**Ordinary High Water Mark (OHWM)** - The point on the bank or shore up to which the presence and action of surface water is so continuous so as to leave a distinctive mark such as by erosion, destruction or prevention of terrestrial vegetation, predominance of aquatic vegetation or other easily recognized characteristics.

**Peak flow** - The maximum rate of flow of water at a given point in a channel or conduit resulting from a predetermined storm or flood.

**Property** - A parcel of real estate.

**Public flood control project** - A flood control project which will be operated and maintained by a public agency to reduce flood damages to existing buildings and structures which includes a hydrologic and hydraulic study of the existing and proposed conditions of the watershed. Nothing in this definition shall preclude the design, engineering, construction or financing, in whole or in part, of a flood control project by persons or parties who are not public agencies.

**Publicly navigable waters** - All streams and lakes capable of being navigated by watercraft.

**Registered Land Surveyor** - A land surveyor registered in the State of Illinois, under The Illinois Professional Land Surveyor Act (225 ILCS 330/1 *et seq.*).

**Registered Professional Engineer** - An engineer registered in the State of Illinois, under The Illinois Professional Engineering Practice Act (225 ILCS 325/1 *et seq.*).

**Regulatory floodway** - The channel, including onstream lakes, and that portion of the floodplain adjacent to a stream or watercourse as designated by DWR, which is needed to store and convey the existing and anticipated future 100- year frequency flood discharge with no more than a 0.1 foot increase in stage due to the loss of flood conveyance or storage, and no more than a ten percent (10%) increase in velocities. The regulatory floodways are designated for Salt Creek and West-wood Creek on the Flood Boundary and Floodway Map prepared by FEMA and dated January 16, 1987 and such amendments to such study and maps as may be prepared from time to time, and for Salt Creek, Westwood Creek, and the South Fork of Westwood Creek, on the Regulatory Floodplain Map prepared by DWR and dated July 1, 1979 and such amendments to such study and maps as may be prepared from time to time. The regulatory floodways for those parts of unincorporated DuPage County that are within the extraterritorial jurisdiction of the Village that may be annexed in the Village are designated for the East Branch of the DuPage River, East Branch Tributary No. 1 of the DuPage River, and Salt Creek, on the Flood Boundary and Floodway map prepared by FEMA (or Department of Housing and Urban Development) and

dated April 15, 1982 and such amendments to such study and maps as may be prepared from time to time. To locate the regulatory floodway boundary on any site, the regulatory floodway boundary should be scaled off the regulatory floodway map and located on a site plan, using reference marks common to both maps. Where interpretation is needed to determine the exact location of the regulatory floodway boundary, the DWR should be contacted for the interpretation.

**Repair, remodeling or maintenance** - Development activities which do not result in any increases in the outside dimensions of a building or any changes to the dimensions of a structure.

**Retention basin** - A facility designed to completely retain a specified amount of storm water runoff without gravity release.

**Retention/detention facility** - A retention facility stores storm water runoff without a gravity release. A detention facility provides for storage of storm water runoff and controlled gravity release of this runoff during and after a flood or storm.

**Riverine SFHA** - Any SFHA subject to flooding from a river, creek, intermittent stream, ditch, on stream lake system, or any other identified channel. This term does not include areas subject to flooding from lakes, ponding areas, areas of sheet flow, or other areas not subject to overbank flooding.

**Runoff** - The waters derived from melting snow or rain falling within a tributary drainage basin which are in excess of the infiltration capacity of the soils of that basin, which flow over the surface of the ground or are collected in channels or conduits.

**Sedimentation** - The processes that deposit soils, debris, and other materials either on other ground surfaces or in bodies of water or watercourses.

**Special Flood Hazard Area (SFHA)** - Any base flood area subject to flooding from a river, creek, intermittent stream, ditch, or any other identified channel or ponding and shown on a Flood Hazard Boundary Map or Flood Insurance Rate Map as Zone A, AO, A1-30, AE, A99, AH, VO, V30, VE, V, M, or E.

**Storm sewer** - A closed conduit for conveying collected storm water.

**Storm water drainage system** - All means, natural or manmade, used for conducting storm water to, through or from a drainage area to the point of final outlet, including but not limited to any of the following: conduits and appurtenance features, canals, channels, ditches, streams, culverts, streets, and pumping stations.

**Storm water drainage facility** - Any element in a storm water drainage system which is made or improved by man.

**Storm water runoff** - The waters derived from melting snow or rain falling within a tributary drainage basin, flowing over the surface of the ground or collected in channels or conduits.

**Structure** - The results of a man-made change to the land constructed on or below the ground, including the construction, reconstruction, or placement of a building or any addition to a building; installing a manufactured home on a site; preparing a site for a manufactured home or installing a travel trailer on a site for more than one hundred eighty (180) days.

**Substantial improvement** - Any repair, reconstruction, or improvement of a structure, the cost of which equals or exceeds 50 percent (50%) of the market value of the structure either (a) before the improvement or repair is started, or (b) if the structure has been damaged, and is being restored, before the damage occurred. For the purposes of this definition, "substantial improvement" is considered to occur when the first alteration of any wall, ceiling, floor, or other structural part of the building commences, whether or not that alteration affects the external dimensions of the structure. The term does not, however, include either (1) any project for improvement of a structure to comply with existing state or local health, sanitary, or safety code specifications which are solely necessary to assure safe living conditions, or (2) any alteration of a structure listed on the National Register of Historic Places or a State Inventory of Historic Places.

**Time of concentration** - The elapsed time for storm water to flow from the most distant point in a drainage basin to the outlet or point in question.

**Transition section** - Reaches of the stream or floodway where water flows from a narrow cross-section to a wide cross-section or vice versa.

**Tributary watershed** - All of the land surface area that contributes runoff to a given point.

**Two-year event** - A runoff, rainfall, or flood event having a fifty percent (50%) chance of occurring in any given year.

**Village Engineer** - The duly appointed engineer of the Village of Addison, Illinois, or his designated representative.

**Watercourse** - Any stream, creek, brook, branch, natural or artificial depression, slough, gulch, reservoir, lake, pond or natural or man-made drainage way in or into which storm water runoff and floodwaters flow either regularly or intermittently.

**Wet bottom detention basin** - A basin designed to retain a permanent pool of water after having provided its planned detention of runoff during a storm event.

**Wetland** - Those transitional lands between terrestrial and aquatic systems where the water table is usually at or near the surface or the land is covered by shallow water. Classification of areas as wetlands shall follow the "Classification of Wetlands and Deepwater Habitats of the United States" as published by the U.S. Fish and Wildlife Service (FWS/OBS-79/31).

## **Article II. Drainage System.**

### **Sec. 26-201. Drainage Plan.**

Each applicant shall submit the following information, depending on development size, showing the following information and data to ensure that the provisions of this Chapter are met. The submittal shall include sufficient information to evaluate the environmental characteristics of the property, the potential adverse impacts of the development on water resources both on-site and downstream, and the effectiveness of the proposed drainage plan in managing storm water runoff. The applicant shall certify on the drawings that all clearing, grading, drainage, and construction shall be accomplished in strict conformance with the drainage plan. The following information shall be submitted for both existing and proposed property conditions.

(A) Properties Smaller than 10 Acres.

- (1) Topographic Map - A topographic survey of the property and areas upstream and downstream necessary to determine off-site impacts of the proposed drainage plan at 1-foot contours.
- (2) Environmental Features - A depiction of environmental features of the property and immediate vicinity including the following:
  - (a) The limits of wetland areas.
  - (b) Any proposed channel modifications.
  - (c) Proposed environmental mitigation features for any proposed channel modifications.
  - (d) The delineations of floodplains and floodways.
- (3) Drainage System - A depiction of drainage system features of the property and immediate vicinity not to exceed 1" = 50' scale, including:
  - (a) The banks and centerline of streams and channels.
  - (b) Shorelines of lakes, ponds, and detention basins.
  - (c) Farm drains and tiles.
  - (d) Watershed boundary of the area contributing runoff to the property and sub-area boundaries within the property to determine flow concentration points or inlet locations.
  - (e) The properties located within stream or river watersheds.
  - (f) Location, size, and slope of storm water conduits.

- (g) Sanitary or combined sewers.
  - (h) Depressional storage areas.
  - (i) Detention facilities.
  - (j) Roads and streets and associated storm water inlets.
  - (k) 100-year floodplain and floodway for the entire drainage system of the property.
  - (l) Basis of design for the final drainage network components.
- (B) Properties Larger than 10 Acres. The same information as required in Subsection A hereinabove is required for properties larger than ten (10) acres along with the following additional information:
- (1) Mapping of the floodplain for the entire drainage system for the 2-year, 24-hour event.
  - (2) Mapping of floodplain for the minor drainage system's design event.
  - (3) Cross-section data for open channel flow paths.
  - (4) Direction of storm flows.
  - (5) Flow rates and velocities at critical points in the drainage system.
  - (6) Mapping of floodplain for the entire drainage system for the 100-year, 24-hour event.

**Sec. 26-202. Minimization of Runoff Volumes and Rates.**

In the selection of a drainage plan for a development, the applicant shall choose a strategy which strives to minimize the increase in runoff volumes and rates from the site. The applicant shall consider and evaluate the following strategies in developing a drainage plan:

- (1) Flow attenuation by use of open vegetated swales and retention of natural depression and existing natural stream channels.
- (2) Infiltration of runoff on-site.
- (3) Storm water retention structures.
- (4) Storm water detention structures.
- (5) Storm sewers.

**Sec. 26-203. Release Rates.**

The drainage system for a property shall be designed to control the peak rate of discharge from the property for the 2-year, 24-hour and 100-year, 24-hour events to levels which will not cause an increase in flooding or channel instability downstream when considered in aggregate with other developed properties and downstream drainage capacities. The 2-year discharge shall be no greater than 0.04 cfs per acre of property. The 100-year discharge shall be no greater than 0.10 cfs per acre of property.

**Sec. 26-204. Water Quality and Multiple Uses.**

The drainage system should be designed to control pollutants contained in storm water runoff to the maximum extent feasible. If detention basins are used, they shall incorporate design features to capture storm water runoff pollutants. Detention and infiltration of storm water shall be promoted throughout the property's drainage system to reduce the volume of storm water runoff and to reduce the quantity of runoff pollutants.

