Chapter 155

STORMWATER MANAGEMENT

[HISTORY: Adopted by the Town Council of the Municipality of Kingston 10-1-2012 by Ord. No. 2012-7.[1] Amendments noted where applicable.]

GENERAL REFERENCES

Building construction — See Ch. 60.
Floodplains — See Ch. 97.
Sewers and drains — See Ch. 147.
Subdivision of land — See Ch. 158.
Wastewater discharge — See Ch. 176.

ARTICLE I
General Provisions

§ 155-1. Short title.

This chapter shall be known and may be cited as the "Municipality of Kingston Stormwater Management Ordinance."

§ 155-2. Statement of findings.

The governing body of the Municipality finds that:

A. Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases non-point-source pollution of water resources.

B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of the people of the commonwealth, their resources, and the environment.

C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.

D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES).

1. **Editor's Note: This ordinance also provided for the repeal of former Ch. 155, Stormwater Management, adopted 4-7-2004 by Ord. No. 2004-4.**

§ 155-3. Purpose.

The purpose of this chapter is to promote health, safety, and welfare within the Municipality and its watershed by minimizing the harms and maximizing the benefits described in § 155-2 of this chapter, through provisions designed to:

A. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code Chapter 93, to protect, maintain, reclaim, and restore the existing and designated uses of the waters of this commonwealth.

B. Preserve the natural drainage systems as much as possible.

C. Manage stormwater runoff close to the source.

D. Provide procedures and performance standards for stormwater planning and management.

E. Maintain groundwater recharge to prevent degradation of surface water and groundwater quality and to otherwise protect water resources.

F. Prevent scour and erosion of stream banks and streambeds.

G. Provide proper operation and maintenance of all permanent SWM BMPs that are implemented within the Municipality.

H. Provide standards to meet NPDES permit requirements.

§ 155-4. Statutory authority.

A. Primary authority. The Municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. § 680.1 et seq., as amended, the "Stormwater Management Act," and the Charter of the Municipality of Kingston.

B. Secondary authority. The Municipality also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, the Pennsylvania Municipalities Planning Code, as amended.[2]

§ 155-5. Applicability.

A. All regulated activities and all activities that may affect stormwater runoff, including land development and earth disturbance activity, are subject to regulation by this chapter.

B. Pennsylvania Department of Transportation (PennDOT) roadway projects will perform stormwater management consistent with Publication 13M (Design Manual-2), Chapter 13.6, Antidegradation and Post Construction Stormwater Management Policy.

---

2. **Editor's Note: See 53 P.S. § 10101 et seq.**

§ 155-6. Repealer.

Any other ordinance provision(s) or regulation of the Municipality inconsistent with any of the provisions of this chapter is hereby repealed to the extent of the inconsistency only.

§ 155-7. Severability.

In the event that a court of competent jurisdiction declares any section or provision of this chapter invalid, such decision shall not affect the validity of any of the remaining provisions of this chapter.

§ 155-8. Compatibility with other requirements; administration.

A. Approvals issued and actions taken under this chapter do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation, or ordinance.

B. If the Municipality administers its own Subdivision and Land Development Ordinance, the Municipality shall be responsible for administering this chapter.

C. If the Municipality falls under the authority of the Luzerne County Subdivision and Land Development Ordinance, the county shall be responsible for administering this chapter.

D. The standards and criteria in this chapter supersede the standards and criteria in the previously enacted Luzerne County Stormwater Management Ordinance.

ARTICLE II
Definitions

§ 155-9. Interpretation.

For the purposes of this chapter, certain terms and words used herein shall be interpreted as follows:

A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.

B. The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like kind and character.

C. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

§ 155-10. Definitions.

As used in this chapter, the following terms shall have the meanings indicated:

AGRICULTURAL ACTIVITY — Activities associated with agriculture, such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops, including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

APPLICANT — A landowner, developer, or other person who has filed an application to the Municipality for approval to engage in any regulated activity at a project site in the Municipality.

BEST MANAGEMENT PRACTICES (BMPs) — Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this chapter. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "nonstructural." In this chapter, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff, whereas structural BMPs or measures are those that consist of a physical device or practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low-impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural stormwater BMPs are permanent appurtenances to the project site.

CAPTURE — The process of collecting runoff to be managed by a stormwater BMP.

CONSERVATION DISTRICT — A conservation district, as defined in Section 3(c) of the Conservation District Law [3 P.S. § 851(c)] that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code Chapter 102; refers to the Luzerne Conservation District unless otherwise noted.

DEP — The Pennsylvania Department of Environmental Protection.

DESIGN STORM — The magnitude and temporal distribution of precipitation from a storm event, measured in probability of occurrence (e.g., a five-year storm) and duration (e.g., 24 hours); used in the design and evaluation of stormwater management systems. Also see "return period."

DETENTION VOLUME — The volume of runoff that is captured and released into the waters of this commonwealth at a controlled rate.

DEVELOPMENT, LAND — See "land development."

DEVELOPMENT, SITE — Any human-induced change to improved or unimproved real estate, whether public or private, including, but not limited to, land development, construction, installation, or expansion of a building or other structure, land division, street construction,

drilling, and site alteration such as embankments, dredging, grubbing, grading, paving, parking or storage facilities, excavation, filling, stockpiling, or clearing.

DISCONNECTED IMPERVIOUS AREA (DIA) — An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration as specified in Appendix B, Disconnected Impervious Area.[3]

DISTURBED AREA — An unstabilized land area where an earth disturbance activity is occurring or has occurred.

EARTH DISTURBANCE ACTIVITY — A construction or other human activity which disturbs the surface of the land, including, but not limited to: clearing and grubbing; grading; excavations; embankments; road maintenance; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

EROSION — The natural process by which the surface of the land is worn away by water, wind, or chemical action.

EXISTING CONDITION — The dominant land cover during the five-year period immediately preceding a proposed regulated activity.

FEMA — The Federal Emergency Management Agency.

FLOODPLAIN — Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area; also includes areas that comprise Group 13 soils, as listed in Appendix A of the Pennsylvania DEP Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by the DEP).

FLOODWAY — The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the one-hundred-year flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the one-hundred-year floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top of the bank of the stream.

FOREST MANAGEMENT/TIMBER OPERATIONS — Planning and activities necessary for the management of forestland. These include conducting a timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

GEOTEXTILE — A porous fabric manufactured from synthetic fiber that is used to provide separation between different types of media (i.e., between soil and stone).

GRAVEL (CRUSHED STONE) — Considered to be impervious when the intended use of the stone is for transportation purposes, parking areas, construction areas, trails, or if the

3. **Editor's Note: The appendixes are on file in the municipal offices.**

gravel is compacted at any time during or after its placement; landscaping stone is not considered as impervious area.

HOTSPOT — Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater (e.g., vehicle salvage yards and recycling facilities, vehicle fueling stations, fleet storage areas, vehicle equipment and cleaning facilities, and vehicle service and maintenance facilities).

HYDROLOGIC SOIL GROUP (HSG) — Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The NRCS defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS 3, 4).

IMPERVIOUS SURFACE (IMPERVIOUS AREA) — A surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavements, parking lots, driveways, roofs, and stone patios. See the definition of "gravel (crushed stone)" for when gravel classifies as impervious area.

INFILTRATION — Movement of surface water into the soil, where it is absorbed by plant roots, evaporated into the atmosphere, or percolated downward to recharge groundwater.

KARST — A type of topography or landscape characterized by surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

LAND DEVELOPMENT (DEVELOPMENT) — Inclusive of any or all of the following meanings:

A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:

   (1) A group of two or more buildings; or

   (2) The division or allocation of land or space between or among two or more existing or prospective occupants by means of or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features.

B. Any subdivision of land.

C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.[4]

LOW-IMPACT DEVELOPMENT — A land development and construction approach that uses various land planning, design practices, and technologies to simultaneously conserve and

4. **Editor's Note: See 53 P.S. § 10503(1.1).**

protect natural resource systems, while allowing for necessary infrastructure improvements associated with land development.

