

Chapter 160

STORMWATER MANAGEMENT

[HISTORY: Adopted by the Borough Council of the Borough of Chester Heights 12-1-2003 by Ord. No. 170. Amendments noted where applicable.]

GENERAL REFERENCES

Building construction — See Ch. 61.
Uniform construction codes — See Ch. 77.
Sewers — See Ch. 149.
Land development — See Ch. 162.
Zoning — See Ch. 185.

ARTICLE I General Provisions

§ 160-1. Statement of findings.

The governing body of the municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, and threatens public health and safety.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated erosion, is fundamental to the public health, safety, welfare, and the protection of the people of the municipality and all of the people of the commonwealth, their resources, and the environment.

§ 160-2. Purpose.

The purpose of this chapter is to: promote health, safety, and welfare within the municipality; implement the requirements of the Chester Creek Stormwater Management Plan; and implement the requirements of the National Pollutant Discharge Elimination System Phase II (NPDES II) by minimizing the damages described in § 160-1A of this chapter through provisions designed to:

- A. Manage accelerated runoff, erosion, and sedimentation problems at their source by regulating activities that cause these problems.
- B. Utilize and preserve the existing natural drainage systems.
- C. Encourage recharge of groundwater where appropriate and prevent degradation of groundwater quality.

- D. Maintain existing flows and quality of streams and watercourses in the municipality and the commonwealth.
- E. Preserve and restore the flood-carrying capacity of streams.
- F. Provide proper maintenance of all permanent stormwater management facilities that are constructed in the municipality.
- G. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

§ 160-3. Statutory authority.

The municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of October 4, 1978, 32 P.S., P.L. 864 (Act 167), § 680.1 et seq., as amended, the "Storm Water Management Act," the Pennsylvania Municipalities Planning Code, Act 247, as amended, and the applicable municipal code.

§ 160-4. Applicability.

- A. This chapter shall apply to all areas of the municipality, as delineated in the Chester Creek Stormwater Management Plan, which is hereby adopted as part of this chapter.
- B. This chapter shall only apply to permanent stormwater management facilities constructed as part of any of the regulated activities listed in this section. Stormwater management and erosion and sedimentation control during construction activities are specifically not regulated by this chapter but shall continue to be regulated under existing laws and ordinances.
- C. This chapter contains only the stormwater management performance standards and design criteria that are necessary or desirable from a watershed-wide perspective. Local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by the applicable municipal ordinances or at the municipal Engineer's discretion.
- D. The following activities are defined as "regulated activities" and shall be regulated by this chapter:
 - (1) Land development and/or redevelopment.
 - (2) Subdivision.
 - (3) Construction of new or additional impervious or semipervious surfaces (driveways, parking lots, etc.).
 - (4) Construction of new buildings or additions to existing buildings.
 - (5) Diversion or piping of any natural or man-made stream channel.
 - (6) Installation of stormwater management facilities or appurtenances thereto.
 - (7) Placement of fill material.

§ 160-5. Repealer.

Any ordinance or ordinance provision of the municipality inconsistent with any of the provisions of this chapter is hereby repealed to the extent of the inconsistency only.

§ 160-6. Severability.

Should any section or provision of this chapter be declared invalid by a court of competent jurisdiction, such decision shall not affect the validity of any of the remaining provisions of this chapter.

§ 160-7. Compatibility with other ordinance requirements.

Approvals issued pursuant to this chapter do not relieve the applicant of the responsibility to comply with or to secure required permits or approvals for activities regulated by any other applicable codes, rules, statutes, or ordinances.

ARTICLE II

Definitions

§ 160-8. Word usage and definitions.

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 words "includes" or "including" shall not limit the term to the specific example but are intended to extend its meaning to all other instances of like kind and character.
- C. The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any other similar entity.
- D. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.
- E. The words "used" or "occupied" include the words "intended, designed, maintained, or arranged to be used, occupied, or maintained."

ACCELERATED EROSION — The removal of the surface of the land through the combined action of man's activity and the natural processes at a rate greater than would occur because of the natural process alone.

ACCESSORY STRUCTURE — A structure detached from a principal building located on the same lot and customarily incidental and subordinate to the principal building or use.

AGRICULTURAL ACTIVITIES — The work of producing crops and raising livestock, including tillage, plowing, disking, harrowing, pasturing, and installation of conservation measures. Construction of new buildings or impervious area is not considered an agricultural activity.

ALTERATION — As applied to land, a change in topography as a result of the moving of soil and rock from one location or position to another; also, the changing of surface conditions by causing the surface to be more or less impervious; land disturbance.

APPLICANT — A landowner or developer who has submitted a drainage plan or filed an application for approval to engage in any regulated activities as defined in § 160-4 of this chapter.

AS-BUILT DRAWINGS — A set of engineering or site drawings that delineates the specific permitted stormwater management facility as actually constructed.

BMP (BEST MANAGEMENT PRACTICE) — Stormwater structures, facilities, and techniques to maintain or improve the water quality of surface runoff. Pennsylvania Handbook of Best Management Practices for Developing Areas, Spring 1998.

BUFFER — See "riparian buffer."

CHANNEL EROSION — The widening, deepening, and headward cuffing of small channels and waterways due to erosion caused by moderate to large floods.

CISTERN — An underground reservoir or tank for storing rainwater.

COMBINED SEWERS — A sewerage system that carries both sanitary sewage and stormwater runoff.

CONSERVATION DISTRICT — The Delaware and Chester County Conservation Districts as appropriate for the individual municipality within the Chester Creek watershed.

CULVERT — A structure with appurtenant works that carries a stream under or through an embankment or fill.

DAM — An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill, or structure for highway, railroad, or other purposes which does or may impound water or another fluid or semifluid.

DEED RESTRICTION — See "restrictive covenant."

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.

DESIGNEE — The agent of the Delaware County Planning Department or the Chester County Planning Commission and/or agent of the governing body involved with the administration, review, or enforcement of any provisions of this chapter by contract or memorandum of understanding.

DETENTION BASIN — An impoundment structure designed to manage stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

DETENTION DISTRICT — Those subareas in which some type of detention is required to meet the plan requirements and the goals of Act 167.

DEVELOPER — A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any regulated activity of this chapter.

DEVELOPMENT — See "land development."

DEVELOPMENT SITE — The specific tract of land for which a regulated activity is proposed.

DISCHARGE EASEMENT — The grant of a property right to allow runoff in excess of the previous quantity and/or rate of flow.

DOWNSLOPE PROPERTY LINE — That portion of the property line of the lot, tract, or parcels of land being developed located such that all overland or pipe flow from the site would be directed towards it.

DRAINAGE CONVEYANCE FACILITY — A stormwater management facility designed to transmit stormwater runoff, including streams, channels, swales, pipes, conduits, culverts, storm sewers, etc.