To the maximum extent feasible, the drainage system should have multiple uses. Uses considered compatible with storm water management include open space, aquatic habitat, recreation (boating, trails, playing fields), and wetlands. The applicant should avoid using portions of the property exclusively for storm water management.

**Sec. 26-205. Design Criteria and Standards.**

- (A) Hydrologic Design Procedures. The design of the drainage system shall be developed and evaluated by the applicant based on routing runoff hydrographs for the 2-year, 10-year, and 100-year, 24-hour events through its minor and major components. In addition, a general assessment of the impacts of flows exceeding the 100-year event shall be presented.
  - (1) Rainfall - Unless a continuous simulation approach to drainage system hydrology is used, all design rainfall events and rainfall distributions shall be based on the Illinois State Water Survey Bulletin 70 (1989). For 24-hour events, 4th quartile average time distributions of heavy rainfalls shall be used as shown in Bulletin 70. SCS Type II rainfall distribution should only be used with the SCS TR-55 hydrograph method.
  - (2) Hydrograph Required - Runoff hydrographs must be developed as part of the design of the drainage system's minor and major components. The modified rational formula shall not be used for development of a hydrograph.
  - (3) Antecedent Moisture - All computations of runoff hydrographs which do not rely on a continuous accounting of antecedent moisture conditions shall assume that no more than 80 percent (80%) of potential abstraction is available for any event.
- (B) Hydraulic Design Procedures. A profile and mapping of floodwater depths and coverage shall be prepared for the property for the 2-year, 10-year, and 100-year events. Direction of flow and velocities shall also be reported for critical points in the drainage system.

- (1) Detention - The maximum available storage to be provided in a detention basin shall be based on the runoff from the 100-year, 24-hour event. In lieu of calculating the 100-year, 24-hour event and upon approval by the Village Engineer, the maximum available storage may be equivalent to 4.5 inches over the subject property. Hydrographs for the 2-year, 10-year, and 100-year, 24-hour events shall be routed through any detention structures included in the drainage system and the results displayed as part of Section 26-201, Subsections A and B.
- (C) Wet Bottom Detention Basin. Wet bottom detention basins shall be designed to remove storm water pollutants, to be safe, to be aesthetically pleasing, and as much as feasible, to be available for recreational use.
- (1) Depths - Wet basins shall be at least 3 feet (3') deep, excluding near shore banks and safety ledges. If fish habitat is to be provided, they shall be at least ten feet (10') deep over twenty-five percent (25%) of the bottom area to prevent winter freeze-out.
  - (2) Permanent Pool Volume - The permanent pool volume in a wet basin at normal depth shall be equal to the runoff volume from its watershed for the 2-year event.
  - (3) Nuisance Control - Wet basins shall be designed in a manner which will reduce as much as practicable nuisance problems such as algae and waterfowl.
- (D) Dry Bottom Detention Basins. Dry bottom detention basins shall be designed to remove storm water pollutants, to be safe, to be aesthetically pleasing, and as much as feasible to be available for multiple uses.
- (1) Drainage - Dry basins shall be designed so that eighty percent (80%) of their bottom areas shall have standing water no longer than seventy-two (72) hours for any runoff event less than the 100-year event. Basins shall have a minimum two percent bottom slope.
  - (2) Water Quality - All dry detention basins shall be designed to remove storm water pollutants. At a minimum, dry detention basins should be designed to capture the 2-year, 24-hour runoff event and hold it for at least twenty-four (24) hours.
- (E) Safety. The drainage system components, especially all detention basins, shall be designed to protect the safety of any children or adults coming in contact with the system during runoff events.
- (1) Shorelines - The shorelines of all detention basins shall be as level as practicable to prevent accidental falls into the basin and for stability and ease of maintenance.
  - (2) Banks - The side slopes of the banks of wet bottom detention basins shall not be steeper than five (5) horizontal to one (1) vertical above the normal water level and three (3) horizontal to one (1) vertical below the normal water level. The side

slopes of the banks of dry bottom detention ponds shall not be steeper than five (5) horizontal to one (1) vertical.

- (3) Safety Ledge - All wet detention basins shall have a level safety ledge extending five feet (5') into the basin from the shoreline and two feet (2') below the normal water depth.
  - (4) Velocity - Velocities throughout the drainage system shall be controlled to safe levels, taking into consideration rates and depths of flow.
- (F) Infiltration Practices. Infiltration practices, including basins, trenches, and porous pavement, shall only be allowed in soils considered "A" or "B" by the U.S. Soil Conservation Service. Infiltration practices shall not be located within seventy-five feet (75') of a water supply well or a building foundation. A sediment settling basin shall be provided to remove coarse sediment from storm water flows before they reach infiltration basins or trenches. Storm water shall not be allowed to stand more than seventy-two (72) hours over eighty percent (80%) of a dry basin's bottom area for the maximum design event to be exfiltrated. The bottom of infiltration facilities shall be a minimum of four feet (4') above seasonally high ground water and bedrock.
- (G) Detention in Floodplains. Storm water detention facilities are not allowed in the floodway unless permitted by the Illinois Department of Transportation, Department of Water Resources. (Ord. 91-60)
- (H) General Detention Considerations.
- (1) Overflow Structures - All storm water detention basins shall be provided with an overflow structure capable of safely passing flows in excess of the 100-year event.
  - (2) Length to Width Ratio - All detention basins should have a length to width ratio of at most 3 to 1 as measured along the longitudinal axis of flow.
  - (3) Inlet and Outlet Orientation - As much as feasible, the distance between detention inlets and outlets shall be maximized. If possible, they should be at opposite ends of the basin.
  - (4) Velocity Dissipation - Baffles or berms should be placed perpendicular to the direction of flow through a detention basin to reduce velocity and prevent scour.
  - (5) Freeboard - The top of bank shall be a minimum of one foot above the 100-year capacity elevation.
  - (6) No detention facility shall be constructed within a distance of ten feet (10') plus one and one-half (1½) times the depth of the facility adjacent to any property line unless an easement is established for the purpose of a detention pond across this property line. (Ord. 91-60)

- (I) Maintenance. The storm water drainage system shall be designed to minimize and facilitate maintenance. Turfed side slopes shall be designed to allow lawn mowing equipment to easily negotiate them. Presedimentation basins shall be considered for localizing sediment deposition and removal.

**Sec. 26-206. Flows from Tributary Areas.**

Storm water runoff from areas tributary to the property shall be considered in the design of the property's drainage system. The upstream flows may be routed around the applicant's detention basin through an underground piping system. The upstream flows may be routed through the applicant's detention basin in which case the basin release rate shall be the sum of the allowable release rate for the applicant's property tributary to the basin and the upstream flows.

**Sec. 26-207. Early Completion of Detention Facilities.**

Where detention, retention, or depressional storage areas are to be used as part of the drainage system for a property, they shall be completed before general property grading begins. This is to ensure that if soil erosion and sediment control practices are not adequately implemented, any eroded sediment will be captured in these areas and will have to be removed by the applicant before project completion.

**Sec. 26-208. Maintenance.**

Maintenance of storm water drainage facilities located on private property shall be the responsibility of the owner of that property. Before a permit is obtained from the Village of Addison, the applicant shall execute a maintenance agreement with the Village of Addison guaranteeing that the applicant and all future owners of the property will maintain its storm water drainage system. The maintenance agreement shall also specifically authorize representatives of the Village to enter onto the property for the purpose of inspections of the drainage system. Each agreement shall be recorded with the Recorder of Deeds of DuPage County. The maintenance agreement shall include a schedule for regular maintenance of each aspect of the property's storm water drainage system and shall provide for access to the system for inspection by authorized personnel of the Village of Addison. The maintenance agreement shall also stipulate that if the Village Engineer of the Village of Addison notifies the property owner in writing of maintenance problems which require correction, the property owner shall make such corrections within thirty (30) calendar days of such notification. If the corrections are not made within this time period, the Village may have the necessary work completed and assess the cost to the property owner.

The Village of Addison has the option of requiring a bond to be filed by the property owner for maintenance of the storm water drainage system.

**Article III. Floodplain Management.**

**Sec. 26-301. Duties of the Enforcement Official.**

The Village Engineer shall be responsible for the general administration and enforcement of this Chapter, which shall include the following:

- (A) Determining the Floodplain Designation. Check all new development sites to determine whether they are in a Special Flood Hazard Area (SFHA). If they are in a SFHA, determine whether they are in a floodway, flood fringe or in a floodplain on which a detailed study has not been conducted which drains more than one square mile.
- (B) Professional Engineer Review. If the development site is within a floodway or in a floodplain on which a detailed study has not been conducted which drains more than one square mile, then the permit shall be referred to a registered professional engineer (P.E.) under the employ or contract of the Village for review to ensure that the development meets the requirements of Sections 26-303 through 26-307. In the case of an appropriate use, the P.E. shall state in writing that the development meets the requirements of Sections 26-303 through 26-307.
- (C) Dam Safety Requirements. Ensure that a DWR Dam Safety permit has been issued or a letter indicating no Dam Safety permit is required, if the proposed development activity includes construction of a dam as defined in Subsection 26-302(B). Regulated dams may include weirs, restrictive culverts or impoundment structures.
- (D) Other Permit Requirements. Ensure that any and all required federal, state, county, and local permits are received prior to the issuance of a floodplain development permit.
- (E) Plan Review and Permit Issuance. Ensure that all development activities within the SFHA's of the jurisdiction of the Village meet the requirements of this Chapter and issue a floodplain development permit in accordance with the provisions of this Chapter and other regulations of this community when the development meets the condition of this Chapter.
- (F) Inspection Review. Inspect all development projects before, during, and after construction to assure proper elevation of the structure and to ensure they comply with the provisions of this Chapter.
- (G) Elevation and Floodproofing Certificates. Maintain in the permit files an Elevation Certificate certifying the elevation of the lowest floor (including basement) of a residential or non-residential building or the elevation to which a non-residential building has been floodproofed, using a Floodproofing Certificate, for all buildings subject to Section 26-306 of this Chapter for public inspection and provide copies of same.
- (H) Records for Public Inspection. Maintain for public inspection and furnish upon request, base flood data, SFHA and regulatory floodway maps, copies of federal or state permit documents, variance documentation, Conditional Letter of Map Revision, Letter of Map Revision, Letter of Map Amendment, and "as-built" elevation and floodproofing or elevation and floodproofing certificates for all buildings constructed subject to this Chapter.
- (I) State Permit. Ensure that construction authorization has been granted by the Illinois Division of Water Resources, for all development projects subject to Sections 26-15 and 26-16 of this Chapter, unless enforcement responsibility has been delegated to the