MUNICIPALITY — The Municipality of Kingston, Luzerne County, Pennsylvania.

NRCS — The USDA Natural Resources Conservation Service (previously SCS).

PEAK DISCHARGE — The maximum rate of stormwater runoff from a specific storm event.

PERVIOUS AREA — Any area not defined as impervious.

PROJECT SITE — The specific area of land where any regulated activities in the Municipality are planned, conducted, or maintained.

QUALIFIED PROFESSIONAL — Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by this chapter.

REDEVELOPMENT — Any development that requires demolition or removal of existing structures or impervious surfaces at a site and replacement with new impervious surfaces. Maintenance activities such as top-layer grinding and repaving are not considered to be redevelopment. Interior remodeling projects and tenant improvements are also not considered to be redevelopment.

REGULATED ACTIVITIES — Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect stormwater runoff.

REGULATED EARTH DISTURBANCE ACTIVITY — Activity involving earth disturbance subject to regulation under 25 Pa. Code Chapter 92, 25 Pa. Code Chapter 102, or the Clean Streams Law.[5]

RETENTION VOLUME/REMOVED RUNOFF — The volume of runoff that is captured and not released directly into the surface waters of this commonwealth during or after a storm event.

RETURN PERIOD — The average interval, in years, within which a storm event of a given magnitude can be expected to occur one time. For example, the twenty-five-year return period rainfall would be expected to occur on average once every 25 years; or stated in another way, the probability of a twenty-five-year storm occurring in any one year is 0.04 (i.e., a four-percent chance).

RUNOFF — Any part of precipitation that flows over the land.

SEDIMENT — Soils or other materials transported by surface water as a product of erosion.

STATE WATER QUALITY REQUIREMENTS — The regulatory requirements to protect, maintain, reclaim, and restore water quality under Title 25 of the Pennsylvania Code and the Clean Streams Law.

---

5. **Editor's Note: See 35 P.S. § 691.1 et seq.**

STORMWATER — Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES — Is abbreviated as "BMPs" or "SWM BMPs" throughout this chapter.

STORMWATER MANAGEMENT FACILITY — Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to: detention and retention basins, open channels, storm sewers, pipes, French drains, underground on-lot seepage pits, and infiltration facilities.

STORMWATER MANAGEMENT PLAN — The Luzerne County Stormwater Management Plan for managing stormwater runoff, adopted by the County of Luzerne as required by the Act of October 4, 1978, P.L. 864, (Act 167), as amended, and known as the "Storm Water Management Act."[6]

STORMWATER MANAGEMENT SITE PLAN — The plan, prepared by the developer or his representative, indicating how stormwater runoff will be managed at the development site in accordance with this chapter. "Stormwater management site plan" will be designated as "SWM site plan" throughout this chapter.

SUBDIVISION — As defined in the Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.[7]

USDA — The United States Department of Agriculture.

VOID RATIO — The ratio of the volume of void space to the total volume of the BMP material (void space plus solid material/media providing structural support to create the storage area).

WATERSHED — A region or area drained by a river, watercourse, or other surface water of this commonwealth.

WATERS OF THIS COMMONWEALTH — Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of this commonwealth.

WETLAND — Areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, and similar areas.

---

6. **Editor's Note: See 32 P.S. § 680.1 et seq.**

7. **Editor's Note: See 53 P.S. § 10101 et seq.**

ARTICLE III
Stormwater Management Standards

§ 155-11. General requirements.

A. For all regulated activities, submission of the stormwater management permit application provided in Appendix B is required.[8]

B. For all regulated activities, unless preparation of an SWM site plan is specifically exempted in § 155-12:

(1) Preparation and implementation of an approved SWM site plan is required.

(2) No regulated activities shall commence until the Municipality issues written approval of an SWM site plan, which demonstrates compliance with the requirements of this chapter.

C. SWM site plans approved by the Municipality, in accordance with § 155-20, shall be on site throughout the duration of the regulated activity.

D. The Municipality may, after consultation with the DEP, approve measures for meeting the state water quality requirements other than those in this chapter, provided that they meet the minimum requirements of, and do not conflict with, state law, including, but not limited to, the Clean Streams Law.

E. For all regulated earth disturbance activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the regulated earth disturbance activities (e.g., during construction) to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code and the Clean Streams Law. Various BMPs and their design standards are listed in the Erosion and Sediment Pollution Control Program Manual (E&S Manual)[2], No. 363-2134-008 (March 2012), as amended and updated.

F. For all regulated activities, implementation of the volume controls in § 155-13 is required, unless otherwise exempted by § 155-12.

G. Impervious areas.

(1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.

(2) For development taking place in stages, the entire development plan must be used in determining conformance with this chapter.

(3) Stormwater calculations. For redevelopment projects in which the existing site is already controlled by a stormwater management facility, the requirement to consider 20% of existing impervious area as meadow is waived, provided the existing facility meets the water quality, volume, and peak rate standards and criteria of this chapter.

---

8. **Editor's Note: The appendixes are on file in the municipal offices.**

H. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s). Such stormwater flows shall be subject to the requirements of this chapter.

I. All regulated activities shall include measures to:

(1) Protect health, safety, and property;

(2) Meet the water quality goals of this chapter by implementing measures outlined in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual)[1] to:

(a) Minimize disturbance to floodplains, wetlands, and wooded areas.

(b) Maintain or extend riparian buffers.

(c) Avoid erosive flow conditions in natural flow pathways.

(d) Minimize thermal impacts to waters of this commonwealth.

(e) Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

(3) To the maximum extent practicable, incorporate the techniques for low-impact development practices described in the BMP Manual[1].

J. The design of all facilities over karst and mined areas shall include an evaluation of measures to minimize adverse effects.

K. Infiltration BMPs should be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this chapter.

L. Storage facilities, to the greatest extent possible and at the discretion of the Municipal Engineer, shall completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm.

M. Storage facilities shall incorporate features to maximize the length of the flow path and increase the travel time through the facility.

N. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, United States Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.[5]

O. For all regulated activities, SWM BMPs shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this chapter and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.

P. Various BMPs and their design standards are listed in the BMP Manual[1].

§ 155-12. Exemptions.

A. Regulated activities that create impervious areas or earth disturbance shall adhere to Table III.1 to meet the requirements of this chapter. The larger of the two areas determines the applicable requirements of this chapter (i.e., if only 500 square feet of impervious area is proposed, but 15,000 square feet of earth disturbance, the requirements follow Row 3 of Table III.1).

Table III.1

Stormwater Management Requirements and Exemptions

Proposed Impervious Area (square feet)	Proposed Total Earth Disturbance (square feet)	Chapter Exemptions	Stormwater Management Requirements	What is Required to Submit to Municipality?*
< 1,000	< 5,000	§§ 155-13, 155-14 and Article IV of this chapter	Ensure § 155-11, General requirements, is met	N/A
1,000 to 5,000	5,000 to 10,000	§§ 155-13, 155-14 and Article IV of this chapter	Disconnected impervious area (DIA) as in Appendix C.1[2]	Appendix C.1 worksheet and sketch (or equivalent)[2]
			OR	OR
			Capture and control first 1 inch of runoff over proposed impervious areas as in Appendix E[2]	Appendix E worksheet and sketch (or equivalent)[2]
5,000 to 10,000	10,000 to 20,000	§ 155-14 and Article IV of this chapter	Capture and permanently remove the first 2 inches of runoff over proposed impervious areas as in § 155-13B of this chapter	Appendix D worksheet and sketch (or equivalent)[2]

Table III.1
Stormwater Management Requirements and Exemptions

Proposed Impervious Area (square feet)	Proposed Total Earth Disturbance (square feet)	Chapter Exemptions	Stormwater Management Requirements	What is Required to Submit to Municipality?*
>10,000	>20,000	None	All requirements of this chapter	SWM site plan

NOTES:

* In addition to the stormwater management permit application provided in Appendix B.[2]

B. Agricultural activity is exempt from the rate control and SWM site plan preparation requirements of this chapter, provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

C. Forest management and timber operations are exempt from the rate control and SWM site plan preparation requirements of this chapter, provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

D. Exemptions from any provisions of this chapter shall not relieve the applicant from the requirements in § 155-11A through P.

