

DOYLESTOWN TOWNSHIP

Chapter 148: STORMWATER MANAGEMENT

ARTICLE II Terminology

§ 148-10. 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 word “person” includes an individual, firm, association, organization, partnership, trust, company, corporation, unit of government, 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.”

§ 148-11. Definitions.

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

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

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 person who has filed an application for approval to engage in any regulated activity defined in § 148-5 of this chapter.

AS-BUILT DRAWINGS — Engineering or site drawings maintained by the contractor as he constructs the project and upon which he documents the actual locations of the building components and changes to the original contract documents. These documents, or a copy of same, are turned over to the Township or its designee at the completion of the project.

BANKFULL — The channel at the top-of-bank, or point from where water begins to overflow onto a floodplain.

BASE FLOW — Portion of stream discharge derived from groundwater; the sustained discharge that does not result from direct runoff or from water diversions, reservoir releases, piped discharges, or other human activities.

BIORETENTION — A stormwater retention area that utilizes woody and herbaceous plants and soils to remove pollutants before infiltration occurs.

BMP (BEST MANAGEMENT PRACTICE) — Methods, measures or practices used to prevent or reduce surface runoff and/or water pollution, including but not limited to, structural and nonstructural stormwater management practices and operation and maintenance procedures. See also “Nonstructural Best Management Practice (BMP).”

BUFFER — The area of land immediately adjacent to any stream, measured perpendicular to and horizontally from the top-of-bank on both sides of a stream (see “top-of-bank”).

CHANNEL — An open drainage feature through which stormwater flows. Channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

CHANNEL EROSION — The widening, deepening, or headward cutting of channels and waterways, caused by stormwater runoff or bankfull flows.

CISTERN — An underground reservoir or tank for storing rainwater.

CONSERVATION DISTRICT — The Bucks County Conservation District.

CULVERT — A structure with its appurtenant works which carries water under or through an embankment or fill.

DAM — A man-made barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid. A dam may include a refuse bank, fill or structure for highway, railroad or other purposes which impounds or may impound water or another fluid or semifluid.

DEPARTMENT — The Pennsylvania Department of Environmental Protection.

DESIGNEE — The agent of the Bucks County Planning Commission, Bucks County Conservation District 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.

DESIGN PROFESSIONAL (QUALIFIED) — A Pennsylvania registered professional engineer, registered landscape architect or registered professional land surveyor trained to develop stormwater management plans.

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.

DETENTION BASIN — An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely soon after a rainfall event and become dry until the next rainfall event.

DETENTION DISTRICT — Those subareas of a watershed in which some type of detention is required to meet the plan requirements and the goals of Act 167. Editor’s Note: See 32 P.S. § 680.1 et seq.

DEVELOPER — A person that seeks to undertake any regulated earth disturbance activities at a project site in the Township.

DEVELOPMENT — 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. As used in this chapter, development encompasses both new development and redevelopment.

DEVELOPMENT SITE — The specific tract or parcel of land where any regulated activity set forth in § 148-5 is planned, conducted or maintained.

DIFFUSED DRAINAGE DISCHARGE — Drainage discharge that is not confined to a single point location or channel, including sheet flow or shallow concentrated flow.

DISCHARGE — To release water from a project, site, aquifer, drainage basin or other point of interest (verb); the rate and volume of flow of water such as in a stream, generally expressed in cubic feet per second (noun). See also “peak discharge.”

DISCHARGE POINT — The point of discharge for a stormwater facility.

DISTURBED AREAS — Unstabilized land area where an earth disturbance activity is occurring or has occurred.

DITCH — A man-made waterway constructed for irrigation or stormwater conveyance purposes.

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

DRAINAGE CONVEYANCE FACILITY — A stormwater management facility designed to transport stormwater runoff that includes channels, swales, pipes, conduits, culverts, and storm sewers.

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 Township after the drainage plan has been approved.

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 § 148-13.

EARTH DISTURBANCE ACTIVITY — A construction or other human activity which disturbs the surface of land, including, but not limited to, clearing and grubbing, grading, excavations, embankments, land development, agricultural plowing or tilling, timber harvesting activities, road maintenance activities, mineral extraction, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

EMERGENCY SPILLWAY — A conveyance area that is used to pass peak discharge greater than the maximum design storm controlled by the stormwater facility.