Village. Upon acceptance of this Chapter by DWR and FEMA, responsibility is hereby delegated to the Village as per 92 Ill. Adm. Code 708 for construction in the regulatory floodway and floodplain when floodways have not been defined in Sections 26-15 and 26-16 of this Chapter. However, the following review approvals are not delegated to the Village and shall require review or permits from DWR:

- (1) Organizations which are exempt from this Chapter, as per the Illinois Revised Statutes.
  - (2) Department of Transportation projects, dams or impoundment structures as defined in Subsection 26-103(B) and all other state federal or local unit of government projects, including projects of the Village and County, except for those projects meeting the requirements of Section 26-15(B)(5).
  - (3) An engineer's determination that an existing bridge or culvert crossing is not a source of flood damage and the analysis indicating the proposed flood profile, per Section 26-15(B)(2)(e).
  - (4) An engineer's analysis of the flood profile due to Section 26-15(B)(2)(d).
  - (5) Alternative transition Sections and hydraulically equivalent compensatory storage as indicated in Section 26-15(B)(2) (a), (b) and (h).
  - (6) Permit issuance of structures within or over publicly navigable rivers, lakes, and streams.
  - (7) Any changes in the Base Flood Elevation or floodway locations.
  - (8) Base Flood Elevation determinations where none now exist.
- (J) Cooperation with Other Agencies. Cooperate with state, county, and federal floodplain management agencies to improve base flood or 100-year frequency flood and floodway data and to improve the administration of this Chapter. Submit data to DWR and the Federal Emergency Management Agency for proposed revisions of a regulatory map. Submit reports as required for the National Flood Insurance Program. Notify the Federal Emergency Management Agency of any proposed amendments to this Chapter.
- (K) Promulgate Regulations. Promulgate rules and regulations as necessary to administer and enforce the provisions of this Chapter, subject however to the review and approval of DWR and FEMA for any chapter changes.

**Sec. 26-302. Base Flood Elevation.**

This Chapter's protection standard is based on the Flood Insurance Study for the Village. If a base flood elevation or 100-year frequency flood elevation is not available for a particular site, then the protection standard shall be according to the best existing data available in the Illinois State Water Survey's Floodplain Information Repository. When a party disagrees with

the best available data, he/she may finance the detailed engineering study needed to replace existing data with better data and submit it to DWR, FEMA, and the Village.

- (A) The base flood or 100-year frequency flood elevation for the SFHA's of Salt Creek and Westwood Creek shall be as delineated on the 100-year flood profiles in the Flood Insurance Study of the Village prepared by FEMA and dated January 16, 1987, and such amendments to such study and maps as may be prepared from time to time.
- (B) The base flood or 100-year frequency flood elevation for the SFHA's of those parts of unincorporated DuPage County that are within the extraterritorial jurisdiction of the Village or that may be annexed into the Village shall be as delineated on the 100-year flood profiles in the Flood Insurance Study of DuPage County prepared by FEMA and dated October 15, 1981, and such amendments or revisions to such study and maps as may be prepared from time to time.
- (C) The base flood or 100-year frequency flood elevation for each SFHA delineated as an "AH Zone" or "AO Zone" shall be that elevation (or depth) delineated on the Flood Insurance Rate Map of the Village.
- (D) The base flood or 100-year frequency flood elevation for each of the remaining SFHA's delineated as an "A Zone" on the Flood Insurance Rate Map of the Village shall be according to the best existing data available in the Illinois State Survey Floodplain Information Repository. When no base flood or 100-frequency flood elevation exists, the base flood or 100-year frequency flood elevation for a Riverine SFHA shall be determined from a backwater model, such as HEC-2, WSP-2, or a dynamic model such as HIP. The flood flows used in the hydraulic models shall be obtained from a hydrologic model, such as HEC-1 TR-20, or HIP, or by techniques presented in various publications prepared by the United States Geological Survey for estimating peak flood discharges. Flood flows should be based on anticipated future land use conditions in the watershed as determined from adopted local and regional land use plans. Along any watercourses draining more than one (1) square mile, the above analyses shall be submitted to DWR for approval; once approved, it must be submitted to the Illinois State Water Survey Floodplain Information Repository for filing. For a non-riverine SFHA, the Base Flood Elevation shall be the historic Flood of Record plus three feet (3'), unless calculated by a detailed engineering study and approved by the Illinois State Water Survey.

### **Sec. 26-303. Occupation and Use of Flood Fringe Areas.**

Development in and/or filing of the flood fringe will be permitted if protection is provided against the base flood or 100-year frequency flood by proper elevation, and compensatory storage and other provisions of this Chapter are met. No use will be permitted which adversely affects the capacity of drainage facilities or systems. Developments located within the flood fringe shall meet the requirements of this Section, along with the requirements of Section 26-306.

- (A) Development Permit. No person, firm, corporation, or governmental body not exempted by state law shall commence any development in the SFHA without first obtaining a development permit from the Village Engineer.
- (1) Application for a development permit shall be made on a form provided by the Village Engineer. The application shall be accompanied by drawings of the site, drawn to scale, showing property line dimensions and legal description for the property and sealed by a licensed engineer, architect, or land surveyor; existing grade elevations in M.S.L., 1929 adj. datum or N.G.V.D. and all changes in grade resulting from excavation or filling; the location and dimensions of all buildings and additions to buildings. For all proposed buildings, the elevation of the lowest floor (including basement) and lowest adjacent grade shall be shown on the submitted plans and the development will be subject to the requirements of Section 26-306 of this Chapter.
  - (2) Upon receipt of a development permit application, the Village Engineer shall compare the elevation of the site to the base flood or 100-year frequency flood elevation. Any development located on land that can be shown to have been higher than the base flood elevation as of the site's first Flood Insurance Rate Map identification is not in the SFHA and, therefore, not subject to the requirements of this Chapter. The Village Engineer's office shall maintain documentation of the existing ground elevation at the development site and certification that this ground elevation existed prior to the date of the site's first Flood Insurance Rate Map identification.
  - (3) The Village Engineer shall be responsible for obtaining from the applicant, copies of all other local, state, county, and federal permits, approval or permit-not-required letters that may be required for this type of activity. The Village Engineer may not issue a permit unless all other local, state, and federal permits have been obtained.
- (B) Preventing Increased Damages. No development in the flood fringe shall create a threat to public health and safety.
- (1) If fill is being used to elevate the site above the base flood or 100-year frequency flood elevation, the applicant shall submit sufficient data and obtain a letter of map revision (LOMR) from FEMA for the purpose of removing the site from the floodplain.
  - (2) Compensatory Storage. Whenever any portion of a floodplain is authorized for use, the volume of space which will be occupied by the authorized fill or structure below the base flood or 100-year frequency flood elevation shall be compensated for and balanced by one and one-half times the hydraulically equivalent volume of excavation taken from below the base flood or 100-year frequency flood elevation. The excavation volume shall be at least one and one-half times the volume of storage lost due to the fill or structure. In the case of streams and watercourses, such excavation shall be made opposite or adjacent to the areas so

filled or occupied. All floodplain storage lost below the existing 10-year flood elevation shall be replaced below the proposed 10-year flood elevation. All floodplain storage lost above the existing 10-year flood elevation shall be replaced above the proposed 10-year flood elevation. All such excavations shall be constructed to drain freely and openly to the watercourse.

**Sec. 26-304. Occupation and Use of Identified Floodways.**

This Section applies to proposed development, redevelopment, site modification, or building modification within a regulatory floodway. The regulatory floodway for Salt Creek and Westwood Creek shall be as delineated on the regulatory floodway maps designated by DWR according and referenced in Section 26-103. Only those uses and structures will be permitted which meet the criteria in this Section. All floodway modifications shall be the minimum necessary to accomplish the purpose of the project. The development shall also meet the requirements of Section 26-306.

- (A) Development Permit. No person, firm, corporation, or governmental body not exempted by state law shall commence any development in a floodway without first obtaining a development permit from the Village Engineer.
  - (1) Application for a development permit shall be made on a form provided by the Village Engineer. The application shall include the following information:
    - (a) Name and address of applicant.
    - (b) Site location (including legal description) of the property, drawn to scale, on the regulatory floodway map, indicating whether it is proposed to be in an incorporated or unincorporated area.
    - (c) Name of stream or body of water affected.
    - (d) Description of proposed activity.
    - (e) Statement of purpose of proposed activity.
    - (f) Anticipated dates of initiation and completion of activity.
    - (g) Name and mailing address of the owner of the subject property if different from the applicant.
    - (h) Signature of applicant or the applicant's agent.
    - (i) If the applicant is a corporation, the president or other authorized officer shall sign the application form.
    - (j) If the applicant is a partnership, each partner shall sign the application form.

- (k) If the applicant is a land trust, the trust officer shall sign the name of the trustee by him/her as trust officer. A disclosure affidavit shall be filed with the application, identifying each beneficiary of the trust by name and address and defining the respective interests therein.
- (l) Plans of the proposed activity shall be provided which includes as a minimum:
  - (i) A vicinity map showing the site of the activity, name of the waterway, boundary lines, names of roads in the vicinity of the site, graphic or numerical scale, and north arrow.
  - (ii) A plan view of the project and engineering study reach showing existing and proposed conditions including principal dimensions of the structure or work, elevations in mean sea level (1 29 adjustment) datum or N.G.V.D., adjacent property lines and ownership, drainage and flood control easements, location of any channels and any existing or future access roads, regulatory floodway limit, floodplain limit, specifications and dimensions of any proposed channel modifications, location and orientation of cross-sections, north arrow, and a graphic or numerical scale.
  - (iii) Cross-Section views of the project and engineering study reach showing existing and proposed conditions including principal dimensions of the work as shown in plan view, existing and proposed elevations, normal water elevation, 100-year frequency flood elevation, and graphic or numerical scales (horizontal and vertical).
  - (iv) A copy of the regulatory floodway map marked to reflect any proposed change in the regulatory floodway location.
- (m) Any and all other local, county, state, and federal permits or approval letters that may be required for this type of development.
- (n) Engineering calculations and supporting data shall be submitted showing that the proposed work will meet the permit criteria of Section 26-15(B).
- (o) If the regulatory floodway delineation, base flood, or 100-year frequency flood elevation will change due to the proposed project, the application will not be considered complete until DWR has indicated conditional approval of the regulatory floodway map change. No structures may be built until a Letter of Map Revision has been approved by FEMA.
- (p) The application for a structure shall be accompanied by drawings of the site, drawn to scale showing property line dimensions and existing ground elevations and all changes in grade resulting from any proposed

excavation or filling, and floodplain and floodway limits; sealed by a registered professional engineer, licensed architect or registered land surveyor; the location and dimensions of all buildings and additions to buildings; and the elevation of the lowest floor (including basement) of all proposed buildings subject to the requirements of Section 26-306 of this Chapter.