§ 155-13. Volume controls.

The low-impact development practices provided in the BMP Manual[1] shall be utilized for all regulated activities to the maximum extent practicable. Water volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. For all regulated activities that require submission of a formal SWM site plan, both the Design Storm Method and the Simplified Method shall be calculated; the larger control volume based on the two calculations shall be controlled. Subsection C below provides requirements for mined, karst, or other geologically limiting areas where infiltration shall not occur.

A. The Design Storm Method (CG-1 in the BMP Manual[1]) is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.

(1) Do not increase the post-development total runoff volume for all storms equal to or less than the two-year, twenty-four-hour duration precipitation.

(2) For modeling purposes:

(a) Existing (predevelopment) nonforested pervious areas must be considered meadow or its equivalent.

(b) Twenty percent of existing impervious area, when present, shall be considered meadow in the model for existing conditions.

B. When Design Storm Method CG-1 guidelines are not used, the Simplified Method (CG-2 in the BMP Manual[1]) has been modified to accommodate two inches of permanently removed runoff volume. This method (provided below) is independent of site conditions and should be used if the Design Storm Method is not followed. For new impervious surfaces:

(1) The first two inches of runoff from new impervious surfaces shall be permanently removed from the runoff flow (i.e., it shall not be released into the surface waters of this commonwealth). Removal options include reuse, evaporation, transpiration, and infiltration.

(2) Wherever possible, infiltration facilities should be designed to accommodate infiltration of the entire permanently removed runoff; however, in all cases at least the first 0.5 inch of the permanently removed runoff should be infiltrated.

(3) Facilities, to the greatest extent possible and subject to the Municipal Engineer's discretion, shall be designed to drain the permanently removed runoff volume in a period no less than 24 hours and no greater than 72 hours.

(4) Runoff volume in excess of two inches shall be safely conveyed to existing stormwater collection systems or streams, in the direction of the existing drainagecourse.

(5) This method is exempt from the requirements of § 155-14, Rate controls.

C. Before infiltration is proposed on a site, site conditions shall be evaluated by a qualified design professional through subsurface investigation and testing to determine if site conditions are suitable to support proposed infiltration facilities to manage runoff. If it is determined that infiltration is not feasible due to physical constraints of the site, or will adversely impact the environment as demonstrated by the presence of acid mine drainage, sinkhole formation, or other serious environmental issues, then the above volume controls must be achieved through surface BMP mitigation. Reference the BMP Manual[1] for alternative mitigation measures that do not require infiltration.

§ 155-14. Rate controls.

A. Areas not covered by a Stormwater Management District Map contained in Appendix F.1.[9] Post-development discharge rates shall not exceed the predevelopment discharge rates for the one-year through one-hundred-year, twenty-four-hour storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the predevelopment analysis for one-year through one-hundred-year, twenty-four-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

---

9. **Editor's Note: The appendixes are on file in the municipal offices.**

B. Areas covered by a Stormwater Management District Map contained in Appendix F.1.[10] For the one-year through one-hundred-year storms, the post-development peak discharge rates will follow the applicable approved Stormwater Management District Maps. For any areas not shown on the Stormwater Management District Maps, the post-development discharge rates shall not exceed the predevelopment discharge rates.

ARTICLE IV
Stormwater Management (SWM) Site Plan Requirements

§ 155-15. Plan requirements.

The following items shall be included in the SWM site plan:

A. Appropriate sections from the Municipality's Subdivision and Land Development Ordinance,[11] and other applicable local ordinances, shall be followed in preparing the SWM site plans. In instances where the Municipality lacks subdivision and land development regulations, the content of SWM site plans shall follow the county's Subdivision and Land Development Ordinance.

B. The Municipality or county shall not approve any SWM site plan that is deficient in meeting the requirements of this chapter. At its sole discretion and in accordance with this article, when an SWM site plan is found to be deficient, the Municipality may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Municipality may accept submission of modifications.

C. Provisions for permanent access or maintenance easements for all physical SWM BMPs, such as ponds and infiltration structures, as necessary to implement the operation and maintenance (O&M) plan discussed in Subsection E(9) below.

D. The following signature block for the Municipality: "(Municipal official or designee), on this date (date of signature), has reviewed and hereby certifies that the SWM site plan is in compliance with Kingston Municipal Ordinance No. 2012-7."

E. The SWM site plan shall provide the following information:

(1) The overall stormwater management concept for the project.

(2) A determination of site conditions in accordance with the BMP Manual[1]. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, mined areas, and other environmentally sensitive areas, such as brownfields; depending on site conditions, more-stringent standards than those in this chapter may be imposed at the discretion of the Municipal Engineer.

(3) Stormwater runoff design computations, and documentation as specified in this chapter, or as otherwise necessary to demonstrate that the maximum practicable measures have been taken to meet the requirements of this chapter, including the

10. **Editor's Note: The appendixes are on file in the municipal offices.**

11. **Editor's Note: See Ch. 158, Subdivision of Land.**

recommendations and general requirements in § 155-11; computations are required for all proposed stormwater management facilities.

(4) Expected project time schedule.

(5) A soil erosion and sediment control plan, where applicable, as prepared for and submitted to the approval authority, and in conformance with 25 Pa. Code Chapter 102.

(6) The effect of the project (in terms of runoff volumes, water quality, and peak flows) on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.

(7) Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.

(8) The SWM site plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.

(9) The SWM site plan shall include an O&M plan for all existing and proposed physical stormwater management facilities. This plan shall address long-term ownership and responsibilities for O&M as well as schedules and costs for O&M activities.

(10) The SWM site plan shall include the following additional elements:

(a) Construction details of all proposed stormwater management facilities.

(b) A stormwater facility design narrative.

(c) A signature block containing the name, address, and phone number of the individual responsible for the operation and maintenance plan.

(d) A drainage area map with time of concentration paths shown.

(e) Existing contour intervals of two feet.

(f) All existing features on the property and within 50 feet of the property.

(g) Floodplain and floodway limits.

(h) Proposed structures and proposed grades.

(i) Soil boundary lines and descriptions.

(j) Date of submission, North arrow, graphic scale, call before you dig note and reference number, location map, name of development, name and address of property owner, and individual preparing the SWM site plan.

(k) Existing and proposed easements.

(l) Statement signed by the landowner stating he/she they cannot alter any stormwater management facility without prior permission of the Municipality.

§ 155-16. Plan submission.

A. Five copies of the SWM site plan shall be submitted as follows:

(1) Two copies to the Municipality.

(2) One copy to the Municipal Engineer (when applicable).

(3) One copy to the County Conservation District.

(4) One copy to the County Planning Commission/Office.

B. Additional copies shall be submitted as requested by the Municipality or DEP.

§ 155-17. Plan review.

A. The SWM site plan shall be reviewed by a qualified professional for the Municipality for consistency with the provisions of this chapter. After review, the qualified professional shall provide a written recommendation for the Municipality to approve or disapprove the SWM site plan. If it is recommended to disapprove the SWM site plan, the qualified professional shall state the reasons for the disapproval in writing. The qualified professional also may recommend approval of the SWM site plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. The SWM site plan review and recommendations shall be completed within the time allowed by the Municipalities Planning Code for reviewing subdivision plans.

B. The Municipality shall notify the applicant in writing within 45 days whether the SWM site plan is approved or disapproved. If the SWM site plan involves a subdivision and land development plan, the notification period is 90 days. If a longer notification period is provided by other statute, regulation, or ordinance, the applicant will be so notified by the Municipality. If the Municipality disapproves the SWM site plan, the Municipality shall cite the reasons for disapproval in writing.