ENCROACHMENT — A structure or activity that changes, expands or diminishes the course, current or cross section of a watercourse, floodway or body of water.

EROSION — The process by which the surface of the land, including water/stream channels, is worn away by

water, wind, or chemical action.

EROSION AND SEDIMENT CONTROL PLAN — A plan that is designed to minimize accelerated erosion and sedimentation. Said plan must be submitted to and approved by the appropriate Conservation District before construction can begin.

EXCEPTIONAL VALUE WATERS — Surface waters of high quality which satisfy Pennsylvania Code Title 25 Environmental Protection, Chapter 93, Water Quality Standards, § 93.4b(b) (relating to antidegradation).

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

FLOOD — A temporary condition of partial or complete inundation of 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 as 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 a watercourse and those portions of the adjoining floodplains which 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 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-bank.

FLUVIAL GEOMORPHOLOGY — The study of landforms associated with river channels and the processes that form them.

FOREST MANAGEMENT/TIMBER OPERATIONS — Planning and associated 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 and reforestation.

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

GRADE

A. A slope, usually of a road, channel or natural ground specified in percent and shown on plans as specified herein (noun).

B. To finish the surface of a roadbed, the top of an embankment, or the bottom of excavation (verb).

GRASSED WATERWAY — A natural or man-made waterway, usually broad and shallow, covered with erosion-resistant grasses, used to convey surface water.

GROUNDWATER — Water beneath the earth’s surface that supplies wells and springs and is often between saturated soil and rock.

GROUNDWATER RECHARGE — The replenishment of existing natural underground water supplies from

rain or overland flow.

HEC-HMS — The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC)-Hydrologic Modeling System (HMS). This model was used to model the Neshaminy and Little Neshaminy Creeks watershed during the Act 167 Editor's Note: See 32 P.S. § 680.1 et seq. plan development and was the basis for the standards and criteria of this chapter.

HIGH-QUALITY WATERS — Surface waters having quality which exceeds levels necessary to support propagation of fish, shellfish, and wildlife and recreation in and on the water by satisfying Pennsylvania Code Title 25 Environmental Protection, Chapter 93 Water Quality Standards, § 93.4b(a).

HOTSPOTS — Areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

HYDROGRAPH — A graph representing the discharge of water versus time for a selected point in the drainage system.

HYDROLOGIC REGIME — The hydrologic cycle or balance that sustains quality and quantity of stormwater, base flow, storage, and groundwater supplies under natural conditions.

HYDROLOGIC SOIL GROUP — A classification of soils by the Natural Resources Conservation Service, formerly the Soil Conservation Service, 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.

IMPERVIOUS SURFACE — A surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavement, roofs, or driveway areas. Any surface areas designed to be gravel or crushed stone shall be regarded as impervious surfaces.

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

INFILL — Development that occurs on smaller parcels that remain undeveloped but are within or very close proximity to urban or densely developed areas. Infill development usually relies on existing infrastructure and does not require an extension of water, sewer or other public utilities.

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.

INFILTRATION STRUCTURES — A structure designed to direct runoff into the underground water (e.g., French drains, seepage pits, or seepage trenches).

INLET — The upstream end of any structure through which water may flow.

INTERMITTENT STREAM — A stream that flows only part of the time. Flow generally occurs for several weeks or months in response to seasonal precipitation or groundwater discharge.

LAND DEVELOPMENT — Any of the following activities:

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 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
(2) 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.

B. A subdivision of land.

C. Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code. Editor's Note: See 53 P.S. § 10503(1.1).

LIMITING ZONE — A soil horizon or condition in the soil profile or underlying strata that includes one of the following:

A. A seasonal high-water table, whether perched or regional, determined by direct observation of the water table or indicated by soil mottling.

B. A rock with open joints, fracture or solution channels, or masses of loose rock fragments, including gravel, with insufficient fine soil to fill the voids between the fragments.

C. A rock formation, other stratum or soil condition that is so slowly permeable that it effectively limits downward passage of effluent.

LOT — A designated parcel, tract or area of land established by a plat or otherwise as permitted by law and to be used, developed or built upon as a unit.

LOW-IMPACT DEVELOPMENT (LID) PRACTICES — Practices that will minimize proposed conditions, runoff rates and volumes, which will minimize needs for artificial conveyance and storage facilities.

MAIN STEM (MAIN CHANNEL) — Any stream segment or other runoff conveyance used as a reach in the Neshaminy 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.