(q) If the proposed project involves a channel modification, the applicant shall submit the following information:

- (i) A discussion of the purpose of and the need for the proposed work.
- (ii) A discussion of the feasibility of using alternative locations or methods to accomplish the purpose of the proposed work.
- (iii) An analysis of the extent and permanence of the impacts the project would have on the physical and biological condition of the body of water affected.

(2) The Village Engineer shall be responsible for obtaining from the applicant copies of all other local, state, and federal permits and approvals that may be required for this type of activity. The Village Engineer may not issue the development permit unless all required federal and state permits have been obtained. A Registered Professional Engineer, under the employ or contract of the Village shall review and approve applications reviewed under this Section.

(B) Preventing Increased Damages and a List of Appropriate Uses. The only developments in a floodway which will be allowed are Appropriate Uses, which will not cause a rise in the base flood elevation, and which will not create a damaging or potentially damaging increase in flood heights or velocities or be a threat to public health and safety and welfare or impair the natural hydrologic and hydraulic functions of the floodway or channel, or permanently impair existing water quality or aquatic habitat. Construction impacts shall be minimized by appropriate mitigation methods as called for in this Chapter. Only those Appropriate Uses listed in 92 Ill.Adm.Code 708 will be allowed. Appropriate uses do not include the construction or placement of any new structures, fill, building additions, buildings on stilts, excavation or channel modifications done to accommodate otherwise nonappropriate uses in the floodway, fencing (including landscaping or planting design to act as a fence), and storage of materials except as specifically defined above as an Appropriate Use.

(1) The approved Appropriate Uses are as follows:

- (a) Flood control structures, dikes, dams, and other public works or private improvements relating to the control of drainage, flooding, erosion, or water quality or habitat for fish and wildlife.

- (b) Structures or facilities relating to the use of, or requiring access to, the water or shoreline, such as pumping and treatment facilities, and facilities and improvements related to recreational boating, commercial shipping, and other functionally water dependent uses.
  - (c) Storm and sanitary sewer outfalls.
  - (d) Underground and overhead utilities.
  - (e) Recreational facilities such as playing fields and trail systems including any related fencing (at least 50 percent (50%) open when viewed from any one direction) built parallel to the direction of flood flows, and including open air pavilions.
  - (f) Detached garages, storage sheds, or other nonhabitable accessory structures without toilet facilities to existing buildings that will not block flood flows, nor reduce floodway storage.
  - (g) Bridge, culverts, roadways, sidewalks, railways, runways and taxiways and any modification thereto.
  - (h) Parking lots and any modifications thereto (where depth of flooding at the 100-year frequency flood event will not exceed 1.0 feet) and aircraft parking aprons built at or below ground elevation.
  - (i) Regulatory floodway regrading, without fill, to create a positive non-erosive slope toward a watercourse.
  - (j) Floodproofing activities to protect previously existing lawful structures including the construction of watertight window wells, elevating structures, or construction of floodwalls around residential, commercial or industrial principal structures where the outside toe of the floodwall shall be no more than ten feet (10') away from the exterior wall of the existing structure, and which are not considered substantial improvements to the structure.
  - (k) In the case of damaged or replacement buildings, reconstruction or repairs made to a building that are valued at less than fifty percent (50%) of the market value of the building before it was damaged or replaced, and which do not increase the outside dimensions of the building.
  - (l) Additions to existing buildings above the BFE that do not increase the building's footprint and are valued at less than fifty percent (50%) of the market value of the building.
- (2) Within the regulatory floodway, as identified on the regulatory floodway maps designated by DWR, the construction of an Appropriate Use will be considered

permissible provided that the proposed project meets the following engineering and mitigation criteria and is so stated in writing with supporting plans, calculations, and data by a registered professional engineer and provided that any structure meets the protection requirements of Section 26-306 of this Chapter.

- (a) Preservation of Flood conveyance so as Not to Increase Flood Stages Upstream. For appropriate uses other than bridge or culvert crossings, on-stream structures or dams, all effective regulatory floodway conveyance lost due to the project will be replaced for all flood events up to and including the 100-year frequency flood. In calculating effective regulatory floodway conveyance, the following factors shall be taken into consideration:

- (i) Regulatory floodway conveyance,

$$"K" = \frac{1.486 AR^{2/3}}{n}$$

where "n" is Manning's roughness factor, "A" is the effective area of the cross- Section, and "R" is the ratio of the area to the wetted perimeter. (See Open Channel Hydraulics, Ven Te Chow, 1959, Mc Graw-Hill Book Company, New York.)

- (ii) The same Manning's "n" value shall be used for both existing and proposed conditions unless a recorded maintenance agreement with a federal, state, or local unit of government can assure the proposed conditions will be maintained or the land cover is changing from a vegetative to a non-vegetative land cover.
    - (iii) Transition Sections shall be provided and used in calculations of effective regulatory floodway conveyance. The following expansion and contraction ratios shall be used unless an applicant's engineer can prove to DWR through engineering calculations or model tests that more abrupt transitions may be used with the same efficiency:
      - a. When water is flowing from a narrow Section to a wider Section, the water should be assumed to expand no faster than at a rate of one foot horizontal for every four feet (4') of the flooded stream's length.
      - b. When water is flowing from a wide Section to a narrow Section, the water should be assumed to contract no faster than at a rate of one foot horizontal for every one foot of the flooded stream's length.
      - c. When expanding or contracting flows in a vertical direction, a minimum of one foot (1') vertical transition for

every ten feet (10') of stream length shall be used.

- d. Transition Sections shall be provided between cross-Sections with rapid expansions and contractions and when meeting the regulatory floodway delineation on adjacent properties.
  - e. All cross-sections used in the calculations shall be located perpendicular to flood flows.
- (b) Preservation of Floodway Storage so as Not to Increase Downstream Flooding. Compensatory storage shall be provided for any regulatory floodway storage lost due to the proposed work from the volume of fill or structures placed and the impact of any related flood control projects. Compensatory storage for fill or structures shall be equal to at least 1.5 times the volume of floodway storage lost. Artificially created storage lost due to a reduction in head loss behind a bridge shall not be required to be replaced. The compensatory regulatory floodway storage shall be placed between the proposed normal water elevation and the proposed 100-year flood elevation. All regulatory floodway storage lost below the existing 10-year flood elevation shall be replaced below the proposed 10-year flood elevation. All regulatory floodway storage lost above the existing 10-year flood elevation shall be replaced above the proposed 10-year flood elevation. All such excavations shall be constructed to drain freely and openly to the watercourse. If the compensatory storage will not be placed at the location of the proposed construction, the applicant's engineer shall demonstrate to DWR through a determination of flood discharges and water surface elevations that the compensatory storage is hydraulically equivalent. Finally, there shall be no reduction in floodway surface area as a result of a floodway modification, unless such modification is necessary to reduce flooding at existing structure.
- (c) Preservation of Floodway Velocities so as Not to Increase Stream Erosion or Flood Heights. For all Appropriate Uses, except bridges or culverts or on-stream structures, the proposed work will not result in more than a ten percent an increase in the average channel or regulatory floodway velocities or stage for all flood events up to and including the 100-year frequency event. However, in the case of bridges or culverts or on-stream structures built for the purpose of backing up water in the stream during normal or flood flows, velocities may be increased at the structure site if scour, erosion, and sedimentation will be avoided by the use of riprap or other design measures.
- (d) Construction of New Bridges or Culvert Crossings and Roadway Approaches. The proposed structure shall not result in an increase of upstream flood stages greater than 0.1 foot when compared to the existing conditions for all flood events up to and including the 100-year frequency

event; or the upstream flood stage increases will be contained within the channel banks (or within existing vertical extensions of the channel banks) such as within the design protection grade of existing levees or flood walls or within recorded flood easements. If the proposed construction will increase upstream flood stages greater than 0.1 feet, the developer must contact DWR, Dam Safety Section for a Dam Safety permit or waiver.

- (i) The engineering analysis of upstream flood stages must be calculated using the flood study flows and corresponding flood elevations for tailwater conditions for the flood study specified in Section 26-302 of this Chapter. Culverts must be analyzed using the U.S. DOT, FHWA-Hydraulic Chart for the Selection of Highway Culverts. Bridges must be analyzed using the U.S. DOT/Federal Highway Administration Hydraulics of Bridge Waterways calculation procedures.
  - (ii) Lost floodway storage must be compensated for per Section 26-304(B)(2)(b).
  - (iii) Velocity increase must be mitigated per Section 26-304(B)(2)(c).
  - (iv) If the crossing is proposed over a public water that is used for recreational or commercial navigation, a Department of Transportation permit must be received.
  - (v) The hydraulic analysis for the backwater caused by the bridge showing the existing condition and proposed regulatory profile must be submitted to DWR for concurrence that a CLOMR is not required by Section 26-304(B) (2)(n).
  - (vi) All excavations for the construction of the crossing shall be designed per Section 26-304(B).
- (e) Reconstruction or Modification of Existing Bridges, Culverts, and Approach Roads.
- (i) The bridge or culvert and roadway approach reconstruction or modification shall be constructed with no more than 0.1 foot increase in backwater over the existing flood profile for all flood frequencies up to and including the 100-year event, if the existing structure is not a source of flood damage.
  - (ii) If the existing bridge or culvert and roadway approach is a source of flood damage to buildings or structures in the upstream floodplain, the applicant's engineer shall evaluate the feasibility of redesigning the structure to reduce the existing backwater, taking

into consideration the effects on flood stages on upstream and downstream properties.