§ 155-18. Modification of plans.

A modification to a submitted SWM site plan that involves a change in SWM BMPs or techniques, or that involves the relocation or redesign of SWM BMPs, or that is necessary because soil or other conditions are not as stated on the SWM site plan, as determined by the Municipality, shall require a resubmission of the modified SWM site plan in accordance with this article.

§ 155-19. Resubmission of disapproved SWM site plans.

A disapproved SWM site plan may be resubmitted, with the revisions addressing the Municipality's concerns, to the Municipality in accordance with this article. The applicable review fee must accompany a resubmission of a disapproved SWM site plan.

§ 155-20. Authorization to construct and term of validity.

The Municipality's approval of an SWM site plan authorizes the regulated activities contained in the SWM site plan for a maximum term of validity of five years following the date of approval. The Municipality may specify a term of validity shorter than five years in the approval for any specific SWM site plan. Terms of validity shall commence on the date the Municipality signs the approval for an SWM site plan. If an approved SWM site plan is not completed according to § 155-21 within the term of validity, then the Municipality may consider the SWM site plan disapproved and may revoke any and all permits. SWM site plans that are considered disapproved by the Municipality shall be resubmitted in accordance with § 155-19 of this chapter.

§ 155-21. As-built plans, completion certificate, and final inspection.

A. The developer shall be responsible for providing as-built plans of all SWM BMPs included in the approved SWM site plan. The as-built plans and an explanation of any discrepancies with the construction plans shall be submitted to the Municipality.

B. The as-built submission shall include a certification of completion signed by a qualified professional verifying that all permanent SWM BMPs have been constructed according to the approved plans and specifications. If any licensed qualified professionals contributed to the construction plans, then a licensed qualified professional must sign the completion certificate.

C. After receipt of the completion certification by the Municipality, the Municipality or official designee may conduct a final inspection.

ARTICLE V
Operation and Maintenance

§ 155-22. Responsibilities of developers and landowners.

A. The Municipality shall make the final determination on the continuing maintenance responsibilities prior to final approval of the SWM site plan. The Municipality may require a dedication of such facilities as part of the requirements for approval of the SWM site plan. Such a requirement is not an indication that the Municipality will accept the facilities. The Municipality reserves the right to accept or reject the ownership and operating responsibility for any portion of the stormwater management controls. If the facility is rejected by the Municipality, provisions shall be made to identify the legal owner.

B. Three options exist for perpetual ownership and responsibility of stormwater management facilities:

(1) The developer retains ownership.

(2) A homeowners' association assumes ownership and responsibility.

(3) The facility is dedicated to, and accepted by, the Municipality.

C. Facilities, areas, or structures used as stormwater management BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.

D. The O&M plan shall be recorded as a restrictive deed covenant that runs with the land.

E. The Municipality may take enforcement actions against an owner for any failure to satisfy the provisions of this article.

§ 155-23. O&M agreements.

The owner is responsible for O&M of the SWM BMPs. If the owner fails to adhere to the O&M agreement, the Municipality may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

ARTICLE VI
Fees and Expenses

§ 155-24. Review fee.

The Municipality may include all costs incurred in the review fee charged to an applicant. The review fee may include, but not be limited to, costs for the following:

A. Administrative/clerical processing.

B. Review of the SWM site plan.

C. Attendance at meetings.

D. Inspections.

ARTICLE VII
Prohibitions

§ 155-25. Prohibited discharges and connections.

A. Any drain or conveyance, whether on the surface or subsurface, that allows any nonstormwater discharge, including sewage, process wastewater, and wash water, to enter the waters of this commonwealth is prohibited.

B. No person shall allow, or cause to allow, discharges into surface waters of this commonwealth which are not composed entirely of stormwater, except

(1) As provided in Subsection C below; and

(2) Discharges allowed under a state or federal permit.

C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this commonwealth:

(1) Discharges from firefighting activities.

(2) Potable water sources, including water line flushing.

(3) Irrigation drainage.

(4) Air-conditioning condensate.

(5) Springs.

(6) Water from crawl space pumps.

(7) Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.

(8) Flows from riparian habitats and wetlands.

(9) Uncontaminated water from foundations or from footing drains.

(10) Lawn watering.

(11) Dechlorinated swimming pool discharges.

(12) Uncontaminated groundwater.

(13) Water from individual residential car washing.

(14) Routine external building washdown (which does not use detergents or other compounds).

D. In the event that the Municipality or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of this commonwealth, the Municipality or DEP will notify the responsible person(s) to cease the discharge.

§ 155-26. Roof drains.

Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs and to the maximum extent practicable satisfy the criteria for DIAs consistent with Appendix C.1 of this chapter.[12]

§ 155-27. Alteration of SWM BMPs.

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of the Municipality.

12. **Editor's Note: The appendixes are on file in the municipal offices.**

ARTICLE VIII
Enforcement and Penalties

§ 155-28. Right of entry.

Upon presentation of proper credentials, the Municipality may enter at reasonable times upon any property within the Municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by his chapter.

§ 155-29. Inspection.

Stormwater structures and facilities may be inspected by the landowner, or the landowner's designee (including the Municipality for dedicated and owned facilities), or governmental agencies using SWM BMPs:

A. The frequency of said inspections shall be determined by the landowner, Municipality or governmental agency, as deemed appropriate on a case-by-case basis.

B. Such inspections are at the discretion of the Municipality or governmental agency where the facility is located. The cost of this inspection shall be set by the Municipality or governmental agency, which may include bonding requirements. Such costs or bonding requirements shall be provided to the landowner and/or developer at its request or at any time during the project; however, if bonding is required, then all work shall cease until these requirements are met.

§ 155-30. Enforcement.

A. It shall be unlawful for a person to undertake any regulated activity except as provided in an approved SWM site plan, unless specifically exempted in § 155-12 of this chapter.

B. It shall be unlawful to violate § 155-27 of this chapter.

§ 155-31. Violations and penalties.

A. Anyone violating the provisions of this chapter shall be guilty of a summary offense and, upon conviction, shall be subject to a fine of not more than $500 for each violation, recoverable with costs, including, but not limited to, court costs and attorneys' fees. Each day that the violation continues shall be a separate offense, and penalties shall be cumulative.

B. In addition, the Municipality may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this chapter. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

§ 155-32. Appeals.

Any person aggrieved by any decision of the Municipality, its representative or designee, relevant to the provisions of this chapter, may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the Municipality's decision.

ARTICLE IX
References

§ 155-33. References.

1. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. Pennsylvania Stormwater Best Management Practices Manual. Harrisburg, PA.

2. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (April 15, 2000), as amended and updated. Erosion and Sediment Pollution Control Program Manual. Harrisburg, PA.

3. U.S. Department of Agriculture, National Resources Conservation Service (NRCS). National Engineering Handbook. Part 630: Hydrology, 1969-2001. Originally published as the National Engineering Handbook, Section 4: Hydrology. Available from the NRCS online at: http://www.nrcs.usda.gov/.

4. U.S. Department of Agriculture, Natural Resources Conservation Service. 1986. Technical Release 55: Urban Hydrology for Small Watersheds, 2nd Edition. Washington, D.C.

5. U.S. Department of Commerce, National Oceanic and Atmospheric Administration, National Weather Service, Hydrometeorological Design Studies Center. 2004-2006. Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, Silver Spring, Maryland. Internet address: http://hdsc.nws.noaa.gov/hdsc/pfds/.

(8) Proposed structures, roads, paved areas and buildings.

(9) Final contours at intervals of two (2) feet. In areas of steep slopes [greater than fifteen percent (15%)], five-foot contour intervals may be used.

(10) Stormwater management district boundaries applicable to the site.

C. Stormwater management controls.

(1) All stormwater management controls must be shown on a map and described, including:

(a) Groundwater recharge methods such as seepage pits, beds or trenches. When these structures are used, the locations of septic tank infiltration areas and wells must be shown.