MUNICIPAL ENGINEER — A professional engineer licensed as such in the Commonwealth of Pennsylvania, duly appointed as the engineer for Doylestown Township, planning agency or joint planning commission.

NATURAL HYDROLOGIC REGIME — See “hydrologic regime.”

NATURAL RECHARGE AREA — Undisturbed surface area or depression where stormwater collects, and a portion of which infiltrates and replenishes the groundwater.

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

NONSTORMWATER DISCHARGES — Water flowing in stormwater collection facilities, such as pipes or swales, which is not the result of a rainfall event or snowmelt.

NONSTRUCTURAL BEST MANAGEMENT PRACTICE (BMPS) — Methods of controlling stormwater runoff quantity and quality, such as innovative site planning, impervious area and grading reduction, protection of natural depression areas, temporary ponding on site and other techniques.

NPDES — National Pollutant Discharge Elimination System, the federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

NRCS — Natural Resource Conservation Service (previously Soil Conservation Service).

OUTFALL — Point source as described in 40 CFR § 122.2 at the point where the Township's storm sewer system discharges to surface waters of the commonwealth.

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

PARENT TRACT — The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this chapter.

PARKING LOT STORAGE — Involves the use of 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 — The computer-based hydrologic model developed at the Pennsylvania State University.

PERVIOUS SURFACE — A surface that allows the infiltration of water into the ground.

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

PLANNING COMMISSION — The Planning Commission of Doylestown Township. Editor's Note: See Ch. 30, Planning Commission.

POINT SOURCE — Any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in state regulations at 25 Pa. Code § 92.1.

POSTCONSTRUCTION — Period after construction during which disturbed areas are stabilized, stormwater controls are in place and functioning and all proposed improvements in the approved land development plan are completed.

PREDEVELOPMENT — Undeveloped/natural condition.

PRETREATMENT — Techniques employed in stormwater BMPs to provide storage or filtering to trap coarse materials and other pollutants before they enter the system, but not necessarily designed to meet the water quality volume requirements of § 148-23.

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

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

RECHARGE — The replenishment of groundwater through the infiltration of rainfall, other surface waters, or land application of water or treated wastewater.

RECORD DRAWINGS — Original documents revised to suit the as-built conditions and subsequently provided by the Engineer to the client. The Engineer reviews the contractor's as-builts against his/her own records for completeness, then either turns these over to the client or transfers the information to a set of reproducible, in

both cases for the client's permanent records.

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. Utility trenches in streets are not considered redevelopment unless more than 50% of the street width, including shoulders, is removed and repaved.

REGULATED ACTIVITIES — Actions or proposed actions that have an impact on stormwater runoff quality or quantity and that are specified in § 148-5 of this chapter.

REGULATED EARTH DISTURBANCE ACTIVITY — Defined under NPDES Phase II regulations as earth disturbance activity of one acre or more with a point source discharge to surface waters or the Township's storm sewer system, or five acres or more regardless of the planned runoff. This includes earth disturbance on any portion of, part, or during any stage of, a larger common plan of development.

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

REPAVING — Replacement of the impervious surface that does not involve reconstruction of an existing paved (impervious) surface.

REPLACEMENT PAVING — Reconstruction of and full replacement of an existing paved (impervious) surface.

RETENTION BASIN — A structure in which stormwater is stored and not released during the storm event. Retention basins are designed for infiltration purposes and do not have an outlet. The retention basin must infiltrate stored water in four days or less.

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 of once every 25 years.

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.

ROAD MAINTENANCE — Earth disturbance activities within the existing road cross section, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

ROOF DRAINS — A drainage conduit or pipe that collects water runoff from a roof and leads it away from the structure.

ROOFTOP DETENTION — The temporary ponding and gradual release of stormwater falling directly onto flat roof surfaces using controlled-flow roof drains into building designs.

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

SALDO — Subdivision and Land Development Ordinance. Editor's Note: See Ch. 153, Subdivision and Land Development.

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

SEDIMENT BASIN — A barrier, dam, retention or detention basin located and designed in such a way as to retain rock, sand, gravel, silt, or other material transported by water during construction.

SEDIMENT POLLUTION — The placement, discharge or any other introduction of sediment into the waters of the commonwealth.

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 underground water.