- (iii) The determination as to whether or not the existing crossing is a source of flood damage and should be redesigned must be prepared in accordance with the Department of Transportation Rules 92 Ill. Adm. Code 708 (Floodway Construction in Northeastern Illinois) and submitted to the Division for review and concurrence before a permit is issued.
  
- (f) **On-Stream Structures Built for the Purpose of Backing Up Water.** Any increase in upstream stream flood stages greater than 0.1 foot when compared to the existing conditions, for all flood events up to and including the 100-year frequency event shall be contained within the channel banks (or within existing vertical extensions of the channel banks) such as within the design protection grade of existing levees or flood walls or within recorded flood easements. A permit or letter indicating a permit is not required must be obtained from DWR, Dam Safety Section for a Dam Safety permit or waiver for any structure built for the purpose of backing up water in the stream during normal or flood flow. All dams and impoundment structures as defined in Section 26-103(B) shall meet the permitting requirements of 92 Ill. Adm. Code 702 (Construction and Maintenance of Dams). If the proposed activity involves a modification of the channel or floodway to accommodate an impoundment, it shall be demonstrated that:
  - (i) The impoundment is determined to be in the public interest by providing flood control, public recreation, or regional storm water detention.
  - (ii) The impoundment will not prevent the migration of indigenous fish species, which require access to upstream areas as part of their life cycle, such as for spawning.
  - (iii) The impoundment will not cause or contribute to degraded water quality or habitat conditions. Impoundment design should include gradual bank slopes, appropriate bank stabilization measures, and a presedimentation basin.
  - (iv) A non-point source control plan has been implemented in the upstream watershed to control the effects of sediment runoff as well as minimize the input of nutrients, oil and grease, metals, and other pollutants. If there is more than one municipality in the upstream watershed, the municipality in which the impoundment is constructed should coordinate with upstream municipalities to ensure comprehensive watershed control.

- (v) The project otherwise complies with the requirement of Section 26-304.
- (g) Floodproofing of Existing Habitable, Residential and Commercial Structures. If construction is required beyond the outside dimensions of the existing building, the outside perimeter of the floodproofing construction shall be placed no further than ten feet (10') from the outside of the building. Compensation of lost storage and conveyance will not be required for floodproofing activities.
- (h) Excavation in the Floodway. When excavation is proposed in the design of bridges and culvert openings, including modifications to and replacement of existing bridge and culvert structures, or to compensate for lost conveyance for other Appropriate Uses, transition Sections shall be provided for the excavation. The following expansion and contraction ratios shall be used unless an applicant's engineer can prove to DWR through engineering calculations or model tests that more abrupt transitions may be used with the same efficiency.
  - (i) When water is flowing from a narrow Section to a wider Section, the water should be assumed to expand no faster than at a rate of one foot horizontal for every four feet (4') of the flooded stream's length.
  - (ii) When water is flowing from a wide Section to a narrow Section, the water should be assumed to contract no faster than at a rate of one foot horizontal for every one foot of the flooded stream's length.
  - (iii) When expanding or contracting flows in a vertical direction, a minimum of one foot (1') vertical transition for every ten feet (10') of stream length shall be used.
  - (iv) Erosion/scour protection shall be provided inland upstream and downstream of the transition Sections.
- (i) If the proposed activity involves a channel modification, it shall be demonstrated that:
  - (i) There are no practicable alternatives to the activity which would accomplish its purpose with less impact to the natural conditions of the body of water affected.
  - (ii) The activity has been planned and designed and will be constructed in a way which will minimize its adverse impacts on the natural conditions of the body of water affected, consistent with the following criteria:

- a. The physical characteristics of the modified channel shall match as closely as possible those of the existing channel in length, cross-Section, slope and sinuosity.
  - b. Hydraulically effective transitions shall be provided at both the upstream and downstream ends of the project, designed such that they will prevent erosion.
  - c. One-sided construction of a channel shall be used when feasible. Removal of streamside (riparian) vegetation should be limited to one side of the channel, where possible, to preserve the shading and stabilization effects of the vegetation.
  - d. Clearing of vegetation shall be limited to that which is essential for construction of the channel.
  - e. Channel banks shall be constructed with a side slope of no steeper than 4:1 horizontal to vertical, wherever practicable. Natural vegetation and gradual side slopes are the preferred method for bank stabilization. Where high velocities or sharp bends necessitate the use of alternative stabilization measures, natural rock or riprap are preferred materials. Artificial materials such as concrete, gabion, or construction rubble should be avoided unless there are no practicable alternatives.
  - f. All disturbed areas associated with the modification shall be seeded or otherwise stabilized as soon as possible upon completion of construction. Erosion blanket or an equivalent material shall be required to stabilize disturbed channel banks prior to establishment of the vegetative cover.
  - g. If the existing channel contains considerable bottom diversity such as deep pools, riffles, and other similar features, such features shall be provided in the new channel. Spawning and nesting areas and flow characteristics compatible with fish habitat shall also be established where appropriate.
  - h. The project otherwise complies with the requirements of Section 26-304.
- (j) Seeding and Stabilization Plan. For all activities located in a floodway, a seeding and stabilization plan shall be submitted by the applicant.

- (k) Soil Erosion and Sedimentation Measures. For all activities in the floodway, including grading, filling, and excavation, in which there is potential for erosion of exposed soil, soil erosion, and sedimentation, control measures shall be employed consistent with the following criteria:
  - (i) The construction area shall be minimized to preserve the maximum vegetation possible. Construction shall be scheduled to minimize the time soil is exposed and unprotected. In no case shall the existing natural vegetation be destroyed, removed, or disturbed more than fifteen (15) days prior to the initiation of improvements.
  - (ii) Temporary and/or permanent soil stabilization shall be applied to denuded areas as soon as possible. As a minimum, soil stabilization shall be provided within fifteen (15) days after final grade is reached on any portion of the site, and within fifteen (15) days to denuded areas which may not be at final grade but will remain undisturbed for longer than sixty (60) days.
  - (iii) Sedimentation control measures shall be installed before any significant grading or filling is initiated on the site to prevent the movement of eroded sediments off-site or into the channel. Potential sediment control devices include filter fences, straw bale fences, check dams, diversion ditches, and sediment basins.
  - (iv) A vegetated buffer strip of at least twenty-five feet (25') in width shall be preserved and/or re-established, where possible, along exiting channels (see Section 26-304(B)(2)(p)). Construction vehicle use of channels shall be minimized. Temporary stream crossings shall be constructed, where necessary, to minimize erosion. Necessary construction in or along channels shall be restabilized immediately.
  - (v) Soil erosion and sedimentation control measures shall be designed and implemented consistent with "Procedures and Standards for Urban Soil Erosion and Sedimentation Control in Illinois" (1988) also known as the "Green Book" and "Standards and Specifications for Soil Erosion and Sediment Control" (EPA, 1987).
- (l) Public Flood Control Projects. For public flood control projects, the permitting requirements of this Section will be considered met if the applicant can demonstrate to DWR through hydraulic and hydrologic calculations that the proposed project will not singularly or cumulatively result in increased flood heights outside the project right-of-way or easements for all flood events up to and including the 100-year frequency event.
- (m) General Criteria for Analysis of Flood Elevations.

- (i) The flood profiles, flows, and floodway data in the regulatory floodway study, referenced in Section 26-302, must be used for analysis of the base conditions. If the study data appears to be in error or conditions have changed, DWR shall be contacted for approval and concurrence on the appropriate base conditions data to use.
- (ii) If the 100-year regulatory floodway elevation at the site of the proposed construction is affected by backwater from a downstream receiving stream with a larger drainage area, the proposed construction shall be shown to meet the requirements of this Section for the 100-year frequency flood elevations of the regulatory floodway conditions and conditions with the receiving stream at normal water elevations.
- (iii) If the applicant learns from DWR, local governments, or a private owner that a downstream restrictive bridge or culvert is scheduled to be removed, reconstructed, modified, or a regional flood control project is scheduled to be built, removed, constructed or modified within the next five (5) years, the proposed construction shall be analyzed and shown to meet the requirements of this Section for both the existing conditions and the expected flood profile conditions when the bridge, culvert or flood control project is built.
- (n) Conditional Letter of Map Revision. If the Appropriate Use would result in a change in the regulatory floodway location or the 100-year frequency flood elevation, the applicant shall submit to DWR and to FEMA all the information, calculations and documents necessary to be issued a conditional regulatory floodway map revision and receive from DWR a conditional approval of the regulatory floodway change before a permit is issued. However, the final regulatory floodway map will not be changed by DWR until as-built plans or record drawings are submitted and accepted by FEMA and DWR. In the case of non-government projects, the municipality in incorporated areas and the county in unincorporated areas shall concur with the proposed conditional regulatory floodway map revision before DWR approval can be given. No filling, grading, dredging or excavating shall take place until a conditional approval is issued. No further development activities shall take place until a final Letter of Map Revision (LOMR) is issued by FEMA and DWR.
- (o) Professional Engineer's Supervision. All engineering analyses shall be performed by or under the supervision of a registered professional engineer.
- (p) For all activities in the floodway involving construction within twenty-five feet (25') of the channel, the following criteria shall be met:

- (i) A natural vegetation buffer strip shall be preserved within at least twenty-five feet (25') of the ordinary high-water mark of the channel.
    - (ii) Where it is impossible to protect this buffer strip during the construction of an Appropriate Use, a vegetated buffer strip shall be established upon completion of construction.
    - (iii) The use of native riparian vegetation is preferred in the buffer strip. Access through this buffer strip shall be provided, when necessary, for stream maintenance purposes.
  - (q) After receipt of conditional approval of the regulatory floodway change and issuance of a permit and a Conditional Letter of Map Revision, construction as necessary to change the regulatory floodway designation may proceed but no buildings or structures or other construction that is not an Appropriate Use may be placed in that area until the regulatory floodway map is changed and a final Letter of Map Revision is received. The regulatory floodway map will be revised upon acceptance and concurrence by DWR and FEMA of the "as built" plans.
- (3) State Review. For those projects listed below located in a regulatory floodway, the following criteria shall be submitted to DWR for their review and concurrence prior to the issuance of a permit:
- (a) DWR will review an engineer's analysis of the flood profile due to a proposed bridge pursuant to Section 26-304(B)(2)(d).
  - (b) DWR will review an engineer's determination that an existing bridge or culvert crossing is not a source of flood damage and the analysis shall indicate the proposed flood profile, pursuant to Section 26-304(B)(2)(e).
  - (c) The DWR will review alternative transition Sections and hydraulically equivalent storage pursuant to Section 26-304(B)(2)(a), (b), and (h).
  - (d) The DWR will review and approve prior to the start of construction any Department projects, dams (as defined in Section 26-103), and all other state, federal or local units of government projects, including projects of the municipality or county.
- (4) Other Permits. In addition to the other requirements of this Chapter, a development permit for a site located in a floodway shall not be issued unless the applicant first obtains a permit or written documentation that a permit is not required from DWR, issued pursuant to 615 ILCS 5/5 *et seq.* No permit from DWR shall be required if the Division has delegated this responsibility to the Village.