(b) Other control devices or methods such as rooftop storage, semipervious paving materials, grass swales, parking lot ponding, vegetated strips, detention or retention ponds, storm sewers, etc.

(2) All calculations, assumptions and criteria used in the design of the control device or method must be shown.

D. Maintenance program. A maintenance program for all stormwater management control facilities must be included. This program must include the proposed ownership of the control facilities, the maintenance requirements for the facilities and the financial responsibilities for the required maintenance.

§ 155-17. Plan submission.

A. For regulated activities specified in § 155-4D(1) and (2):

(1) The drainage plan shall be submitted by the developer to the Municipal Secretary (or other appropriate person) as part of the preliminary plan submission for the subdivision or land development.

(2) Two (2) copies of the drainage plan shall be submitted.

(3) Distribution of the drainage plan will be as follows:

(a) One (1) copy to the municipal governing body.

(b) One (1) copy to the Municipal Engineer.

B. For regulated activities specified in § 155-4D(3) and (4), the drainage plan shall be submitted by the developer to the Municipal Building Permit Officer as part of the building permit application.

C. For regulated activities specified in § 155-4D(5) and (6), the drainage plan shall be submitted by the developer as part of the DER permit application process under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Flood Plain Management) of DER's Rules and Regulations.

§ 155-18. Drainage plan review.

A. The Municipal Engineer shall review the drainage plan for consistency with the adopted Toby Creek stormwater management plan as embodied by this chapter and against any additional storm drainage provisions contained in the municipal subdivision and land development or zoning ordinance, as applicable.[9]

B. For regulated activities specified in § 155-4D(5) and (6), the municipality shall notify DER whether the drainage plan is consistent with the stormwater management plan and forward a copy of the review letter to the developer.

C. The municipality shall not approve any subdivision or land development [regulated activities in § 155-4D(1) and (2)] or building permit application [regulated activities in § 155-4D(3) and (4)] if the drainage plan has been found to be inconsistent with the stormwater management plan as determined by the Municipal Engineer.

§ 155-19. Modification of plans.

A modification to a submitted drainage plan for a proposed development site which involves a change in control methods or techniques, or which involves the relocation or redesign of control measures, or which is necessary because soil or other conditions are not as stated on the drainage plan (as determined by the Municipal Engineer), shall require a resubmission of the modified drainage plan consistent with § 155-17, subject to review per § 155-18 of this chapter.

§ 155-20. Hardship waiver procedure.

A. The municipality (governing body) may hear requests for waivers where it is alleged that the provisions of this (Act 167) ordinance inflict unnecessary hardship upon the applicant. The waiver request shall be in writing on an application form promulgated by the municipality and accompanied by the requisite fee based upon a fee schedule adopted by the municipality. A copy of the completed application form shall be provided to each of the following: municipality, Municipal Engineer and Municipal Solicitor. The application shall fully document the nature of the alleged hardship.

B. The municipality may grant a waiver, provided that all of the following findings are made in a given case:

(1) That there are unique physical circumstances or conditions, including irregularity of lot size or shape, or exceptional topographical or other physical conditions peculiar to the particular property, and that the unnecessary hardship is due to such conditions, and not the circumstances or conditions generally created by the provisions of this chapter in the stormwater management district in which the property is located;

(2) That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformity with the provisions of this chapter, including the no-harm provision, and that the authorization of a waiver is therefor necessary to enable the reasonable use of the property;

---

[9] **Editor's Note: See Ch. 158, Subdivision of land, and Ch. 181, Zoning.**

(3) That such unnecessary hardship has not been created by the applicant; and

(4) That the waiver, if authorized, will represent the minimum waiver that will afford relief and will represent the least modification possible of the regulation in issue.

C. In granting any waiver, the municipality (governing body) may attach such reasonable conditions and safeguards as it may deem necessary to implement the purposes of Act 167 and this chapter.

ARTICLE V
Inspections

§ 155-21. Schedule of inspections.

A. The Municipal Engineer or his designee shall inspect all phases of the installation of the permanent stormwater control facilities and the completed installation.

B. If at any stage of the work the Municipal Engineer determines that the permanent stormwater control facilities are not being installed in accordance with the approved development plan, the municipality shall revoke any existing permits until a revised development plan is submitted and approved as required by § 155-19.

ARTICLE VI
Fees and Expenses

§ 155-22. General.

A fee shall be established by the municipality to defer municipal costs for drainage plan review and processing.

§ 155-23. Expenses covered by fees.

The fees required by this chapter shall at a minimum cover:

A. The review of the drainage plan by the Municipal Engineer.

B. The site inspection.

C. The inspection of required controls and improvements during construction.

D. The final inspection upon completion of the controls and improvements required in the plan.

E. Any additional work required to enforce any permit provisions regulated by this chapter, correct violations and assure the completion of stipulated remedial actions.

ARTICLE VII
Maintenance Responsibilities

§ 155-24. Maintenance responsibilities.

The maintenance responsibilities for permanent stormwater runoff control facilities shall be determined based upon the type of ownership of the property which is controlled by the facilities.

A. Single-entity ownership. In all cases where the permanent stormwater runoff control facilities are designed to manage runoff from property in a single-entity ownership as defined below, the maintenance responsibility for the stormwater control facilities shall be with the single-entity owner. The single-entity owner shall enter into an agreement with the municipality which specifies that the owner will properly maintain the facilities consistent with accepted practice as determined by the Municipal Engineer. The agreement shall provide for regular inspections by the municipality and contain such provisions as necessary to ensure timely correction of any maintenance deficiencies by the single-entity owner. A "single-entity owner" shall be defined as an individual, association, public or private corporation, partnership firm, trust, estate or any other legal entity empowered to own real estate.

B. Multiple ownership.

(1) In cases where the property controlled by the permanent stormwater control facilities shall be in multiple ownership (i.e. many individual owners of various portions of the property), the developer shall dedicate the permanent stormwater control facilities to the municipality for maintenance. The developer shall pay a fee to the municipality corresponding to the present worth of maintenance of the facilities for a ten-year period. The estimated annual maintenance cost for the facilities shall be based on a fee schedule provided by the Municipal Engineer and adopted by the municipality. The fee schedule must be reasonable.

(2) In certain multiple-ownership situations, the municipality may benefit by transferring the maintenance responsibility to an individual or group of individuals residing within the controlled area. These individuals may have the permanent stormwater control facilities adjacent to their lots or otherwise have an interest in the proper maintenance of the facilities. In these instances, the municipality and the individual(s) may enter into a formal agreement for the maintenance of the facilities. The municipality shall maintain ownership of the facilities and be responsible for periodic inspections.

§ 155-25. Right of entry.

Upon presentation of the proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to investigate or ascertain whether proper maintenance is being provided for any stormwater management facilities for which the municipality is not directly responsible for maintenance as provided in § 155-24.

APPENDIX A

SAMPLE DRAINAGE PLAN APPLICATION

(TO BE ATTACHED TO THE "LAND SUBDIVISION PLAN OR DEVELOPMENT PLAN REVIEW APPLICATION" OR "MINOR LAND SUBDIVISION PLAN REVIEW APPLICATION")

APPLICATION IS HEREBY MADE FOR REVIEW OF THE STORMWATER MANAGEMENT PLAN AND RELATED DATA AS SUBMITTED HEREWITH IN ACCORDANCE WITH THE _____ TOWNSHIP STORMWATER MANAGEMENT ORDINANCE.