SEPARATE STORM SEWER SYSTEM — A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

SHALLOW CONCENTRATED FLOW — Stormwater runoff flowing in shallow, defined ruts prior to entering a defined channel or waterway.

SHEET FLOW — A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

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).

SOURCE WATER PROTECTION AREAS (SWPA) — The zone through which contaminants, if present, are likely to migrate and reach a drinking water well or surface water intake.

SPECIAL PROTECTION SUBWATERSHEDS — Watersheds that have been designated in Pennsylvania Code Title 25 Environmental Protection, Chapter 93 Water Quality Standards, as exceptional-value (EV) or high-quality (HQ) waters.

SPELLWAY — A conveyance that is used to pass the peak discharge of the maximum design storm that is controlled by the stormwater facility.

STATE WATER QUALITY REQUIREMENTS — As defined under state regulations, protection of designated and existing uses (see 25 Pa. Code Chapters 93 and 96), including:

- A. Each stream segment in Pennsylvania has a designated use, such as cold-water fishery or potable water supply, which are listed in Chapter 93. These uses must be protected and maintained, under state regulations.
- B. “Existing uses” are those attained as of November 1975, regardless whether they have been designated in Chapter 93. Regulated earth disturbance activities must be designed to protect and maintain existing uses and maintain the level of water quality necessary to protect those uses in all streams, and to protect and maintain water quality in special protection streams.
- C. Water quality involves the chemical, biological and physical characteristics of surface water bodies. After regulated earth disturbance activities are complete, these characteristics can be impacted by addition of pollutants such as sediment and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed and structural integrity of the waterway, to prevent these impacts.

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 convey intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

STORMWATER — The surface runoff generated by 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 quality, rate or quantity. 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 watershed plan, known as the “Neshaminy and Little Neshaminy Creeks Watershed Act 167 Stormwater Management Plan,” for managing those land use activities that will influence stormwater runoff quality and quantity and that would impact the Neshaminy and Little Neshaminy Creeks Watershed adopted by Bucks County and Montgomery County as required by the Act of October 4, 1978, P.L. 864 (Act 167). Editor’s Note: See 32 P.S. § 680.1 et seq.

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 — A natural watercourse.

STREAM BUFFER — The land area adjacent to each side of a stream essential to maintaining water quality. (See “buffer.”)

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

SUBAREA (SUBWATERSHED) — 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, partition by the court for distribution to heirs or devisees, 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 dwelling, shall be exempted.

SURFACE 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 waters, or parts thereof, whether natural or artificial, within or on the boundaries of the commonwealth.

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 required 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.

TOP-OF-BANK — Highest point of elevation in a stream channel cross section at which a rising water level just begins to flow out of the channel and over the floodplain.

TOWNSHIP — Doylestown Township, Bucks County, Pennsylvania.

VERNAL POND — Seasonal depressional wetlands that are covered by shallow water for variable periods from winter to spring, but may be completely dry for most of the summer and fall.

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

WATERSHED — Region or area drained by a river, watercourse or other body of water, whether natural or artificial.

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 the commonwealth.

WELLHEAD

- A. A structure built over a well.
- B. The source of water for a well.

WELLHEAD PROTECTION AREA — The surface and subsurface area surrounding a water supply well, well field, or spring supplying a public water system, through which contaminants are reasonably likely to move toward and reach the water source.

WET BASIN — Pond for urban runoff management that is designed to detain urban runoff and always contains water.

WETLAND — Those 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. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

ARTICLE III Drainage Plan Requirements

§ 148-12. General requirements.

For any of the activities regulated by this chapter, the preliminary or final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any earth disturbance activity may not proceed until the property owner or applicant or his/her agent has received written approval of a drainage plan from the Township and an adequate erosion and sediment control plan review by the

Conservation District and NPDES permit for stormwater discharges associated with construction activities if the proposed land disturbance is greater than one acre.

§ 148-13. Drainage plan contents.

A. The drainage plan shall consist of a general description of the project including sequencing items described in § 148-21, calculations, maps and plans. A note on the maps shall refer to the associated computations and erosion and sediment control plan by title and date. The cover sheet of the computations, erosion and sediment control plan and postconstruction stormwater management plan shall refer to the associated maps by title and date. All drainage plan materials shall be submitted to the Township in a format that is clear, concise, legible, neat, and well organized; otherwise, the drainage plan shall not be accepted for review and shall be returned to the applicant.