- (5) Dam Safety Permits. Any work involving the construction, modification or removal of a dam as defined in Section 26-103 per 92 Ill.Adm.Code 702 (Rules for Construction of Dams) shall obtain an Illinois Division of Water Resources Dam Safety permit prior to the start of construction of a dam. If the Village Engineer finds a dam that does not have a DWR permit, he/she shall immediately notify the Dam Safety Section of the Division of Water Resources. If the Village Engineer finds a dam which is believed to be in unsafe condition, he/she shall immediately notify the owner of the dam, DWR, Dam Safety Section in Springfield, and the Illinois Emergency Services and Disaster Agency (ESDA).
- (6) Activities that do not require a registered professional engineer's review. The following activities may be permitted without a registered professional engineer's review. Such activities shall still meet the other requirement of this Chapter, including the mitigation requirements.
  - (a) Underground and overhead utilities that:
    - (i) Do not result in any increase in existing ground elevations, or
    - (ii) Do not require the placement of above ground structures in the floodway, or
    - (iii) In the case of underground stream crossings, the top of the pipe or encasement is buried a minimum of three feet (3') below the existing stream bed, and
    - (iv) In the case of overhead utilities, no supporting towers are placed in the watercourse and are designed in such a fashion as not to catch debris.
  - (b) Storm and sanitary sewer outfalls that:
    - (i) Do not extend riverward or lakeward of the existing adjacent natural bank slope, and
    - (ii) Do not result in an increase in ground elevation, and
    - (iii) Are designed so as not to cause stream erosion at the outfall location.
  - (c) Construction of sidewalks, athletic fields (excluding fences), properly anchored playground equipment and patios at grade.
  - (d) Construction of shoreline and streambank protection that:
    - (i) Does not exceed one thousand feet (1,000') in length.
    - (ii) Materials are not placed higher than the existing top of bank.

- (iii) Materials are placed so as not to reduce the cross-sectional area of the stream channel or bank of the lake.
  - (iv) Vegetative stabilization and gradual side slopes are the preferred mitigation methods for existing erosion problems. Where high channel velocities, sharp bends or wave action necessitate the use of alternative stabilization measures, natural rock or rip-rap are preferred materials. Artificial materials such as concrete, construction rubble, and gabions should be avoided unless there are no practicable alternatives.
- (e) Temporary stream crossings in which:
- (i) The approach roads will be 0.5 feet (1/2-foot) or less above natural grade.
  - (ii) The crossing will allow stream flow to pass without backing up the water above the stream bank vegetation line or above any drainage tile or outfall invert.
  - (iii) The top of the roadway fill in the channel will be at least two feet (2') below the top of the lowest bank. All fill in the channel shall be non-erosive materials, such as riprap or gravel.
  - (iv) All disturbed stream banks will be seeded or otherwise stabilized as soon as possible upon installation and again upon removal of the crossing.
  - (v) The access road and temporary crossings will be removed within one year after authorization.

**Sec. 26-305. Occupation and Use of SFHA Areas where Floodways Are Not Identified.**

In SFHA or floodplains, where no floodways have been identified and no base flood or 100-year frequency flood elevations have been established by FEMA, and draining more than a square mile, no development shall be permitted unless the cumulative effect of the proposals, when combined with all other existing and anticipated uses and structures, shall not significantly impede or increase the flow and passage of the floodwaters nor significantly increase the base flood or 100-year frequency flood elevation.

- (A) Development Permit. No person, firm, corporation, or governmental body, not exempted by state law, shall commence any development in a SFHA or floodplain without first obtaining a development permit from the Village Engineer. Application for a development permit shall be made on a form provided by the Village Engineer. The application shall be accompanied by drawings of the site, drawn to scale showing property line dimensions; and existing grade elevations and all changes in grade resulting from excavation or filling, sealed by a licensed engineer, architect, or surveyor;

the location and dimensions of all buildings and additions to buildings; and the elevation at the lowest floor (including basement) of all proposed buildings subject to the requirements of Section 26-306 of this Chapter.

- (1) The application for a development permit shall also include the following information:
  - (a) A detailed description of the proposed activity, its purpose, and intended use.
  - (b) Site location (including legal description) of the property, drawn to scale, on the regulatory floodway maps, indicating whether it is proposed to be in an incorporated or unincorporated area.
  - (c) Anticipated dates of initiation and completion of activity.
  - (d) Plans of the proposed activity shall be provided which include as a minimum:
    - (i) A vicinity map showing the site of the activity, name of the waterway, boundary lines, names of roads in the vicinity of the site, graphic or numerical scale, and north arrow.
    - (ii) A plan review of the project and engineering study reach showing existing and proposed conditions including principal dimensions of the structure or work, elevations in mean sea level (1929 adjustment) datum or N.G.V.D., adjacent property lines and ownership, drainage and flood control easements, floodplain limit, location and orientation of cross-sections, north arrow, and a graphical or numerical scale.
    - (iii) Cross-section view of the project and engineering study reach showing existing and proposed conditions including principal dimensions of the work as shown in plan view, existing and proposed elevations, normal water elevations, 10-year frequency flood elevation, 100-year frequency flood elevation, and graphical or numerical scales (horizontal and vertical).
  - (e) Engineering calculations and supporting data shall be submitted showing that the proposed work will meet the criteria of Section 26-305(B).
  - (f) Any and all other local, state and federal permits or approval that may be required for this type of development.
- (2) Based on the best available existing data according to the Illinois State Water Survey's Floodplain Information Repository, the Village Engineer shall compare the elevation of the site to the base flood or 100-year frequency flood elevation.

Should no elevation information exist for the site, the developer's engineer shall calculate the elevation according to Section 26-302. Any development located on land that can be shown to have been higher than the base flood elevation as of the site's first Flood Insurance Rate Map Identification is not in the SFHA and, therefore, is not subject to the requirements of this Chapter. The Building Department shall maintain documentation of the existing ground elevation at the development site and certification that this ground elevation existed prior to the date of the site's first Flood Insurance Rate map identification.

- (3) The Village Engineer shall be responsible for obtaining from the applicant copies of all other local, state, and federal permits, approvals or permit-not-required letters that may be required for this type of activity. The Village Engineer shall not issue the development permit unless all required local, state, and federal permits have been obtained.
- (B) Preventing Increased Damages. No development in the SFHA, where a floodway has not been determined shall create a damaging or potentially damaging increase in flood heights or velocities or threat to public health, safety, and welfare or impair the natural hydrologic and hydraulic functions of the floodway or channel.
- (1) Within all riverine SFHA's where the floodway has not been determined, the following standards shall apply:
    - (a) The developer shall have a Registered Professional Engineer state in writing and show through supporting plans, calculations, and data that the project meets the engineering requirements of Section 26-304(B) (2) for the entire floodplain, as calculated under the provisions of Section 26-302(D) of this Chapter. As an alternative, the developer should have an engineering study performed to determine a floodway and submit that engineering study to DWR for acceptance as a regulatory floodway. Upon acceptance of their floodway by the Department, the developer shall then demonstrate that the project meets the requirements of Section 26-304 for the regulatory floodway. The floodway shall be defined according to the definition in Section 2-106(B) of this Chapter.
    - (b) A development permit shall not be issued unless the applicant first obtains a permit from DWR or written documentation that a permit is not required from DWR.
    - (c) No permit from DWR shall be required if the Division has delegated permit responsibility to the Village per 92 Ill. Adm. Code, Part 708 for regulatory floodways, per DWR Statewide Permit entitled "Construction in Floodplains with No Designated Floodways in Northeastern Illinois."
    - (d) Dam Safety Permits. Any work involving the construction, modification or removal of a dam or an on-stream structure to impound water as defined in Section 26-103(B) shall obtain an Illinois Division of Water

Resources Dam Safety permit or letter indicating a permit is not required prior to the start of construction of a dam. If the Village Engineer finds a dam that does not have a DWR permit, he shall immediately notify the Dam Safety Section of the Division of Water Resources. If the Village Engineer finds a dam which is believed to be in unsafe condition, he shall immediately notify the owner of the dam, the Illinois Emergency Services and Disaster Agency (ESDA), and the DWR, Dam Safety Section in Springfield.

- (e) The following activities may be permitted without a Registered Professional Engineer's review or calculation of a base flood elevation and regulatory floodway. Such activities shall still meet the other requirements of this Chapter:
  - (i) Underground and overhead utilities that:
    - a. Do not result in any increase in existing ground elevations, or
    - b. Do not require the placement of above-ground structures in the floodway, or
    - c. In the case of underground stream crossings, the top of the pipe or encasement is buried a minimum of three feet (3') below the existing streambed, and
    - d. In the case of overhead utilities, no supporting towers are placed in the watercourse and are designed in such a fashion as not to catch debris.
  - (ii) Storm and sanitary sewer outfalls that:
    - a. Do not extend riverward or lakeward of the existing adjacent natural bank slope.
    - b. Do not result in an increase in ground elevation.
    - c. Are designed so as not to cause stream bank erosion at the outfall location.
  - (iii) Construction of shoreline and streambed protection that:
    - a. Does not exceed one thousand feet (1,000') in length or two (2) cubic yards per lineal foot of streambed.
    - b. Materials are not placed higher than the existing top of bank.