DRAINAGE EASEMENT — A right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

DRAINAGE PERMIT — A permit issued by the municipality after the drainage plan has been approved. Said permit is issued prior to or with the final municipal approval.

DRAINAGE PLAN — The documentation of the stormwater management system, if any, to be used for a given development site, the contents of which are established in § 160-12.

EARTH DISTURBANCE — Any activity, including but not limited to construction, mining, timber harvesting, and grubbing, which alters, disturbs, and exposes the existing land surface.

EASEMENT — A right-of-way granted, but not dedicated, for limited use of private land for a public or quasi-public purpose (e.g., utility lines) and within which the owner of the property shall not erect any permanent structures.

EPHEMERAL STREAMS — Streams that carry only surface runoff and are dry except during precipitation events. The groundwater table is generally located below the bottom of ephemeral streams.

EROSION — The movement of soil particles by the action of water, wind, ice, or other natural forces.

EROSION AND SEDIMENT POLLUTION CONTROL PLAN — A plan that is designed to minimize accelerated erosion and sedimentation. Said plan must be submitted to and approved by the Delaware or Chester County Conservation Districts of the appropriate municipality before construction can proceed.

EXISTING CONDITIONS — The initial condition of a project site prior to the proposed construction. If the initial condition of the site is undeveloped land, the land use shall be considered as "meadow" on "B" soils unless the natural land cover is proven to generate lower curve numbers or Rational "C" value, such as forested lands.

FLOOD — A general but temporary condition of partial or complete inundation of normally dry land areas from the overflow of streams, rivers, and other waters of this commonwealth.

FLOODPLAIN — Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration, Flood Hazard Boundary Map as being a special flood hazard area.

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 frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by the Federal Emergency Management Agency (FEMA). In an area where no FEMA maps or studies have defined the boundary of the one-hundred-year-frequency 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 forest land. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

FREEBOARD — A vertical distance between the elevation of the design high water and the top of a dam, levee, tank, basin, or diversion ridge. The space is required as a safety margin in a pond or basin.

GRADE — A slope, usually of a road, channel, or natural ground, specified in percent and shown on plans as specified herein. (To) Grade: to finish the surface of a roadbed, top of embankment, or bottom of excavation.

GRASSED WATERWAY — A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from cropland.

GROUNDWATER RECHARGE — Replenishment of existing natural underground water supplies.

IMPERVIOUS SURFACE — A surface that has been compacted or covered with material to the extent that it is highly resistant to infiltration by water, including but not limited to conventional impervious surfaces such as paved streets, roofs, compacted stone, and sidewalks. In addition, the following shall be considered impervious surfaces when used by motor vehicles: graveled areas, paver blocks, bricks, and cobblestone.

IMPOUNDMENT — A retention or detention basin designed to retain stormwater runoff and release it at a controlled rate.

INFILTRATION STRUCTURES — A structure designed to direct runoff into the ground (e.g., French drains, seepage pit, and seepage trench).

INLET — A surface connection to a closed drain. A structure at the diversion end of a conduit. The upstream end of any structure through which water may flow.

INTERMITTENT STREAMS — Streams which flow only during wet seasons. The groundwater table generally is at or above the bottom of intermittent streams during wet seasons but drops below the stream bottom during dry seasons. Stream flow in intermittent streams is primarily due to precipitation but does have some groundwater contribution during wet seasons.

LAND DEVELOPMENT

- (1) The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:
 - (a) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
 - (b) The division or allocation of land or space, whether initially or cumulatively, 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.
- (2) Any subdivision of land;
- (3) Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

LAND/EARTH DISTURBANCE — Any activity involving grading, tilling, digging, or filling of ground or stripping of vegetation or any other activity that causes an alteration to the natural condition of the land.

MAIN STEM (MAIN CHANNEL) — Any stream segment or other runoff conveyance facility used as a reach in the Chester Creek hydrologic model.

MANNING EQUATION (MANNING FORMULA) — A method for calculation of velocity of flow (e.g., feet per second) and flow rate (e.g., cubic feet per second) in open channels based upon channel shape, roughness, depth of flow, and slope. Open channels may include closed conduits so long as the flow is not under pressure.

MUNICIPALITY — Chester Heights, Delaware County or Chester County, Pennsylvania.

NONPOINT SOURCE POLLUTION — Pollution that enters a watery body from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

NRCS — Natural Resource Conservation Service [previously the Soil Conservation Service (SCS)].

OPEN CHANNEL — A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

OUTFALL — Point where water flows from a conduit, stream, or drain.

OUTLET — Points of water disposal from a stream, river, lake, tidewater, or artificial drain.

PARKING LOT STORAGE — Involves the use of impervious parking areas as temporary impoundments with controlled release rates during rainstorms.

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

PENN STATE RUNOFF MODEL (CALIBRATED) — A computer-based hydrologic modeling technique.

PERENNIAL STREAMS — Streams that flow year round. Perennial streams derive their flow

from both groundwater and runoff, and the groundwater table never drops below the streambed.

PIPE — A culvert, closed conduit, or similar structure (including appurtenances) that conveys stormwater.

PLANNING COMMISSION — The Planning Commission of Chester Heights Borough.

PMF—PROBABLE MAXIMUM FLOOD — The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in any area. The PMF is derived from the probable maximum precipitation (PMP) as determined based on data obtained from the National Oceanographic and Atmospheric Administration (NOAA).

RATIONAL FORMULA — A rainfall-runoff relation used to estimate peak flow.

REDEVELOPMENT — Reconstruction of an existing improved, developed property, as of the date of adoption of this chapter.

REGULATED ACTIVITIES — Actions or proposed actions that have an impact on stormwater runoff and that are specified in § 160-4 of this chapter.

RELEASE RATE — The percentage of predevelopment peak rate of runoff from a site or subarea to which the postdevelopment peak rate of runoff must be reduced to protect downstream areas.

RESTRICTIVE COVENANT — A restriction on the use of land usually set forth in the deed. Restrictive covenants (a.k.a. "deed restrictions") usually run with the land and are binding upon subsequent owners of the property.

RETENTION BASIN — An impoundment in which stormwater is stored and not released during the storm event. Stored water may be released from the basin at some time after the end of the storm.

RETURN PERIOD — The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the twenty-five-year return period rainfall would be expected to recur on the average once every 25 years.

RIPARIAN BUFFER — A vegetative strip paralleling the banks of a perennial or intermittent stream or other waterbody (including wetlands and ponds). The buffer shall contain appropriate native vegetation throughout its width with the exception of a minimum five-foot-wide strip of land maintained in meadow grass or forbs at its outer boundary. See also Appendix C, Riparian Buffer Technical Reference Guide.¹

RISER — A vertical pipe extending from the bottom of a pond that is used to control the discharge rate from the pond for a specified design storm.