B. The following items shall be included in the drainage plan:

(1) General.

(a) General description of the project including those areas described in § 148-21B.

(b) General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.

(c) Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

(d) An erosion and sediment control plan, including all reviews and approvals by the Conservation District.

(e) A general description of nonpoint source pollution controls.

(f) The drainage plan application and completed fee schedule form and associated fee (Appendix C-1). Editor's Note: Appendix C-1 is included at the end of this chapter.

(g) (Reserved)

(h) An operations and maintenance plan for all proposed best management practices.

(2) Maps. Map(s) of the project area shall be submitted on twenty-four-inch by thirty-six-inch sheets and/or shall be prepared in a form that meets the requirements for recording at the offices of the Recorder of Deeds of Bucks County. If the Subdivision and Land Development Ordinance (SALDO) Editor's Note: See Ch. 153, Subdivision and Land Development. has more stringent criteria then the more stringent criteria shall apply. The contents of the map(s) shall include, but not be limited to:

(a) The location of the project relative to highways, municipal boundaries or other identifiable landmarks.

(b) Existing contours at intervals of two feet. In areas of slopes greater than 25%, five-foot contour intervals may be used.

(c) Existing streams, lakes, ponds or other waters of the commonwealth within the project area.

(d) Other physical features including flood hazard boundaries, stream buffers, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

(e) The locations of all existing and proposed utilities, sanitary sewers, and water lines within 50 feet of property lines.

(f) An overlay showing soil names, boundaries, and soil limitations (in tabular format).

(g) Limits of earth disturbance, including the type and amount of impervious area that would be added.

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

(i) Final contours at intervals of two feet. In areas of steep slopes greater than 25%, five-foot contour intervals may be used.

(j) 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.

(k) The date of submission.

(l) A graphic and written scale of one inch equals no more than 50 feet; for tracts of 20 acres or more, the scale shall be one inch equals no more than 100 feet.

(m) A North arrow.

(n) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

(o) Existing and proposed land use(s).

- (p) A key map showing all existing man-made features beyond the property boundary that would be affected by the project.
- (q) Location of all open channels and all down-gradient receiving channels, swales and waters where stormwater runoff or drainage will be discharged to.
- (r) Overland drainage patterns and swales and all down-gradient receiving channels, swales and waters where stormwater runoff or drainage will be discharged to.
- (s) A minimum fifteen-foot-wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.
- (t) The location of all erosion and sediment control facilities.
- (u) The location of all postconstruction stormwater management facilities, BMPs, etc.
- (v) A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off site. All off-site facilities shall meet the performance standards and design criteria specified in this chapter.
- (w) PCSWM plans, E&SC plans, and NPDES permits/plans should be coordinated between the local Township, CCD (County Conservation District) and PA DEP (Pennsylvania Department of Environmental Protection).
- (x) A statement, signed by the applicant, acknowledging that any revision to the approved drainage plan must be approved by the Township and that a revised E&S plan must be submitted to the Conservation District for a determination of adequacy.
- (y) The following signature block for the design engineer:

I, (Design Engineer), on this date (date of signature), hereby certify that the drainage plan meets all design standards and criteria of the Neshaminy Creek Stormwater Management Ordinance.

(3) Supplemental information to be submitted to the Township.

(a) A written description of the following information shall be submitted by the applicant and shall include:

[1] The overall stormwater management concept for the project designed in accordance with § 148-21.

[2] Stormwater runoff computations as specified in this chapter.

[3] Stormwater management techniques to be applied both during and after development.

[4] Expected project time schedule.

[5] Development stages or project phases, if so proposed.

[6] An operation and maintenance plan in accordance with § 148-32 of this chapter.

(b) An erosion and sediment control plan.

(c) A description of 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) A declaration of adequacy and highway occupancy permit from the PennDOT District Office when utilization of a PennDOT storm drainage system is proposed.

(4) Stormwater management facilities.

(a) All stormwater management facilities must be located on a plan and described in detail. Plan at a minimum should include pre- and postdrainage area maps, an overall postconstruction stormwater management (PCSWM) plan, stormwater details sheets, and landscaping if low-impact development or bioinfiltration, bioretention, vegetated or wetland basins are proposed.

(b) When infiltration measures such as seepage pits, beds or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown. Minimum setback distances should be identified for both distances to wells and septic areas, etc.