_____ FINAL PLAN _____ PRELIMINARY PLAN _____ SKETCH PLAN

DATE OF SUBMISSION _____ SUBMISSION NO. _____

1. NAME OF SUBDIVISION OR DEVELOPMENT _____

2. NAME OF APPLICANT _____ TEL. NO. _____
   _____

   (IF CORPORATION, LIST THE CORPORATION'S NAME AND THE NAMES OF TWO OFFICERS OF THE CORPORATION)
   ADDRESS _____
   _____ ZIP _____

   APPLICANT'S INTEREST IN SUBDIVISION OR DEVELOPMENT _____
   (IF OTHER THAN PROPERTY OWNER GIVE OWNER'S NAME AND ADDRESS)

3. NAME OF PROPERTY OWNER _____ TEL. NO. _____
   ADDRESS _____
   _____ ZIP _____

4. NAME OF ENGINEER OR SURVEYOR _____ TEL. NO. _____
   ADDRESS _____
   _____ ZIP _____

5. TYPE OF SUBDIVISION OR DEVELOPMENT PROPOSED:

___SINGLE-FAMILY LOTS	___TOWNHOUSES	___COMMERCIAL-MULTI
___TWO-FAMILY LOTS	___GARDEN APARTMENTS	___COMMERCIAL-SINGLE
___MULTIFAMILY LOTS	___MOBILE HOME PARK	___INDUSTRIAL-MULTI
___CLUSTER TYPE LOTS	___CAMPGROUND	___INDUSTRIAL-SINGLE
___PLANNED RESIDENTIAL DEVELOPMENT	___OTHER (_____)	

6. LINEAR FEET OF NEW ROAD PROPOSED _____ L.F.

7. AREA OF PROPOSED AND EXISTING IMPERVIOUS AREA ON ENTIRE TRACT:

   A. EXISTING (TO REMAIN) _____ S.F.

   B. PROPOSED _____ S.F.

8. STORMWATER:

   A. DOES THE PEAK RATE OF RUNOFF FROM PROPOSED CONDITIONS EXCEED THAT FLOW WHICH OCCURRED FOR PREDEVELOPMENT CONDITIONS FOR THE DESIGNATED DESIGN STORM? _____

   B. DESIGN STORM UTILIZED FOR ON-SITE CONVEYANCE SYSTEMS

   _____

   C. IS THE PROPOSED RUNOFF REDUCED TO THE ALLOWABLE RELEASE RATE FOR THE SUBAREA IN WHICH THE SITE IS LOCATED FOR THE TWO-YEAR, TEN-YEAR, AND TWENTY-FIVE-YEAR DESIGN STORM?

   _____

   D. SUBAREA NUMBER _____

   E. TYPE OF PROPOSED RUNOFF CONTROL _____

   F. DOES THE PROPOSED STORMWATER CONTROL CRITERIA MEET THE REQUIREMENTS OF THE STORMWATER ORDINANCE? _____
   – IF NOT, WHAT VARIANCES/WAIVERS ARE REQUESTED? _____

   _____

   – REASONS WHY _____

   _____

   G. DOES THE PLAN MEET THE REQUIREMENTS OF ARTICLE IV OF THE STORMWATER ORDINANCE? _____
   – IF NOT, WHAT VARIANCES/WAIVERS ARE REQUESTED? _____

   _____

   – REASONS WHY _____

   _____

   H. IS A HYDRAULIC ROUTING THROUGH THE STORMWATER CONTROL STRUCTURE SUBMITTED? _____

   I. IS A CONSTRUCTION SCHEDULE OR STAGING ATTACHED? _____

   J. IS A RECOMMENDED MAINTENANCE PROGRAM ATTACHED? _____

   K. WHO WILL HAVE ULTIMATE MAINTENANCE RESPONSIBILITY OF THE STORMWATER CONTROL FACILITIES? _____

9. EROSION AND SEDIMENT POLLUTION CONTROL (E&S):

   A. HAS THE STORMWATER MANAGEMENT AND E&S PLAN, SUPPORTING DOCUMENTATION AND NARRATIVE BEEN SUBMITTED TO THE LUZERNE COUNTY CONSERVATION DISTRICT? _____

   B. TOTAL AREA OF EARTH DISTURBANCE _____ S.F.

10. WETLANDS:

   A. HAVE THE WETLANDS BEEN DELINEATED BY SOMEONE TRAINED IN WETLAND DELINEATION? _____

B. HAVE THE WETLAND LINES BEEN VERIFIED BY A STATE OR FEDERAL PERMITTING AUTHORITY? _____

C. HAVE THE WETLAND LINES BEEN SURVEYED? _____

D. TOTAL ACREAGE OF WETLAND WITHIN THE PROPERTY _____

E. TOTAL ACREAGE OF WETLAND DISTURBED _____

F. SUPPORTING DOCUMENTATION _____

12. FILING:

A. HAS THE REQUIRED FEE BEEN SUBMITTED? _____
AMOUNT _____

B. HAS THE PROPOSED SCHEDULE OF CONSTRUCTION INSPECTION TO BE PERFORMED BY THE APPLICANT'S ENGINEER BEEN SUBMITTED?
_____

C. NAME OF INDIVIDUAL WHO WILL BE MAKING THE INSPECTIONS
_____

D. GENERAL COMMENTS ABOUT STORMWATER MANAGEMENT AT DEVELOPMENT _____
_____
_____
_____

CERTIFICATE OF OWNERSHIP AND ACKNOWLEDGEMENT OF APPLICATION: COMMONWEALTH OF PENNSYLVANIA COUNTY OF LUZERNE SS

On this the ____ day of _____, 19___, before me, the undersigned officer, personally appeared _____
who being duly sworn, according to law, deposes and says that _____
_____
owners of the property described in this application and that the application was made with _____ knowledge and/or direction and does hereby agree with the said application and to the submission of the same.

_____ _____
Property Owner Property Owner

My Commission Expires _____, 19___ _____
Notary Public of Officer

THE UNDERSIGNED HEREBY CERTIFIES THAT TO THE BEST OF HIS KNOWLEDGE AND BELIEF THE INFORMATION AND STATEMENTS GIVEN ABOVE ARE TRUE AND CORRECT.

SIGNATURE OF APPLICANT _____

****

(INFORMATION BELOW THIS LINE TO BE COMPLETED BY THE TOWNSHIP)

_____ TOWNSHIP OFFICIAL SUBMISSION RECEIPT:

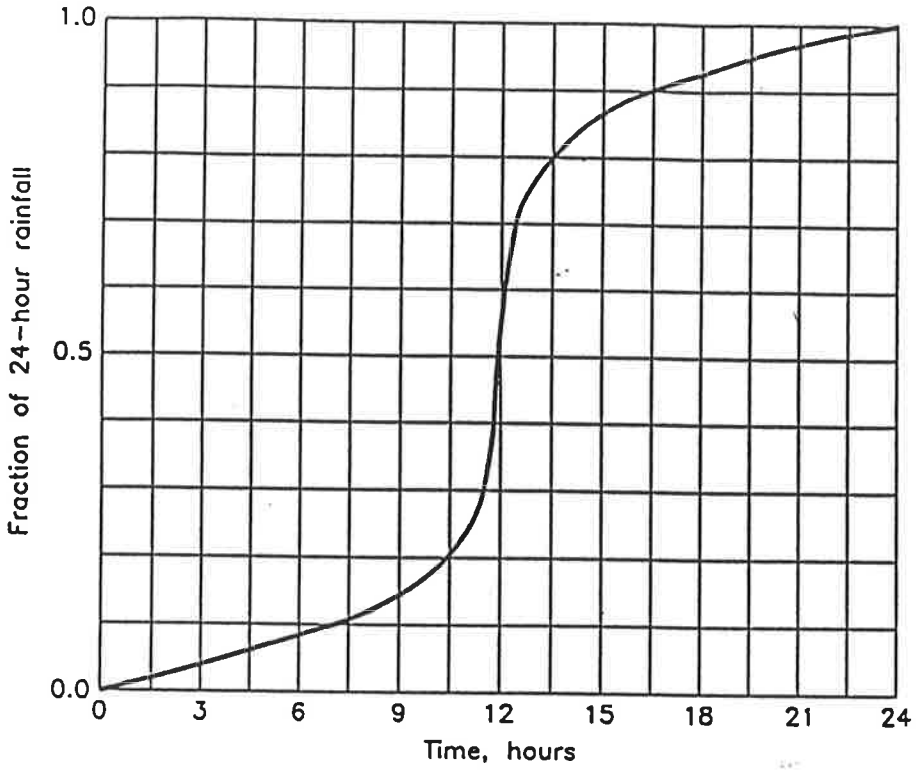
DATE COMPLETE APPLICATION RECEIVED _____
PLAN NO. _____