ROOFTOP DETENTION — Temporary ponding and gradual release of stormwater falling directly onto flat roof surfaces by incorporating controlled-flow roof drains into building designs.

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

1. Editor's Note: Said Appendix C is included at the end of this chapter.

SEDIMENT BASIN — A barrier, dam, or retention or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by water.

SEDIMENT POLLUTION — The placement, discharge, or any other introduction of sediment into the waters of the commonwealth occurring from the failure to design, construct, implement, or maintain control measures and control facilities in accordance with the requirements of this chapter.

SEDIMENTATION — The process by which matter is accumulated or deposited by the movement of water.

SEEPAGE PIT/SEEPAGE TRENCH — An area of excavated earth filled with loose stone or similar coarse material into which surface water is directed for infiltration into the ground.

SHEET FLOW — Runoff that flows over the ground surface as a thin, even layer, not concentrated in a channel.

SOIL-COVER COMPLEX METHOD — A method of runoff computation developed by the NRCS that is based on relating soil type and land use/cover to a runoff parameter called curve number (CN).

SOIL GROUP, HYDROLOGIC — A classification of soils by SCS into four runoff-potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

SPILLWAY — A depression in the embankment of a pond or basin that is used to pass the peak discharge which is greater than the maximum design storm controlled by the pond.

STORAGE INDICATION METHOD — A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

STORM FREQUENCY — The number of times that a given storm event occurs or is exceeded on the average in a stated period of years. See "return period."

STORM SEWER — A system of pipes and/or open channels that conveys intercepted runoff and stormwater from other sources but excludes domestic sewage and industrial wastes.

STORMWATER — The total amount of precipitation reaching the ground surface.

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, and infiltration structures.

STORMWATER MANAGEMENT PLAN — The plan for managing stormwater runoff in the Chester Creek watershed adopted by Delaware and Chester Counties as required by the Act of October 4, 1978, P.L. 864, (Act 167), and known as the "Act 167 Stormwater Management Plan, Chester Creek Watershed."

STORMWATER MANAGEMENT SITE PLAN — The plan prepared by the applicant or his representative indicating how stormwater runoff will be managed at the particular site of interest

according to this chapter.

STREAM ENCLOSURE — A bridge, culvert, or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of this commonwealth.

SUBAREA — The smallest drainage unit of a watershed for which stormwater management criteria have been established in the stormwater management plan.

SUBDIVISION — The division or redivision of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels, or other divisions of land, including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership, or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres not involving any new street or easement of access or any residential dwellings shall be exempt.

SWALE — A low-lying stretch of land that gathers or carries surface water runoff.

TIMBER OPERATIONS — See "forest management."

TIME OF CONCENTRATION (T_c) — The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

TR-20 — The computer-based hydrologic modeling technique adapted to the Chester Creek watershed for the Act 167 plan. The model has been calibrated to reflect actual recorded flow values by adjusting key model input parameters.

TR-55 — A method for determining runoff volumes and rates developed by NRCS.

WATERCOURSE — A channel or conveyance of surface water having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

WATERS OF THE COMMONWEALTH — Any and all rivers, streams, creeks, rivulets, 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 — Those areas that are inundated or saturated by surface 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.

ARTICLE III **Drainage Plan Requirements**

§ 160-9. General requirements.

For any of the activities regulated by this chapter, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity may not proceed until the applicant or his/her agent has received written approval of a drainage plan from the municipality.

§ 160-10. Exemptions.

- A. Stormwater quantity control exemption. Any regulated activity that meets the following exemption criterion shall not be required to submit a drainage plan implementing the stormwater quantity controls of this chapter. This criterion shall apply to the total development even if the development is to take place in phases. The date of the municipal ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered.² Exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, and property.

Stormwater Management Exemption Criterion

No more than 10% of the total site area, up to a maximum of 2,000 square feet of additional impervious cover. Editor's Note: If an applicant proposes a one-thousand-square-foot room addition to his/her home after adoption of the municipal stormwater management ordinance, that applicant would be exempted from the stormwater quantity control submission requirements of this chapter. If, at a later date, the applicant proposes to construct a one-thousand-two-hundred-square-foot tennis court on the same property, the applicant would be required to comply with the full stormwater quantity and quality control submission requirements of this chapter for the total 2,200 square feet of additional impervious surface added to the original property since adoption of the municipal ordinance.

- B. Applicants whose activities are exempted under Subsection A above shall still be required to meet the stormwater management quality controls of this chapter. This may be achieved by implementing one or more of the following minimum best management practices:
- (1) Provide infiltration capacity for the equivalent of one inch of runoff from all new impervious surfaces. The infiltration volume does not have to be provided in one location. However, if site conditions preclude capture of runoff from portions of the impervious area, the infiltration volume for the remaining area should be increased an equivalent amount to offset the loss. In no case should the portion of the new impervious area flowing to an infiltration facility be less than 70% of the total new impervious area.
 - (2) If site conditions preclude use of infiltration facilities (e.g., high groundwater table or extensive rock conditions), provide an extended detention facility that will detain the equivalent of one inch of runoff from all new impervious areas for at least 24 hours.

2. Editor's Note: If an applicant proposes a one-thousand-square-foot room addition to his/her home after adoption of the municipal stormwater management ordinance, that applicant would be exempted from the stormwater quantity control submission requirements of this chapter. If, at a later date, the applicant proposes to construct a one-thousand-two-hundred-square-foot tennis court on the same property, the applicant would be required to comply with the full stormwater quantity and quality control submission requirements of this chapter for the total 2,200 square feet of additional impervious surface added to the original property since adoption of the municipal ordinance.

- (3) Provide buffer areas on the downstream side of any new impervious surfaces (e.g., sidewalks, roadways, parking lots) where the runoff discharges in a sheet flow manner. The buffer areas should be at least 20 feet wide and can be a mix of grass, shrubs, and trees. If buffer areas cannot be provided for the entire length of the impervious surfaces, consider installing a bioretention system and diverting surface runoff from the impervious surfaces to the facility using grass swales.
 - (4) If none of the above options is feasible due to site constraints, the applicant must provide stormwater detention that meets the release rate criteria for the site location or else obtain approval from the municipal Engineer to implement other BMPs that will provide water quality benefits of an equivalent level.
- C. New federal regulations approved October 1999 require operators of small municipal separate storm sewer systems (MS4s) to obtain NPDES Phase II permits from DEP by March 2003. (NPDES II is an acronym for the National Pollutant Discharge Elimination System Phase II Stormwater Permitting Regulations.) This program affects all municipalities in "urbanized areas" of the state. This definition applies to all Chester Creek watershed municipalities. Therefore, all municipalities within the Chester Creek watershed will be subject to the NPDES Phase II requirements, mandated by the Federal Clean Water Act as administered by DEP. For more information on NPDES II requirements, contact the DEP Regional Office.