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

§ 148-14. Plan submission.

The Township shall require receipt of a complete drainage plan, as specified in this chapter.

A. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the plan:

- (1) NPDES permit for stormwater discharges from construction activities.
- (2) DEP joint permit application.
- (3) PennDOT highway occupancy permit.
- (4) Chapter 105 (Dam Safety and Waterway Management).
- (5) Chapter 106 (Floodplain Management).
- (6) Any other permit under applicable state or federal regulations.

B. The plan shall be coordinated with the state and federal permit process and the municipal SALDO Editor's Note: See Ch. 153, Subdivision and Land Development. review process.

C. For projects which require SALDO Editor's Note: See Ch. 153, Subdivision and Land Development. approval, the drainage plan shall be submitted by the applicant as part of the preliminary plan submission where applicable for the regulated activity.

D. For regulated activities that do not require SALDO Editor's Note: See Ch. 153, Subdivision and Land Development. approval, see § 148-12, General requirements.

E. Six copies of the drainage plan shall be submitted and distributed as follows:

- (1) Two copies to the Township accompanied by the requisite municipal review fee, as specified in this chapter.
- (2) Two copies to the Conservation District.
- (3) One copy to the Municipal Engineer.
- (4) One copy to the County Planning Commission/Department.

F. Any submissions to the agencies listed above that are found to be incomplete shall not be accepted for review and shall be returned to the applicant with a notification in writing of the specific manner in which the submission is incomplete.

§ 148-15. Drainage plan review.

A. The Township or its designee shall review the drainage plan for consistency with the adopted Neshaminy Creek Watershed Stormwater Management Plan. Any found incomplete shall not be accepted for review and shall be returned to the applicant.

B. The Township or its designee shall review the drainage plan for any subdivision or land development against the municipal Subdivision and Land Development Ordinance Editor's Note: See Ch. 153, Subdivision and Land Development. provisions not otherwise superseded by this chapter.

C. 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 Township. Such comments shall be considered by the Township prior to final approval of the drainage plan.

D. For activities regulated by this chapter, the Township or its designee shall notify the applicant in writing, within a time frame consistent with the Municipal Planning Code and/or Municipal Subdivision and Land Development Ordinance, Editor's Note: See 53 P.S. § 10101 et seq. and/or Ch. 153, Subdivision and Land Development. whether the drainage plan is consistent with the stormwater management plan.

(1) If the Township or its designee determines that the drainage plan is consistent with the stormwater management plan, the Township or its designee shall forward a letter of consistency to the Municipal Secretary who will then forward a copy to the applicant.

(2) If the Township or its designee determines that the drainage plan is inconsistent or noncompliant with the stormwater management plan, the Township or its designee shall forward a letter to the Municipal Secretary with a copy to the applicant citing the reason(s) and specific chapter sections for the inconsistency or noncompliance. Inconsistency or noncompliance may be due to inadequate information to make a reasonable judgment as to compliance with the stormwater management plan. Any drainage plans that are inconsistent or noncompliant may be revised by the applicant and resubmitted when consistent with this chapter. The Municipal Secretary shall then notify the applicant of the Township's or its designee's findings. Any inconsistent or noncompliant drainage plans may be revised by the applicant and resubmitted consistent with this chapter.

E. For regulated activities specified in § 148-5 of this chapter which require a building permit, the Township or its designee shall notify the Municipal Building Permit Officer in writing, within a time frame consistent with the Municipal Building Code and/or Municipal Subdivision Ordinance, Editor's Note: See Ch. 65, Building Construction, Ch. 76, Construction Codes, Uniform, and Ch. 153, Subdivision and Land Development. whether the drainage plan is consistent with the stormwater management plan. The Municipal Building Permit Officer shall forward a copy of the consistency/inconsistency letter to the applicant. Any drainage plan deemed inconsistent may be revised by the applicant and resubmitted consistent with this chapter.

F. For regulated activities under this chapter that require an NPDES permit application, the applicant shall forward a copy of the Township's or its designee's letter to the Conservation District stating that the drainage plan is consistent with the stormwater management plan. DEP and the Conservation District may consider the Township's or its designee's review comments in determining whether to issue a permit.

G. The Township shall not grant approval or grant preliminary approval to any subdivision or land development for regulated activities specified in § 148-5 of this chapter if the drainage plan has been found by the Township or its designee to be inconsistent with the stormwater management plan. All required permits from DEP must be obtained prior to approval of any subdivision or land development.