- c. Materials are placed so as not to reduce the cross-sectional area of the stream channel by more than ten percent (10%).
  - d. Vegetative stabilization and gradual side slopes are the preferred mitigation methods for existing erosion problems. Where high channel velocities, sharp bends or wave action necessitate the use of alternative stabilization measures, natural rock or riprap are preferred materials. Artificial materials, such as concrete, construction rubble, and gabions should be avoided unless there are no practical alternatives.
- (iv) Temporary stream crossings in which:
- a. The approach will be 0.5 feet (1/2 foot) or less above natural grade.
  - b. The crossing will allow stream flow to pass without backing up the water above the stream bank vegetation line or above any drainage tile or outfall invert.
  - c. The top of the roadway fill in the channel will be at least two feet (2') below the top of the lowest bank. Any fill in the channel shall be non-erosive materials, such as riprap or gravel.
  - d. All disturbed stream banks will be seeded or otherwise stabilized as soon as possible upon installation and again upon removal of construction.
  - e. The access road and temporary crossings will be removed within one year after authorization.
- (v) The construction of light poles, sign posts, and similar structures.
- (vi) The construction of sidewalks, driveways, athletic fields (excluding fences), patios and similar surfaces which are built at grade.
- (vii) The construction of properly anchored, unwallled, open structures such as playground equipment, pavilions, and carports built at or below existing grade that would not obstruct the flow of flood waters.
- (viii) The placement of properly anchored buildings not exceeding seventy (70) square feet in size nor ten feet (10') in any one dimension (e.g., animal shelters and tool sheds).

- (ix) The construction of additions to existing buildings which do not increase the first floor area by more than twenty percent (20%), which are located on the upstream or downstream side of the existing building, and which do not extend beyond the sides of the existing building that are parallel to the flow of flood waters.
- (x) Minor maintenance dredging of a stream channel where:
  - a. The affected length of stream is less than one thousand feet (1,000’).
  - b. The work is confined to re-establishing flows in natural stream channels.
  - c. The cross-sectional area of the dredged channel conforms to that of the natural channel upstream and downstream of the site.
- (f) The flood carrying capacity within any altered or relocated watercourse shall be maintained.
- (2) **Compensatory Storage.** Whenever any portion of a floodplain is authorized for use, the volume of space which will be occupied by the authorized fill or structure below the base flood or 100-year frequency flood elevation shall be compensated for and balanced by a hydraulically equivalent volume of excavation taken from below the base flood or 100-year frequency flood elevation. The excavation volume shall be at least equal to one and one half (1-1/2) times the volume of storage that is lost due to the fill or structure. In the case of streams and watercourses, such excavation shall be made opposite or adjacent to the areas so filled or occupied. All floodplain storage lost below the existing 10-year flood elevation shall be replaced below the proposed 10-year flood elevation. All floodplain storage lost above the existing 10-year flood elevation shall be replaced above the proposed 10-year flood elevation. All such excavations shall be constructed to drain freely and openly to the watercourse.

**Sec. 26-306. Permitting Requirements Applicable to all Flood Plain Areas.**

In addition to the requirements found in Sections 26-303, 26-304, and 26-305 for development in flood fringes, regulatory floodways, and SFHA or floodplains where no floodways have been identified (Zones A, AO, AH, AE, A1-A30, A99, VO, V1-30, VE, V, M, or E), the following requirements shall be met:

(A) **Public Health Standards**

- (1) No developments in the SFHA shall include locating or storing chemicals, explosives, buoyant materials, animal wastes, fertilizers, flammable liquids, pollutants, or other hazardous or toxic materials below the FPE.

- (2) New and replacement water supply systems, wells, sanitary sewer lines and on-site waste disposal systems may be permitted providing all manholes or other above ground openings located below the FPE are watertight.
- (B) Carrying Capacity and Notification. For all projects involving channel modifications, fill, or stream maintenance (including levees), the flood carrying capacity of the water course shall be maintained. In addition, the Village shall notify adjacent communities in writing thirty (30) day prior to the issuance of a permit for the alteration or relocation of the watercourse.
  - (C) Protecting Buildings. All buildings located within a 100-year floodplain, also known as a SFHA, shall be protected from flood damage below the flood protection elevation. However, existing buildings located within a regulatory floodway shall also meet the more restrictive Appropriate Use Standards included in Section 26-304.
    - (1) The building criteria apply to the following situations:
      - (a) Construction or placement of a new building.
      - (b) A structural alteration to an existing building that either increases the first-floor area by more than twenty percent (20%) or the building's market value by more than fifty percent (50%).
      - (c) Installing a manufactured home on a new site or a new manufactured home on an existing site. This building protection requirement does not apply to returning a mobile home to the same site it lawfully occupied before it was removed to avoid flood damage.
      - (d) Installing a travel trailer on a site for more than one hundred eighty (180) days.
    - (2) This building protection requirement may be met by one of the following methods.
      - (a) A residential or non-residential building, when allowed, may be constructed on permanent landfill in accordance with the following:
        - (i) The lowest floor (including basement) shall be at or above the flood protection elevation.
        - (ii) The fill shall be placed in layers no greater than 1-foot deep before compaction and should extend at least ten feet (10') beyond the foundation of the building before sloping below the flood protection elevation. The top of the fill shall be above the flood protection elevation. However, the 10-foot minimum may be waived if a structural engineer certifies an alternative method to protect the building from damages due to hydrostatic pressures.

The fill shall be protected against erosion and scour. The fill shall not adversely affect the flow of surface drainage from or onto neighboring properties.

- (b) A residential or non-residential building may be elevated in accordance with the following:
  - (i) The building or improvement shall be elevated on crawl space, stilts, piles, walls, or other foundation that is permanently open to flood waters and not subject to damage by hydrostatic pressures of the base flood or 100-year frequency flood. The permanent openings shall be no more than one foot above grade and consist of a minimum of two openings. The openings must have a total net area of not less than one square inch for every one square foot of enclosed area subject to flooding below the Base Flood Elevation.
  - (ii) The foundation and supporting members shall be anchored and aligned in relation to flood flows and adjoining structures so as to minimize exposure to known hydrodynamic forces such as current, waves, ice, and floating debris.
  - (iii) All areas below the flood protection elevation shall be constructed of materials resistant to flood damage. The lowest floor (including basement) and all electrical, heating, ventilating, plumbing, and air conditioning equipment and utility meters shall be located at or above the flood protection elevation. Water and sewer pipes, electrical and telephone lines, submersible pumps, and other water-proofed service facilities may be located below the flood protection elevation.
  - (iv) No area below the flood protection elevation shall be used for storage of items or materials.
- (v) Manufactured homes and travel trailers to be installed on a site for more than one hundred eighty (180) days shall be elevated to or above the flood protection elevation and shall be anchored to resist flotation, collapse, or lateral movement by being tied down in accordance with the Rules and Regulations for the Illinois Mobile Home Tie-Down Act issued pursuant to 77 Ill. Adm. Code 870.
- (c) Only a non-residential building may be structurally floodproofed (in lieu of elevation) provided that a registered professional engineer shall certify that the building has been structurally dry floodproofed below the flood protection elevation, the structure and attendant utility facilities are watertight and capable of resisting the effects of the base flood or 100-year frequency flood. The building design shall take into account flood velocities, duration, rate of rise, hydrostatic and hydrodynamic forces, the

effects of buoyancy, and impacts from debris or ice. Floodproofing measures shall be operable without human intervention and without an outside source of electricity (levees, berms, floodwalls, and similar works are not considered floodproofing for the purpose of this subsection).

- (d) Non-conforming structures located in a regulatory floodway may remain in use, but may not be enlarged, replaced or structurally altered. A nonconforming structure damaged by flood, fire, wind or other natural or man-made disaster may be restored unless the damage exceeds 50 percent of its market value before it was damaged, in which case it shall conform to this Chapter.
- (3) Detached garages of single-family homes may be "wet- proofed" provided that all of the following conditions apply:
- (a) The garages are not located in the floodway.
  - (b) The garages are only used for the storage of vehicles and tools.
  - (c) The garages are not habitable and do not contain other rooms or uses (such as a shop, greenhouse, bedroom, etc.
  - (d) All the utilities are above the base flood elevation.
  - (e) All the materials that are located below the base flood elevation are flood resistant.
  - (f) The garages cover less than five hundred (500) square feet of land.

**Sec. 26-307. Other Development Requirements.**

The Board of Trustees shall take into account flood hazards to the extent that they are known in all official actions related to land management, use, and development.

- (A) New subdivisions, manufactured home parks, annexation agreements, and Planned Unit Developments (PUD's) within the SFHA shall be reviewed to assure that the proposed developments are consistent with Sections 26-303, 26-304, 26-305, and 26-306 of this Chapter and the need to minimize flood damage. Plats or plans for new subdivisions, mobile home parks, and PUD's shall include a signed statement by a Registered Professional Engineer that the plat or plans account for changes in the drainage of surface waters in accordance with the Plat Act (765 ILCS 205/2).
- (B) Proposals for new subdivisions, manufactured home parks, travel trailer parks, and PUD's additions to manufactured home parks, and additions to subdivisions shall include base flood or 100-year frequency flood elevation data and floodway delineations. Where this information is not available from an existing study filed with the Illinois State Water Survey, the applicant's engineer shall be responsible for calculating the base flood or 100-

year frequency flood elevation per Section 26-302(D) and the floodway delineation per the definition in Section 26-103(B) and submitting it to the State Water Survey and DWR for review and approval as best available regulatory data.

- (C) Street, blocks, lots, parks, and other public grounds shall be located and laid out in such a manner as to preserve and utilize natural streams and channels. Wherever possible, the floodplains shall be included within parks or other public grounds.
- (D) The Board of Trustees shall not approve any PUD or plat of subdivision located outside the corporate limits unless such agreement or plat is in accordance with the provisions of this Chapter.

#### **Article IV. Administration and Enforcement.**

##### **Sec. 26-401. Responsibility.**

The administration and enforcement of this Chapter shall be the responsibility of the Village Engineer.

##### **Sec. 26-402. Appeals.**

An appeal may be taken to the Board by any person aggrieved by an administrative order, requirement, decision, or determination under this Chapter by the Village Engineer.

##### **Sec. 26-403. Exemption; Payment Option for Areas Not Located in SFHA'S.**

This Section may provide the developer with an alternative to physically providing for detention storage of excess storm water runoff for the development or improvement. The owner or other person proposing development in certain situations shall have the option of paying to the Village cash funds in lieu of complying with the provisions that require physical detention storage to storm water. The cash funds shall be in an amount that is substantially equal to the estimated cost to the Village for providing an alternate means of storm water detention storage that is substantially equivalent to the increased amount of storm water runoff that will result from the proposed development, as determined by the Village Engineer. Calculations of such increased amount of storm water runoff shall be made on the basis of (and expressed in terms of) an acre-foot of volume, or a fraction thereof. All funds paid to the Village under this Section shall be segregated, held, and disbursed only to pay the costs of such additional storm water detention storage facilities as the Village deems appropriate.