§ 160-11. Plan submission.

- A. For all activities regulated by this chapter, the steps below shall be followed for submission. For any activities that require a DEP joint permit application and are regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of DEP's Rules and Regulations, require a PennDOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the permit(s) shall be part of the plan.
- B. Five copies of the drainage plan and associated plan review application shall be submitted by the applicant as part of the Act 247 preliminary plan submission for the regulated activity. Distribution of the drainage plan will be as follows:
 - (1) Two copies to the municipality accompanied by the requisite municipal review fee, as specified in this chapter.
 - (2) One copy to the municipal Engineer.
 - (3) One copy to the County Planning Department.
 - (4) One copy to the County Conservation District.

§ 160-12. Drainage plan contents.

The drainage plan shall consist of all applicable calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sedimentation control plan by title and date. The cover sheet of the computations and erosion and sedimentation control plan shall refer to the associated maps by title and date. All drainage plan materials shall be submitted

to the municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the drainage plan shall be disapproved and returned to the applicant. The following items shall be included in the drainage plan:

A. General.

- (1) General description of project.
- (2) General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.
- (3) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

B. Map(s) of the project area shall be submitted on twenty-four-inch by thirty-six-inch sheets and shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Delaware County. The contents of the maps(s) shall include, but not be limited to:

- (1) The location of the project relative to highways, municipalities, or other identifiable landmarks.
- (2) Existing contours at intervals of two feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.
- (3) Existing streams, lakes, ponds, or other bodies of water and wetlands within the project area.
- (4) Other physical features, including flood hazard boundaries, streams, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.
- (5) The locations of all existing and proposed structures and utilities within 50 feet of property lines.
- (6) An overlay showing soil names and boundaries.
- (7) Proposed changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.
- (8) Proposed structures, roads, paved areas, and buildings.
- (9) Final contours at intervals of two feet. In areas of steep slopes (greater than 15%), five-foot contour intervals may be used.
- (10) The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.
- (11) The date of the plan, including revisions.
- (12) A graphic and written scale at a minimum of one inch equals no more than 50 feet.
- (13) A North arrow.

- (14) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
- (15) Existing and proposed land use(s).
- (16) Vertical profiles of all proposed open channels and storm sewers, including hydraulic capacity for both.
- (17) Overland drainage paths of proposed swales or channels to convey water.
- (18) A note on the plan indicating the location, access, and responsibility for maintenance of stormwater management facilities.
- (19) A statement, signed by the landowner, acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the municipality.
- (20) The following signature block for the design engineer:

"(Design Engineer), on this date (date of signature), has reviewed and hereby certifies that the drainage plan meets all design standards and criteria of the Act 167 Stormwater Management Plan, Chester Creek Watershed, Model Stormwater Management Ordinance."

C. Supplemental information.

- (1) A written description of the following information shall be submitted.
 - (a) The overall stormwater management concept for the project.
 - (b) Stormwater runoff computations as specified in this chapter.
 - (c) Stormwater management techniques to be applied both during and after development.
 - (d) Expected project time schedule.
- (2) A soil erosion and sedimentation control plan, where applicable, including all reviews and approvals, as required by DEP.
- (3) The effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

D. Stormwater management facilities.

- (1) All stormwater management facilities must be located on a plan and described in detail.
- (2) When groundwater recharge methods such as seepage pits, beds, or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be

shown.

- (3) All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

§ 160-13. Drainage plan review.

- A. The municipal Engineer shall review the drainage plan for consistency with the adopted Chester Creek Stormwater Management Plan. The municipality shall require receipt of a complete plan, as specified in this chapter. The municipal Engineer shall review the drainage plan for any submission or land development against the municipal subdivision and land development ordinance provisions not superseded by this chapter.
- B. The Conservation District, in accordance with established criteria and procedures, shall review the drainage plan for consistency with stormwater management and erosion and sediment pollution control requirements and provide comments to the municipality. Such comments shall be considered by the municipality prior to final approval of the drainage plan.
- C. For activities regulated by this chapter, the municipal Engineer shall notify the municipality in writing as to whether the drainage plan is consistent with the Stormwater Management Plan. Should the drainage plan be determined to be consistent with the Stormwater Management Plan, the municipal Engineer will forward an approval letter to the applicant with a copy to the municipal Secretary.
- D. Should the drainage plan be determined to be inconsistent with the Stormwater Management Plan, the municipal Engineer will forward a disapproval letter to the applicant with a copy to the municipal Secretary citing the reason(s) for the disapproval. Any disapproved drainage plans may be revised by the applicant and resubmitted consistent with this chapter.
- E. For regulated activities specified in § 160-4 of this chapter, the municipal Engineer shall notify the municipal Building Permit Officer in writing, within a time frame consistent with the municipal Building Code and/or municipal Subdivision Ordinance, as to whether the drainage plan is consistent with the Stormwater Management Plan and forward a copy of the approval/disapproval letter to the applicant. Any disapproved drainage plan may be revised by the applicant and resubmitted consistent with this chapter.
- F. For regulated activities requiring a DEP joint permit application, the municipal Engineer shall notify DEP as to whether the drainage plan is consistent with the Stormwater Management Plan and forward a copy of the review letter to the municipality and the applicant. DEP may consider the municipal Engineer's review comments in determining whether to issue a permit.
- G. The municipality shall not approve any subdivision or land development for regulated activities specified in § 160-4 of this chapter if the drainage plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the municipal Engineer. All required permits from DEP must be obtained prior to approval.
- H. The municipal Building Permit Officer shall not issue a building permit for any regulated

activity specified in § 160-4 of this chapter if the drainage plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the municipal Engineer, or without considering the comments of the municipal Engineer. All required permits from DEP must be obtained prior to issuance of a building permit.

- I. The applicant shall be responsible for completing as-built drawings of all stormwater management facilities included in the approved drainage plan. The as-built drawing and an explanation of any discrepancies with the design plans shall be submitted to the municipal Engineer for final approval.
- J. The municipality's approval of a drainage plan shall be valid for a period not to exceed five years. This five-year period shall commence on the date that the municipality signs the approved drainage plan. If stormwater management facilities included in the approved drainage plan have not been constructed, or if as-built drawings of these facilities have not been approved within this five-year time period, then the municipality may consider the drainage plan disapproved and may revoke any and all permits. Drainage plans that are considered disapproved by the municipality shall be resubmitted in accordance with § 160-15 of this chapter.

§ 160-14. Modification of plans.