H. No building permits for any regulated activity specified in § 148-5 of this chapter shall be approved by the Township if the drainage plan has been found to be inconsistent with the stormwater management plan, as determined by the Township or its designee and Conservation District, or without considering the comments of the Township or its designee and Conservation District. All required permits from DEP must be obtained prior to issuance of a building permit.

I. The applicant shall be responsible for completing record drawings of all stormwater management facilities included in the approved drainage plan. The record drawings and an explanation of any discrepancies with the design plans shall be submitted to the Township or its designee for final approval. In no case shall the Township approve the record drawings until the Township receives a copy of an approved declaration of adequacy and/or highway occupancy permit from the PennDOT District Office, NPDES permit, and any other applicable permits or approvals, from DEP or the Conservation District. The above permits and approvals must be based on the record drawings.

J. The Township's approval of a drainage plan shall be valid for a period not to exceed five years commencing on the date that the Township signs the approved drainage plan. If stormwater management facilities included in the approved drainage plan have not been constructed, or if constructed and record drawings of these facilities have not been approved within this five-year time period, then the Township may consider the drainage plan inconsistent or noncompliant and may revoke any and all permits. Drainage plans that are determined to be inconsistent or noncompliant by the Township shall be resubmitted in accordance with § 148-17 of this chapter.

§ 148-16. Modification of plans.

A. A modification to a submitted drainage plan under review by the Township for a development site that involves the following shall require a resubmission to the Township of a modified drainage plan consistent with § 148-14 of this chapter and be subject to review as specified in § 148-15 of this chapter:

- (1) Change in stormwater management facilities or techniques;
- (2) Relocation or redesign of stormwater management facilities; or
- (3) Is necessary because soil or other conditions are not as stated on the drainage plan as determined by the Township or its designee.

B. A modification to an already approved or inconsistent or noncompliant drainage plan shall be submitted to the Township, accompanied by the applicable municipal review and inspection fee. A modification to a drainage plan for which a formal action has not been taken by the Township shall be submitted to the Township, accompanied by the applicable municipal review and inspection fee.

§ 148-17. Resubmission of inconsistent or noncompliant drainage plans.

An inconsistent or noncompliant drainage plan may be resubmitted, with the revisions addressing the Town-

ship's or its designee's concerns documented in writing and addressed to the Municipal Secretary in accordance with § 148-14 of this chapter and distributed accordingly and be subject to review as specified in § 148-15 of this chapter. The applicable municipal review and inspection fee must accompany a resubmission of an inconsistent or noncompliant drainage plan.

ARTICLE IV Stormwater Management

§ 148-18. General requirements.

A. Applicants proposing regulated activities in Neshaminy Creek Watershed which do not fall under the exemption criteria shown in § 148-6 shall submit a drainage plan consistent with the Neshaminy Creek Watershed Stormwater Management Plan to the Township for review. The stormwater management criteria of this chapter shall apply to the total proposed development even if development is to take place in stages.

B. The applicant is required to find practicable alternatives to the surface discharge of stormwater, the creation of impervious surfaces and the degradation of waters of the commonwealth, and must maintain as much as possible the natural hydrologic regime.

C. The drainage plan must be designed consistent with the sequencing provisions of § 148-21 to ensure maintenance of the natural hydrologic regime and to promote groundwater recharge and protect groundwater and surface water quality and quantity. The drainage plan designer must proceed sequentially in accordance with Article IV of this chapter.

D. Stormwater drainage systems shall be designed in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this chapter.

E. Existing points of concentrated drainage that discharge onto adjacent property shall not be altered in any manner which could cause property damage without permission of the affected property owner(s) and shall be subject to any applicable discharge criteria specified in this chapter.

F. Areas of existing diffused drainage discharge, whether proposed to be concentrated or maintained as diffused drainage areas, shall be subject to any applicable discharge criteria in the general direction of existing discharge, except as otherwise provided by this chapter. If diffused drainage discharge is proposed to be concentrated and discharged onto adjacent property, the applicant must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other impacts will result from the concentrated discharge.

G. Where a development site is traversed by existing streams, drainage easements shall be provided conforming to the line of such streams. The terms of the easement shall conform to the stream buffer requirements contained in § 148-23G of this chapter.