FEES _____ DATE FEES PAID _____ RECEIVED BY _____

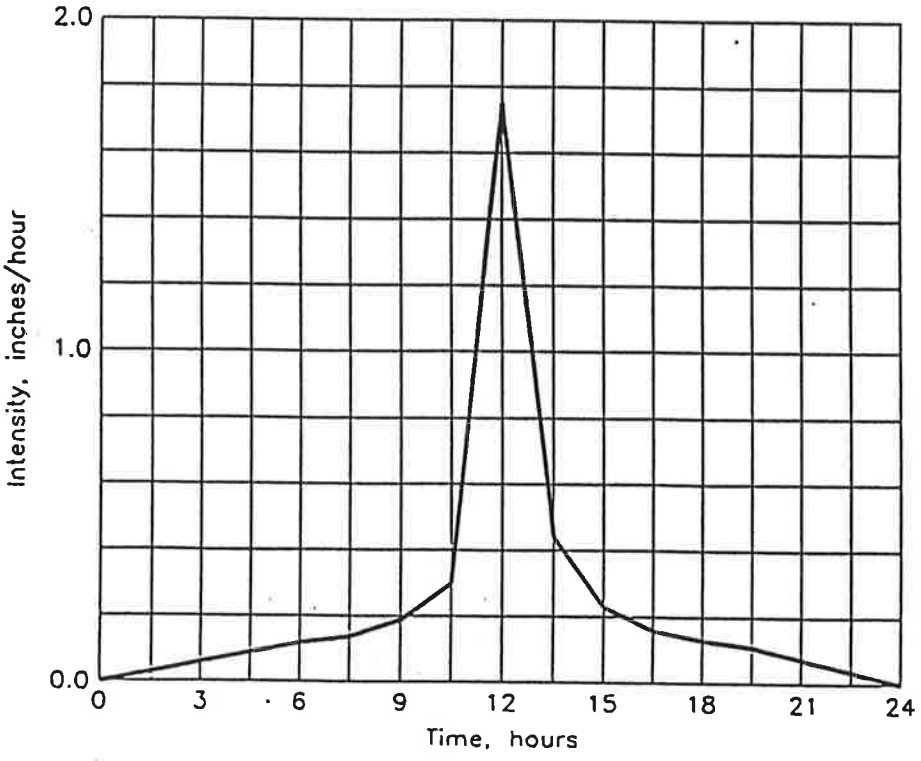
OFFICIAL SUBMISSION RECEIPT DATE _____

RECEIVED BY _____

APPENDIX B

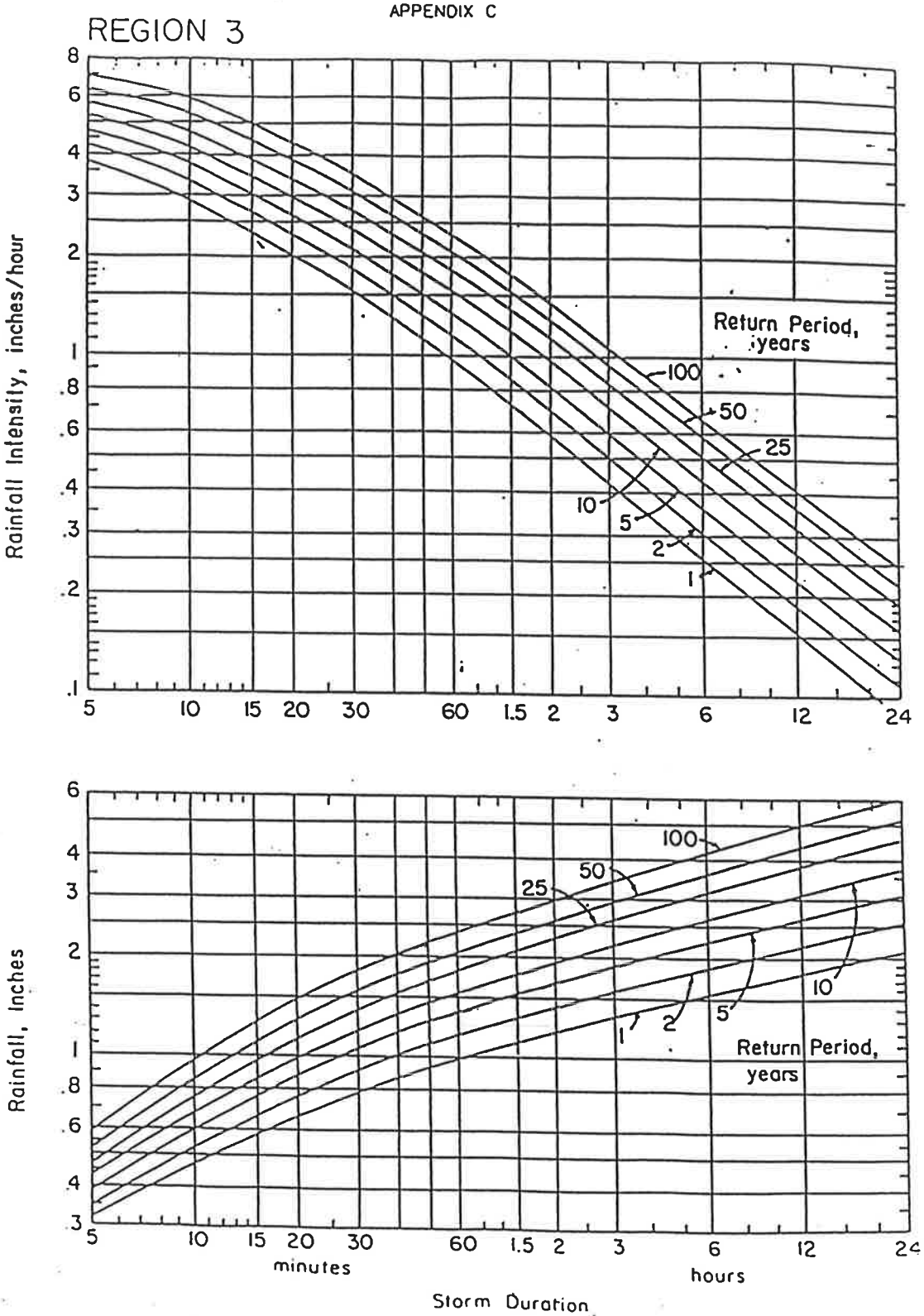


Type II 24-hour Rainfall Distribution



Design Storm – 100 Year Return Period

APPENDIX C



Rainfall intensity-duration-frequency curves for Region 3

Appendix D

Runoff curve numbers for urban areas[1]

Cover description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, golf courses, cemeteries, etc.)[3]:					
Poor condition (grass cover < 50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover > 75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved; curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved; open ditches (including right-of-way)		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way)		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[4]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert, shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (townhouses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					
Newly graded areas (pervious areas only, no vegetation)[5]		77	86	91	94
Idle lands (CN's are determined using cover types similar to those in table 2-2c).					

[1] Average runoff condition and $I_a = 0.2S$.

[2] The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.

[3] CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.

[4] Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious CN's are assumed equivalent to desert shrub in poor hydrologic condition.