- A. A modification to a submitted drainage plan for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or redesign of stormwater management facilities, or that 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 § 160-12 of this chapter and be subject to review as specified in § 160-13 of this chapter.
- B. A modification to an already approved or disapproved drainage plan shall be submitted to the municipality, accompanied by the applicable review fee. A modification to a drainage plan for which a formal action has not been taken by the municipality shall be submitted to the municipality, accompanied by the applicable municipal review fee.

§ 160-15. Resubmission of disapproved drainage plans.

A disapproved drainage plan may be resubmitted, with the revisions addressing the municipal Engineer's concerns documented in writing, to the municipal Engineer in accordance with § 160-12 of this chapter and be subject to review as specified in § 160-13 of this chapter. The applicable municipal review fee must accompany a resubmission of a disapproved drainage plan.

ARTICLE IV
Stormwater Management

§ 160-16. General procedures for water quality and quantity control.

- A. All regulated activities in the Chester Creek watershed which do not fall under the exemption criterion shown in Ordinance § 160-10 shall submit a drainage plan consistent with the Chester Creek Stormwater Management Plan to the municipality for review. This criterion shall apply to the total proposed development even if development is to take place

in stages. Impervious cover shall include, but not be limited to, any roof, parking, or driveway areas and any new streets and sidewalks. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious.

- B. Drainage plans shall be prepared in accordance with the provisions contained in this article. The process for implementing these provisions is illustrated in Figure 4-1, Water Quality and Quantity Control Drainage Plan Preparation Procedures.³
- C. The Chester Creek Stormwater Management Plan requires water quality and water quantity controls as illustrated on the flow chart shown in Figure 4-1 and detailed in § 160-19. The flow chart illustrates a three-step hierarchical process: Step 1, Infiltration; Step 2, Extended detention; and Step 3, Implementation of additional design controls. Applicants must evaluate the outcome of each step before proceeding to the next. In addition, riparian buffers are required where applicable, in accordance with § 160-19A(2).
- D. Applicants are highly encouraged to meet the postdevelopment peak discharge control criteria indicated in §§ 160-17 and 160-18 through use of BMPs and innovative site designs that minimize the amount of new impervious surface.

§ 160-17. Stormwater management districts.

The Chester Creek watershed is divided into districts that represent three levels of stormwater management. The boundaries of the stormwater management districts are shown on an official release rate map, included as part of the Chester Creek Stormwater Management Plan (see Plate 6, Release Rate Map). A copy of the official release rate map at a reduced scale is included as Plate 1 in Appendix A⁴ of this chapter. This map is for reference only. The exact location of the stormwater management district boundaries as they apply to a given development site must be determined by mapping the boundaries using the two-foot topographic contours (or the most accurate data required) provided as part of the drainage plan.

§ 160-18. Stormwater management district performance standards.

- A. General. Postdevelopment rates of runoff from any regulated activity shall not exceed the peak release rates of runoff prior to development for the design storms specified on the official stormwater management release rate map, Ordinance Appendix A,⁵ and § 160-17 of the chapter.
- B. Standards for managing runoff for new development from each subarea in the Chester Creek watershed for the two-, five-, ten-, twenty-five-, fifty-, and one-hundred-year design storms are shown in Table 403-1. Development sites located in each of the districts must control postdevelopment peak runoff rates to the specified percentage of predevelopment peak runoff rates for the design storms as shown in the table.

3. Editor's Note: Figure 4-1 is on file in the Borough's office.

4. Editor's Note: Appendix A is on file in the Borough's office.

5. Editor's Note: Appendix A is on file in the Borough's office.

TABLE 403-1
Control Criteria for Stormwater Management Districts

District Control Criteria

- 100% Postdevelopment peak discharge for all design storms must be no greater than predevelopment peak discharges
- 75% Postdevelopment peak discharge for all design storms must be no greater than 75% of the predevelopment peak discharges
- 50% Postdevelopment peak discharge for all design storms must be no greater than 50% of the predevelopment peak discharges

SOURCE: Gannett Fleming, 2001

- C. Redevelopment projects shall meet peak discharge requirements based on the adjusted runoff control number (RCN) or "C" value illustrated by Figure B-3 in Appendix B.⁶
- D. Sites located in more than one district. For a proposed development site located within two or more release category subareas, the peak discharge rate from any subarea shall be the predevelopment peak discharge for each subarea multiplied by the applicable release rate. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea.
- E. Off-site areas. Off-site areas that drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.
- F. Site areas. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, as determined by the municipal Engineer, only the proposed development area and areas contributory to the proposed stormwater management facilities shall be subject to the release rate criteria.
- G. Regional detention alternatives. For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective applicants. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. "Hydrologic model" refers to the calibrated model as developed for the Stormwater Management Plan.

⁶. Editor's Note: Said Appendix B is included at the end of this chapter.

§ 160-19. Water quality requirements.

- A. In addition to the performance standards and design criteria requirements of §§ 160-17 and 160-18 and §§ 160-20 through 160-22 of this chapter, the applicant shall comply with the following water quality requirements unless otherwise exempted by provisions of this chapter.
- (1) The applicant shall first provide infiltration facilities in areas where soils are suitable for infiltration and shall direct the runoff from impervious surfaces into those infiltration facilities. The volume of storage to be provided shall be no less than the net increase in runoff from the two-year storm event, or one inch of runoff from the total area draining to the infiltration facility, whichever is greater.
 - (2) If a perennial or intermittent stream passes through the site, the applicant shall create a riparian buffer extending a minimum of 50 feet to either side of the top of the bank of the channel. The buffer area shall be maintained with appropriate native vegetation (see list of technical references in Appendix C⁷ of this chapter). If the applicable rear or side yard setback is less than 50 feet, the buffer width may be reduced to 25% of the setback to a minimum of 10 feet. If an existing buffer is legally prescribed (e.g., deed covenant, easement, etc.) and it exceeds the requirement of this chapter, the existing buffer shall be maintained. [The municipality may select a smaller buffer width if desired, but never less than 10 feet.]
 - (3) Detain the two-year, twenty-four-hour design storm runoff based on using the SCS Type II distribution. Provisions shall be made so that the detained runoff takes a minimum of 24 hours to drain from the facility from a point where the maximum volume of water is captured (i.e., the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility). The design of the facility shall consider and minimize the chances of clogging and sedimentation potential. The applicant may also utilize infiltration facilities in lieu of extended detention. The volume of infiltration provided for the contributing area may be deducted from the volume requirement for extended detention.
- B. The applicant shall submit designs for water quality facilities to the municipal Engineer for review and approval. Such designs may achieve the water quality objectives through a combination of BMPs.
- C. In selecting the appropriate BMPs or combinations thereof, the applicant shall consider the following:
- (1) Total contributing area.
 - (2) Permeability and infiltration rate of the site soils.
 - (3) Slope and depth to bedrock.
 - (4) Seasonal high water table.