This Section further provides the developer with an alternative to physically providing for water quality BMP for the development or improvement as those presented in Appendix E of the County Ordinance, Part I-Technical Guidance, Water Quality Best Management Practices. All funds paid to the Village under this paragraph shall be separately segregated, held, and disbursed only to pay the costs of the design, construction and maintenance of BMP as the Village deems appropriate.”

- (A) The "Exemption: Payment Option" will not apply if the area of the proposed development is within a Special Flood Hazard Area.
- (B) The "Exemption: Payment Option" will only be permitted if the developer and his engineer can substantiate hardship in complying with the detention storage provisions of Article 2. The Mayor and Board of Trustees shall only recognize a hardship if, upon evidence presented to them, they conclude the following:
  - (1) The property in question cannot yield a reasonable return if permitted to be used only under the conditions allowed by the provisions of Article 2 otherwise applicable.
  - (2) Failure to grant the "Exemption: Payment Option" would constitute a hardship to the owner which has not resulted from actions of the owner.
  - (3) The requested "Exemption: Payment Option" has a beneficial purpose and is otherwise lawful.
  - (4) The requested "Exemption: Payment Option" will have no materially adverse effect upon efficiency of water flow capacity or water detention storage capacity of any floodway or floodplain, as determined by the Village Engineer.
  - (5) The requested "Exemption: Payment Option" will not materially increase the probability of potential flood damage either to the subject property or to other properties, as determined by the Village Engineer.
  - (6) The requested "Exemption: Payment Option" will not alter the essential character of the vicinity.
- (C) The payment rate due from an owner-developer for the "Exemption: Payment Option" shall be calculated at the rate of one hundred fifteen thousand dollars (\$115,000.00) per acre-foot of exemption detention storage. The exemption detention storage volume shall be equal to 100 percent of the detention storage volume required per Article 2. This one hundred fifteen thousand dollars (\$115,000.00) per acre-foot of exemption detention storage volume has been calculated by the Village Engineer to be sufficient to compensate the Village for total expenses in providing detention storage in another location as of March 1, 1999. The rate for a fractional acre-foot of exemption detention storage shall be prorated as appropriate.

From time to time, as frequently as the Village Board may deem it necessary or desirable, the Village Board shall determine and establish the cost to the Village of providing one acre-foot of storm water exemption detention storage, such cost to include, without limitation, the cost of necessary land acquisition, engineering expenses, legal fees, and other related expenditures. The amount so determined and established shall serve as the basis for the calculation of the cash funds to be paid as provided in this Section until such time as a different amount is determined and established by the Village Board.

- (D) The owner-developer shall be exempt from the storm water detention storage requirement according to Article 2 providing that:
- (1) The owner-developer has procured the written approval of the Village Engineer for lots less than or equal to one acre in size or the Village Engineer and the Mayor and Board of Trustees for lots greater than one acre in size, acknowledging that all of the requirements of this Section have been complied with.
  - (2) The owner-developer has made cash payment to the Village for the amount of detention storage volume exempted and the payment made at the established dollar rate per acre-foot of volume.
  - (3) For lots greater than one acre in size, such exemption shall be made by a certificate signed by the Mayor with the approval of the Board of Trustees.
- (E) The payment rate due from an owner-developer for the “Exemption: Payment Option for water quality BMP” shall be calculated as follows:

Single- or two-family residential land uses	\$ 3,000 per acre
Multiple family or non-residential land uses	\$15,000 per acre
Roadway Developments	\$30,000 per acre
Religious institutions defined under Sec. 15-10 of the Illinois Property Tax Code and governmental entities not to include roadways and parking lots	\$ 3,000 per acre

(Ord. 99-65; 08-60)

**Sec. 26-404. Variances.**

The Board may grant variances from the regulatory standards of this Chapter in accordance with the following requirements: The issuance of a variance is for floodplain management purposes only. The Board, after examining the applicant's hardships, shall approve or disapprove a request. While the granting of variances generally is limited to a lot size less than one-half acre, deviations from that limitation may occur. However, as the lot size increases beyond one-half acre, the technical justification required for issuing a variance increases. The Federal Emergency Management Agency (FEMA) may review a community's findings justifying the granting of variances, and if that review indicates a pattern inconsistent with the objectives of sound floodplain management, FEMA may take appropriate action. Variances may be issued by the Board for reconstruction, rehabilitation or restoration of structures listed on the National Register of Historic Places or a State Inventory of Historic Places, without regard to the procedures set forth in this Section. Procedures for the granting of variances are as follows:

- (A) Variances shall not be issued if any increase in flood levels during the base flood discharge would result.

- (B) Variances may be issued for new construction and substantial improvements to be erected on a lot of one-half acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level in conformance with the procedures of this Section.
- (C) Variances shall only be issued upon (1) a showing of good and sufficient cause, (2) a determination that failure to grant the variance would result in exceptional hardship to the applicant, (3) a determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances, cause fraud on or victimization of the public, or conflict with existing local laws or ordinances, (4) Development activity cannot be located outside of the special flood hazard area, and (5) the provisions of Sections 26-303(B) and 5.305(B) can still be met.
- (D) Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief.
- (E) The Village Engineer shall notify the applicant in writing that (a) the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars (\$25.00) for one hundred dollars (\$100.00) of insurance coverages, and (b) such construction below the base flood level increases risks to life and property. Such notification shall be maintained with a record of all variance actions as required in this Section.
- (F) The Board shall (a) maintain a record of all variance actions, including justification for their issuance, and (b) report such variances issued in its annual or biennial report submitted to FEMA.

#### **Article V. Savings Clauses.**

##### **Sec. 26-501. Separability.**

If any section, clause, provision, or portion of this Chapter is adjudged unconstitutional or invalid by a court of competent jurisdiction, the remainder of this Chapter shall not be affected thereby.

##### **Sec. 26-502. Abrogation and Greater Restrictions.**

It is not intended by this Chapter to repeal, abrogate, or impair any existing easements, covenants, or deed restrictions. However, where this Chapter imposes greater restrictions, the provision of this Chapter shall prevail. This Chapter is intended to repeal the original ordinance or resolution which was adopted to meet the National Flood Insurance Program regulations, but is not intended to repeal the resolution which the Village passed in order to establish initial eligibility for the program.

##### **Sec. 26-503. Disclaimer of Liability.**

The degree of flood protection required by this Chapter is considered reasonable for regulatory purposes and is based on historical records, engineering, and scientific methods of study. Larger floods may occur or flood heights may be increased by manmade or natural causes. This Chapter does not imply that areas outside the prescribed floodplain boundaries or land uses permitted with such floodplains will be free from flooding or flood damages. This Chapter shall not create liability on the part of the Village of Addison or any officer or employee thereof for any flood damages which may result from reliance on this Chapter or on any administrative decision lawfully made thereunder.

**Sec. 26-504. Judicial Appeals.**

Any party shall have the right to appeal decisions of the Village of Addison before the Circuit Court of DuPage County.

**Article VI. Penalties for Violation.**

**Sec. 26-601. General.**

Violation of the provisions of this Chapter or failure to comply with any of its requirements, including conditions and safeguards established in connection with variances or special use permits shall constitute a misdemeanor. Any person who violates this Chapter or fails to comply with any of its requirements shall upon conviction thereof be fined not more than five hundred dollars (\$500.00), and in addition, shall pay all costs and expenses involved in the case. Each day such violation continues shall be considered a separate offense.

**Sec. 26-602. Corrective Actions.**

Nothing herein contained shall prevent the Village of Addison from taking such other lawful action as is necessary to prevent or remedy any violation. All such costs connected therewith shall accrue to the person or persons responsible. The Village Engineer shall inform the owner that any such violation is considered a willful act to increase flood damages and, therefore, may cause coverage by a standard flood insurance policy to be suspended.

**Article VII. Countywide Stormwater and Floodplain Ordinance**  
(Amended in its Entirety by Ord. 19-41)

**Sec. 26-701. Countywide Stormwater and Floodplain Ordinance Adopted.**

- A. The Village of Addison hereby adopts Articles 2 through 16, applicable portions of Article 17 and Article 18, inclusive, of the Countywide Stormwater and Floodplain Ordinance SM-O-0028-19, effective May 14, 2019 as now existing or hereafter amended (County Ordinance). These provisions are not adopted by reference but, rather, are adopted as a specific and integral part of the Village's Stormwater and Floodplain Management as codified in this Chapter. Article 2 through 16, applicable portions of Article 17, and Article 18, inclusive, of the County Ordinance shall be codified as Appendix "A" to this Chapter 26.

- B. The Village of Addison further adopts the General Certifications to the County Ordinance SM-O-0028-19, as now existing or hereafter amended, as an integral part of this Chapter 26.
- C. The provision adopted by this Section shall be in full force and effect and shall supersede any other ordinances of the Village with which they are inconsistent or which are less stringent than the terms of this Chapter.

**Sec. 26-702. Floodway and Floodplain Map Designations Adopted.**

The DuPage County, Illinois, floodway and floodplain designations, attached to this Article as Appendix B and made a part hereof, which include the Flood Insurance Rate Map (FIRM) panels for DuPage County which are final and effective as of August 1, 2019, and the Flood Insurance Study (FIS) dated August 1, 2019 are hereby adopted.

## APPENDIX A

Articles 5, 9, 11, acronyms and initialisms of Schedule A, and Exhibit 2 of the DuPage Countywide Stormwater and Floodplain Ordinance, amended on May 14, 2019 and as amended from time to time, were adopted by Ordinance No. O-19-41 of the Village passed on July 15, 2019 and was appended to this Chapter 26 as Appendix A. The DuPage Countywide Stormwater and Floodplain Ordinance is not included in this volume but is on file in the Office of the Village Clerk. (Ord. 19-41)

## APPENDIX B

DuPage County, Illinois, floodway and floodplain designations, including the FIRM panels and FS, which are final and effective as of August 1, 2019, are available for inspection in the office of the Village Engineer. (Ord. 19-41)