[5] Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Appendix D
(cont'd)
Runoff curve numbers for cultivated agricultural lands[1]

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment[2]	Hydrologic condition[3]	A	B	C	D
Fallow	Bare soil	--	77	86	91	94
	Crop residue cover (CR)	Poor	76	85	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	85
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
	C&T + CR	Poor	65	73	79	81
		Good	61	70	77	80
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
	C&T + CR	Poor	60	71	78	81
		Good	58	69	77	80
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	85
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

[1] Average runoff conditions and $I_a = 0.2S$.
[2] *Crop residue cover* applies only if residue is on at least 5% of the surface throughout the year.
[3] Hydrologic condition is based on combination of factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes in rotations, (d) percent of residue cover on the land surface (good ≥ 20%)and (e) degree of surface roughness.
Poor: Factors impair infiltration and tend to increase runoff.
Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Appendix D
(cont'd)
Runoff curve numbers for other agricultural lands[1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition	A	B	C	D
Pasture, grassland, or range -- continuous forage for grazing.[2]	Poor	68	79	86	89
	Fair	49	69	79	84
	Good	39	61	74	80
Meadow -- continuous grass, protected from grazing and generally mowed for hay.	--	30	58	71	78
Brush -- brush-weed-grass mixture with brush the major element.[3]	Poor	48	67	77	83
	Fair	35	56	70	77
	Good	30[4]	48	65	73
Woods—grass combination (orchard or tree farm).[5]	Poor	57	73	82	86
	Fair	43	65	76	82
	Good	32	58	72	79
Woods.[6]	Poor	45	66	77	83
	Fair	36	60	73	79
	Good	30[4]	55	70	77
Farmsteads -- buildings, lanes, driveways and surrounding lots.	--	59	74	82	86

[1] Average runoff condition and Ia = 0.2S.

[2] *Poor*: <50% ground cover or heavily grazed with no mulch.
Fair: 50 to 75% ground cover and not heavily grazed.
Good: >75% ground cover and lightly or only occasionally grazed.

[3] *Poor*: <50% ground cover.
Fair: 50 to 75% ground cover.
Good: >75% ground cover.

[4] Actual curve number is less than 30: use CN = 30 for runoff computations.

[5] CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

[6] *Poor*: Forest litter, small trees and brush are destroyed by heavy grazing or regular burning.
Fair: Woods are grazed but not burned and some forest litter covers the soil.
Good: Woods are protected from grazing and litter and brush adequately cover the soil.

APPENDIX D
(cont'd)
Runoff curve numbers for arid and semiarid rangelands[1]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition[2]	A[3]	B	C	D
Herbaceous -- mixture of grass, weeds and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen – mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper -- pinyon, juniper or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub -- major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

[1] Average runoff condition and Ia = 0.2S. For range in humid regions, see table 2-2c.

[2] *Poor*: <30% ground cover (litter, grass and brush overstory).
Fair: 30 to 70% ground cover.
Good: >70% ground cover.

[3] Curve numbers for group A have been developed only for desert shrub.

Appendix E

Runoff Coefficients for the Rational Formula by Hydrologic Soil Group and Overland Slope (percent)

Land Use	A			B			C			D		
	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated Land	0.08[a]	0.13	0.16	0.11	0.15	0.21	0.14	0.19	0.26	0.18	0.23	0.31
	0.14[b]	0.18	.0.22	0.16	0.21	0.28	0.20	0.25	0.34	0.24	0.29	0.41
Pasture	0.12	0.20	0.30	0.18	0.28	0.37	0.24	0.34	0.44	0.30	0.40	0.50
	0.15	0.25	0.37	0.23	0.34	0.45	0.30	0.42	0.52	0.37	0.50	0.62
Meadow	0.10	0.16	0.25	0.14	0.22	0.30	0.20	0.28	0.36	0.24	0.30	0.40
	0.14	0.22	0.30	0.20	0.28	0.37	0.26	0.35	0.44	0.30	0.40	0.50
Forest	0.05	0.08	0.11	0.08	0.11	0.14	0.10	0.13	0.16	0.12	0.16	0.20
	0.08	0.11	0.14	0.10	0.14	0.18	0.12	0.16	0.20	0.15	0.20	0.25
Residential	0.25	0.28	0.31	0.27	0.30	0.35	0.30	0.33	0.38	0.33	0.36	0.42
Lot Size 1/8 acre	0.33	0.37	0.40	0.35	0.39	0.44	0.38	0.42	0.49	0.41	0.45	0.54
Lot Size 1/4 acre	0.22	0.26	0.29	0.24	0.29	0.33	0.27	0.31	0.36	0.30	0.34	0.40
	0.30	0.34	0.37	0.33	0.37	0.42	0.36	0.40	0.47	0.38	0.42	0.52
Lot Size 1/3 acre	0.19	0.23	0.26	0.22	0.26	0.30	0.25	0.29	0.34	0.28	0.32	0.39
	0.28	0.32	0.35	0.30	0.35	0.39	0.33	0.38	0.45	0.36	0.40	0.50
Lot Size 1/2 acre	0.16	0.20	0.24	0.19	0.23	0.28	0.22	0.27	0.32	0.26	0.30	0.37
	0.25	0.29	0.32	0.28	0.32	0.36	0.31	0.35	0.42	0.34	0.38	0.48
Lot Size 1 acre	0.14	0.19	0.22	0.17	0.21	0.26	0.20	0.25	0.31	0.24	0.29	0.35
	0.22	0.26	0.29	0.24	0.28	0.34	0.28	0.32	0.40	0.31	0.35	0.46
Industrial	0.67	0.68	0.68	0.68	0.68	0.69	0.68	0.69	0.69	0.69	0.69	0.70
	0.85	0.85	0.86	0.85	0.86	0.86	0.86	0.86	0.87	0.36	0.86	0.88
Commercial	0.71	0.71	0.72	0.71	0.72	0.72	0.72	0.72	0.72	0.72	0.72	0.72
	0.88	0.88	0.89	0.89	0.89	0.89	0.89	0.89	0.90	0.89	0.89	0.90
Streets	0.70	0.71	0.72	0.71	0.72	0.74	0.72	0.73	0.76	0.73	0.75	0.78
	0.76	0.77	0.79	0.80	0.82	0.84	0.84	0.85	0.89	0.89	0.91	0.95
Open Space	0.05	0.10	0.14	0.08	0.13	0.19	0.12	0.17	0.24	0.16	0.21	0.28
	0.11	0.16	0.20	0.14	0.19	0.26	0.18	0.23	0.32	0.22	0.27	0.39
Parking	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87	0.85	0.86	0.87
	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97	0.95	0.96	0.97

[a] Runoff coefficients for storm recurrence intervals less than 25 years
[b] Runoff coefficients for storm recurrence intervals of 25 years of more

Source: Rawls, W.J., S.L. Wong and R.H. McCuen, 1981, "Comparison of Urban Flood Frequency Procedures," Preliminary Draft, U.S. Department of Agriculture, Soil Conservation Service, Beltsville, MD.

Appendix F

Roughness Coefficients for Overland Flow and Sheet Flow

Roughness Coefficients (Manning's "n") for Overland Flow (U.S. Army Corps of Engineers, HEC-1 Users Manual)

Surface description	n		
Dense growth	0.4	-	0.5
Pasture	0.3	-	0.4
Lawns	0.2	-	0.3
Bluegrass sod	0.2	-	0.5
Short grass prairie	0.1	-	0.2
Sparse vegetation	0.05	-	0.13
Bare clay-loan soil (eroded)	0.01	-	0.03
Concrete/Asphalt:			
Very shallow depths (less than 1/4 inch)	0.10	-	0.15
Small depths (1/4) inch to several inches)	0.05	-	0.10

Roughness Coefficients (Manning's "n") for Sheet Flow (U.S. Soil Conservation Service Technical Release 55)

Surface description	n
Smooth surfaces (concrete, asphalt, gravel or bare soil)	0.011
Fallow (no residue)	0.05
Cultivated soils:	
Residue cover ≤ 20%	0.06
Residue > 20%	0.17
Grass:	
Short grass prairie	0.15
Dense grasses	0.24
Bermuda grass	0.41
Range (natural)	0.13
Woods:	
Light underbrush	0.40
Dense underbrush	0.80