7. Editor's Note: Said Appendix C is included at the end of this chapter.

- (5) Proximity to building foundations and well heads.
 - (6) Erodibility of soils.
 - (7) Land availability and configuration of the topography.
 - (8) Consistency with approved watershed and stormwater management plans or regulations.
- D. The following additional factors should be considered when evaluating the suitability of BMPs used to control water quality at a given development site:
- (1) Peak discharge and required volume control.
 - (2) Streambank erosion.
 - (3) Efficiency of the BMPs to mitigate potential water quality problems.
 - (4) The volume of runoff that will be effectively treated.
 - (5) The nature of the pollutant being removed.
 - (6) Maintenance requirements.
 - (7) Creation/protection of aquatic and wildlife habitat.
 - (8) Recreational value.
 - (9) Enhancement of aesthetic and property value.

§ 160-20. Calculation methodology.

- A. Any stormwater runoff calculations involving drainage areas greater than 200 acres, including on- and off-site areas, shall use a generally accepted calculation technique that is based on the NRCS soil-cover complex method. Table 405-1 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular site.

**TABLE 405-1
Acceptable Computation Methodologies for Stormwater Management Plans**

Method	Method Developed by	Applicability
TR-20 or commercial package based on TR-20	USDA - NRCS	When use of full model is desirable or necessary
Tr-55 or commercial package based on TR-55	USDA - NRCS	Applicable for plans within the model's limitations
HEC-HMS	U.S. Army Corps of Eng.	When use of full model is desirable or necessary
PSRM	Penn State Univ.	When use of full model is desirable or

		necessary
Rational Method or commercial package based on Rational Method*	Emil Kuiching (1889)	For sites with a total contributing drainage area of less than 100 acres
Other methods	Various	As approved by the municipal Engineer

*Use of the Rational Method to estimate peak discharges from drainage areas that contain more than 100 acres must be approved by the municipal Engineer.

SOURCE: Gannett Fleming, 2001

- B. All calculations consistent with this chapter using the soil-cover complex method shall use the appropriate design rainfall depths for the various return period storms presented in Table B-1 in Appendix B⁸ of this chapter. If a hydrologic computer model such as PSRM or HEC-1 is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The NRCS "S" curve shown in Figure B-1, in Appendix B of this chapter, shall be used for the rainfall distribution.
- C. For the purposes of predevelopment flow rate determination, undeveloped land shall be considered as "meadow" good condition, type "B" soils, (RCN = 58, Rational "C" = 0.12) unless the natural ground cover generates a lower curve number or Rational "C" value (i.e., forest). If a proposed development meets the definition of "redevelopment" as defined in Article II of this chapter, the applicant may adjust the predevelopment RCN or "C" value based on the curves presented in Figure B-3.
- D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods from the design storm curves from PA Department of Transportation Design Rainfall Curves (1986) (Figure B-2). Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times of concentration for channel and pipe flow shall be computed using Manning's equation.
- E. RCNs for both existing and proposed conditions to be used in the soil-cover complex method shall be obtained from Table B-2 in Appendix B⁹ of this chapter.
- F. Runoff coefficients (C) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table B-3 in Appendix B of this chapter.
- G. Runoff characteristics of off-site areas that drain through a proposed development shall be based on actual existing conditions, not RCN=58 or C=0.12, and shall be assumed to not have any controls implemented on future development (i.e., no release rate restrictions).
- H. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers.

8. Editor's Note: Appendix B is included at the end of this chapter.

9. Editor's Note: Appendix B is included at the end of this chapter.

Values for Manning's roughness coefficient (n) shall be consistent with Table B-4 in Appendix B of the chapter.

- I. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this chapter using any generally accepted hydraulic analysis technique or method. Acceptable methods are presented in Handbook of Hydraulics, by King and Brater (McGraw Hill). In addition, application of computer programs such as HY-8 (Federal Highway Administration) or FlowMaster (Haestad Methods) will also be accepted.
- J. The design of any stormwater detention facilities intended to meet the performance standards of this chapter shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. For drainage areas greater than 20 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The municipality may approve the use of any generally accepted full hydrograph approximation technique that uses a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.
- K. The municipality has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendation of the municipal Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.

§ 160-21. Design criteria for stormwater management facilities.

- A. Any stormwater management facility (i.e., detention basin) designed to store runoff and requiring a berm or earthen embankment required or regulated by this chapter shall be designed to provide an emergency spillway to handle flow up to and including the one-hundred-year postdevelopment conditions. The height of the embankment must be set so as to provide a minimum one foot of freeboard above the maximum pool elevation computed when the facility functions for the one-hundred-year postdevelopment inflow. Should any stormwater management facility require a dam safety permit under DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than the one-hundred-year event.
- B. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures) and any work involving wetlands as directed in DEP Chapter 105 regulations (as amended or replaced from time to time by DEP) shall be designed in accordance with Chapter 105 and will require a permit from DEP. Any other drainage conveyance facility that does not fall under Chapter 105 regulations shall be designed to convey, without damage to the drainage structure or roadway, runoff from a minimum twenty-five-year design storm. Municipalities may require design based on a larger storm event. Open channels shall be designed with a minimum of one foot of freeboard. Any facility that constitutes a dam as defined in DEP Chapter 105 regulations may require a permit under dam safety regulations. Any facility located within a PennDOT right-of-way must meet

PennDOT minimum design standards and permit submission requirements. If the primary drainage facilities do not have capacity for future flows, then a safe drainage path must be provided to convey up to the one-hundred-year design storm (without impacting structures).

- C. Storm sewers must be able to convey postdevelopment runoff from a minimum twenty-five-year design storm without surcharging inlets.
- D. Adequate erosion protection shall be provided along all open channels and at all points of discharge.
- E. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The municipality shall reserve the right to disapprove any design that would result in the occurrence or continuation of an adverse hydrologic or hydraulic condition within the watershed.
- F. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this chapter.
- G. The existing points of concentrated drainage that discharge onto adjacent property shall not be altered without permission of the adjacent property owner(s) and shall be subject to any applicable discharge criteria specified in this chapter.
- H. Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by this chapter. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the applicant must document to the municipality in accordance with § 160-20 that adequate downstream conveyance exists to safely transport the concentrated discharge, or the applicant must obtain drainage easements from affected downstream property owners and provide the facilities to safely convey the flow.
- I. Downstream hydraulic capacity analysis. Any downstream capacity hydraulic analysis conducted in accordance with this chapter shall use the following criteria for determining adequacy for accepting increased peak flow rates:
 - (1) Natural or man-made channels or swales must be able to convey the increased runoff associated with a two-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP Erosion and Sediment Pollution Control Program Manual.
 - (2) Natural or man-made channels or swales must be able to convey the increased twenty-five-year return period runoff without creating any hazard to persons or property.
 - (3) Culverts, bridges, storm sewers, or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP, Chapter 105 regulations (if applicable) and, at a minimum, pass the increased twenty-five-year return period runoff.

- J. Where a development site is traversed by watercourses, riparian buffers shall be provided conforming to the line of such watercourses. The width of the buffers shall be determined as set forth in § 160-19A(2). Excavating, placing of fill, building structures, or making any alterations that may adversely affect the flow of stormwater within any portion of the riparian buffer shall be prohibited unless the proposed work is associated with a regulated wetlands mitigation program. The buffer must be defined through a deed covenant.
- K. When it can be shown that, due to topographic conditions, natural drainageways on the site cannot adequately provide for drainage, open channels may be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainageways shall be subject to approval by DEP through the joint permit application process, or, where deemed appropriate by DEP, through the general permit process.
- L. Any stormwater management facilities regulated by this chapter that would be located in or adjacent to waters of the commonwealth or wetlands shall be subject to approval by DEP through the joint permit application process, or, where deemed appropriate by DEP, the general permit process. When there is a question as to whether wetlands may be involved, it is the responsibility of the applicant or his agent to show that the land in question cannot be classified as wetlands; otherwise, approval to work in the area must be obtained from DEP.
- M. Any stormwater management facilities regulated by this chapter that would be located on state highway rights-of-way shall be subject to approval by PennDOT.
- N. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc. are required, where soil conditions permit, to reduce the size or eliminate the need for detention facilities.
- O. In order to promote overland flow and infiltration/percolation of stormwater, roof drains must discharge into an accepted BMP providing infiltration and filtering of the stormwater.

§ 160-22. Erosion and sedimentation requirements.

- A. Whenever the vegetation and topography are to be disturbed, such activity must be in conformance with Chapter 102, Title 25, Rules and Regulations, Part I, Commonwealth of Pennsylvania, DEP, Subpart C, Protection of Natural Resources, Article II, Water Resources, Chapter 102, "Erosion Control," and in accordance with the Delaware County or Chester County Conservation District, as appropriate, and the standards and specifications of the appropriate municipal government.
- B. Additional erosion and sedimentation control design standards and criteria that must be applied where infiltration BMPs are proposed include the following:
 - (1) Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain their maximum infiltration capacity.
 - (2) In order to ensure compliance with Chapter 102, the timing of the installation and operation of the infiltration BMP shall be at the discretion of the municipal Engineer.

ARTICLE V
Inspections

§ 160-23. Schedule of inspections.

- A. The municipal Engineer or his municipal assignee shall inspect all phases of the installation of the permanent stormwater management and water quality facilities, including nonstructural BMPs.
- B. During any stage of the work, if the municipal Engineer determines that the permanent stormwater management facilities, water quality facilities, or nonstructural BMPs are not being installed in accordance with the approved Chester Creek Stormwater Management Plan, the municipality shall revoke any existing municipal permits or issue a stop-work order until a revised drainage plan is submitted and approved, as specified in this chapter.

ARTICLE VI
Fees and Expenses

§ 160-24. General.

The fee required by this chapter is the municipal review fee. The municipal review fee shall be established by the municipality to defray review costs incurred by the municipality and the municipal Engineer. All fees shall be paid by the applicant.

§ 160-25. Municipal drainage plan review fee.

The municipality shall establish a review fee schedule by separate resolution of the municipal governing body based on the size of the regulated activity and based on the municipality's costs for reviewing drainage plans. The municipality may periodically update the review fee schedule to ensure that review costs are adequately reimbursed.

§ 160-26. Expenses covered by fees.

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

- A. Administrative costs.
- B. The review of the drainage plan by the municipality and the municipal Engineer.
- C. The site inspections.
- D. The inspection of stormwater management facilities and drainage improvements during construction.
- E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the drainage plan.

§ 160-27. Additional costs.

Applicant will be invoiced for any additional costs incurred by the municipality in the course of reviewing the development plan. These costs may include, but are not limited to, special studies by qualified engineers or surveyors, field reconnaissance, and testing.

ARTICLE VII
Maintenance Responsibilities

§ 160-28. Performance guarantee.

The applicant shall provide a financial guarantee to the municipality for the timely installation and proper construction of all stormwater management controls as required by the approved stormwater plan and this chapter equal to the full construction cost of the required controls.

§ 160-29. Maintenance responsibilities.

- A. The drainage plan for the development site shall contain an operation and maintenance plan prepared by the applicant and approved by the municipal Engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to ensure proper operation of the facility(ies).
- B. The drainage plan for the development site shall establish responsibilities for the continued operation and maintenance of all proposed stormwater control facilities, consistent with the following principles:
 - (1) If a development consists of structures or lots that are to be separately owned and in which streets, sewers, and other public improvements are to be dedicated to the municipality, stormwater control facilities may also be dedicated to and maintained by the municipality.
 - (2) If a development site is to be maintained in single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities shall be the responsibility of the owner or private management entity.
- C. The municipality, upon recommendation of the municipal Engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the drainage plan. The municipality reserves the right to accept the ownership and operating responsibility for any or all of the stormwater management controls.

§ 160-30. Maintenance agreement for privately owned stormwater facilities.

- A. Prior to final approval of the site's stormwater management plan, the property owner shall sign and record a maintenance agreement covering all stormwater control facilities that are to be privately owned. Said agreement, designated as Appendix E, is attached and made a part hereto.¹⁰
- B. Other items may be included in the agreement, where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the municipal Solicitor and municipality.

§ 160-31. Postconstruction maintenance inspections.

10. Editor's Note: Said agreement, designated as Appendix E, is on file in the Borough's office.

- A. Stormwater detention and retention basins or facilities shall be inspected by, or under the direction of, a registered professional engineer on behalf of the applicant or responsible entity (including the municipal Engineer for dedicated facilities) on the following basis:
 - (1) Annually for the first five years.
 - (2) Once every three years thereafter.
 - (3) During or immediately after the cessation of a one-hundred-year or greater storm event.
- B. The entity conducting the inspection shall be required to submit a report to the municipality within one month following completion of the inspection. The report will present documentation regarding the condition of the facility and recommend necessary repairs, if needed. Any needed repairs shall be implemented by the owner within one month of the report issuance date.

§ 160-32. Municipal stormwater maintenance fund.

- A. If stormwater facilities are accepted by the municipality for dedication, persons installing stormwater storage facilities shall be required to pay a specified amount to the municipal stormwater maintenance fund to help defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:
 - (1) If the storage facility is to be owned and maintained by the municipality, the deposit shall cover the estimated costs for maintenance and inspections for 10 years. The municipal Engineer will establish the estimated costs utilizing information submitted by the applicant.
 - (2) The amount of the deposit to the fund shall be converted to present worth of the ten-year maintenance costs. The municipal Engineer shall determine the present worth equivalents which shall be subject to the approval of the municipality.
- B. If a storage facility is proposed that also serves as a recreational facility (e.g., ball field, pond), the municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreational purpose.
- C. If at some future time a storage facility (whether publicly or privately owned) is eliminated due to the installation of storm sewers or other storage facility, the unused portion of the maintenance fund deposit will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the costs of abandonment are paid will be returned to the depositor.

ARTICLE VIII
Enforcement and Penalties

§ 160-33. Right of entry.

Upon presentation of proper credentials, duly authorized representatives of 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 this chapter.

§ 160-34. Notification.

In the event that a person fails to comply with the requirements of this chapter or fails to conform to the requirements of any permit issued hereunder, the municipality shall provide written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Failure to comply within the time specified shall subject such person to the penalty provision of this chapter. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies. It shall be the responsibility of the owner of the real property on which any regulated activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this chapter.

§ 160-35. Enforcement.

The municipality is hereby authorized and directed to enforce all of the provisions of this chapter. All inspections regarding compliance with the drainage plan shall be the responsibility of the municipal Engineer or other qualified persons designated by the municipality.

- A. A set of design plans approved by the municipality shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the municipality or designee during construction.
- B. It shall be unlawful for any person, firm, or corporation to undertake any regulated activity under § 160-4 on any property except as provided for in the approved drainage plan and pursuant to the requirements of this chapter. It shall be unlawful to alter or remove any control structure required by the drainage plan pursuant to this chapter or to allow the property to remain in a condition that does not conform to the approved drainage plan.
- C. At the completion of the project, and as a prerequisite for the release of the performance guarantee, the owner or his representatives shall:
 - (1) Provide a certification of completion from an engineer, architect, surveyor, or other qualified person verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.
 - (2) Provide a printed set of as-built drawings to the municipality.
 - (3) Provide a set of as-built drawings to the County Conservation District. Such plans shall be prepared in accordance with established criteria and procedures and in a format (electronic or otherwise) as required by the Conservation District for long-term storage.
- D. After receipt of the certification by the municipality, a final inspection shall be conducted by the governing body or its designee to certify compliance with this chapter.
- E. Suspension and revocation of permits.
 - (1) Any municipal permit issued under this chapter may be suspended or revoked or a stop-work order may be issued by the municipality for:
 - (a) Noncompliance with or failure to implement any provision of the permit.

- (b) A violation of any provision of this chapter or any other applicable law, ordinance, rule, or regulation relating to the project.
 - (c) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, or which endangers the life or property of others.
 - (2) A suspended permit shall be reinstated by the municipality when:
 - (a) The municipal Engineer or his designee has inspected and approved the corrections to the stormwater management and erosion and sediment pollution control measure(s); and/or
 - (b) The municipality is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.
 - (3) A permit that has been revoked by the municipality cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this chapter.
- F. Occupancy permit. An occupancy permit shall not be issued by the municipality unless all requirements of this chapter have been met. The occupancy permit shall be required for each lot owner and/or applicant for all subdivisions and land development in the municipality.

§ 160-36. Public nuisance.

- A. The violation of any provision of this chapter is hereby deemed a public nuisance.
- B. Each day that a violation continues shall constitute a separate violation.

§ 160-37. Enforcement remedies.

- A. Anyone violating the provisions of this chapter shall be subject to a fine of not more than \$500 for each violation plus all court costs, including reasonable attorney's fees incurred by the municipality as a result thereof. Each day that the violation continues shall be a separate offense.
- B. In addition, the municipality, through its Solicitor, 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.

§ 160-38. Appeals.

- A. Any person aggrieved by any action of the municipality or its designee, relevant to the provisions of this chapter, may appeal to the municipality within 30 days of that action.
- B. Any person aggrieved by any decision of the municipality, 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 governing body's decision.

ARTICLE IX
Prohibitions

§ 160-39. Prohibited discharges.

- A. No person in the municipality shall allow or cause to allow stormwater discharges into the municipality's separate storm sewer system which are not composed entirely of stormwater, except discharges allowed under a state or federal permit.
- B. Discharges which may be allowed under the municipality's NPDES permit based on a finding by the municipality that the discharge(s) do not significantly contribute to pollution to surface waters of the Commonwealth by the municipality are:

Waterline flushing	Discharges from potable sources
Landscape irrigation	Discharges from foundation drains
Diverted stream flows	Air-conditioning condensation
Rising groundwaters	Irrigation water
Uncontaminated pumped groundwater	Flows from riparian habitats and wetlands
Springs	Street wash water
Water from crawl-space pumps	Individual residential car washing
Footing drains	Lawn watering
Dechlorinated swimming pool discharges	Discharges from fire-fighting activities including training

- C. In the event that the municipality subsequently determines that any of the discharges identified in Subsection B significantly contribute to pollution of waters of the commonwealth by the municipality, then the municipality will notify the responsible person to cease the discharge.
- D. Upon notice provided by the municipality under Subsection C, the discharger will have a reasonable time to cease the discharge consistent with the degree of pollution caused by the discharge.

§ 160-40. Prohibited connections.

- A. The following connections are prohibited:
 - (1) Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater discharge, including sewage, process wastewater, and wash water, to enter the separate storm sewer system, and any connections to the storm drain system from indoor drains and sinks;
 - (2) Any drain or conveyance connected from a commercial or industrial land use to the separate storm sewer system which has not been documented in plans, maps, or equivalent records, and approved by the municipality.

- B. This prohibition expressly includes, without limitation, connections made in the past, regardless of whether the connection, drain or conveyance was previously allowed, permitted, or approved by a government agency, or otherwise permissible under law or practices applicable or prevailing at the time of connection.

§ 160-41. Roof drains.

- A. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches, except as provided in Subsection B.
- B. When it is more advantageous to connect directly to streets or storm sewers, connections of roof drains to streets or roadside ditches may be permitted on a case-by-case basis by the municipality.
- C. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

§ 160-42. Waste disposal prohibitions.

No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, left, or maintained, in or upon any public or private property, driveway, parking area, street, alley, sidewalk, or other component of the municipality's separate storm sewer system, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, and accumulations, so that the same may cause or contribute to pollution. Wastes deposited in streets in proper waste receptacles for the purposes of collection are exempted from this prohibition.

§ 160-43. Alteration of BMPs.

- A. No person shall modify, remove, fill, landscape or alter any existing stormwater BMP, unless part of an approved maintenance program, without the written approval of the municipality.
- B. No person shall place any structure, fill, landscaping or vegetation into a stormwater BMP or within a drainage easement, which would limit or alter the functioning of the BMP, without the written approval of the municipality.