H. Any stormwater management facilities regulated by this chapter that would be located in or adjacent to waters of the commonwealth or delineated wetlands shall be subject to approval by DEP through the joint permit application or the environmental assessment approval process, or where deemed appropriate, by the DEP 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.

I. Any proposed stormwater management facilities regulated by this chapter that would be located on state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

J. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc., is encouraged where soil conditions permit in order to reduce the size or eliminate the need for detention facilities or other structural BMPs.

K. All stormwater runoff shall be pretreated for water quality prior to discharge to surface or groundwater.

L. All regulated activities within the Township shall be designed, implemented, operated and maintained to meet the purposes of this chapter, through these two elements:

- (1) Erosion and sediment control during the earth disturbance activities (e.g., during construction); and
- (2) Water quality protection measures after completion of earth disturbance activities (i.e., after construction), including operations and maintenance.

M. No regulated earth disturbance activities within the Township shall commence until the requirements of this chapter are met.

N. Postconstruction water quality protection shall be addressed as required by § 148-23.

O. Operations and maintenance of permanent stormwater BMPs shall be addressed as required by Article VII.

P. All best management practices (BMPs) used to meet the requirements of this chapter shall conform to the state water quality requirements and any more stringent requirements as set forth by the Township.

Q. Techniques described in Appendix E (Low-Impact Development) of this chapter Editor's Note: Appendix E is included at the end of this chapter. shall be considered because they reduce the costs of complying with the requirements of this chapter and the state water quality requirements.

R. 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.
- (5) Proximity to building foundations and wellheads.
- (6) Erodibility of soils.
- (7) Land availability and configuration of the topography.
- (8) Peak discharge and required volume control.
- (9) Stream bank erosion.
- (10) Effectiveness of the BMPs to mitigate potential water quality problems.
- (11) The volume of runoff that will be effectively treated.
- (12) The nature of the pollutant being removed.
- (13) Maintenance requirements.
- (14) Creation/protection of aquatic and wildlife habitat.
- (15) Recreational value.

S. The applicant may meet the stormwater management criteria through off-site stormwater management measures as long as the proposed measures are in the same subwatershed as the proposed regulated activity.

§ 148-19. Permit requirements by other government entities.

The following permit requirements may apply to certain regulated earth disturbance activities, and must be met prior to commencement of regulated earth disturbance activities, as applicable:

A. All regulated earth disturbance activities subject to permit requirements by DEP under regulations at 25 Pa. Code Chapter 102.

B. Work within natural drainageways subject to permit by DEP under 25 Pa. Code Chapter 105.

C. Any stormwater management facility that would be located in or adjacent to surface waters of the commonwealth, including wetlands, subject to permit by DEP under 25 Pa. Code Chapter 105.

D. Any stormwater management facility that would be located on a state highway right-of-way, or require access from a state highway, shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

E. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by DEP under 25 Pa. Code Chapter 105.

§ 148-20. Erosion and sediment control during regulated earth disturbance activities.

A. No regulated earth disturbance activities within the Township shall commence until the Township approves an erosion and sediment control plan for construction activities.

B. DEP has regulations that require an erosion and sediment control plan for any earth disturbance activity of 5,000 square feet or more, under 25 Pa. Code § 102.4(b).

C. In addition, under 25 Pa. Code Chapter 92, a DEP NPDES construction activities permit is required for regulated earth disturbance activities when there is land disturbance greater than one acre.

D. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office or County Conservation District must be provided to the Township. The issuance of an NPDES construction permit or permit coverage under the state-wide general permit (PAG-2) satisfies the requirements of Subsection A.

E. A copy of the erosion and sediment control plan and any required permit, as required by DEP regulations, shall be available on the project site at all times.

F. Additional erosion and sediment control design standards and criteria are recommended to be applied where infiltration BMPs are proposed. They shall include the following:

(1) Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity. Barriers such as orange construction fencing should be used to protect and keep construction traffic in the area where infiltration BMPs are proposed. Inlet or pipes that are installed to these systems should be completely sealed or protected and monitored until the drainage areas are completely stabilized.

(2) Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has achieved final stabilization.

§ 148-21. Nonstructural project design (sequencing to minimize stormwater impacts).

A. The design of all regulated activities shall include the following to minimize stormwater impacts.

(1) The applicant shall find practicable alternatives to the surface discharge of stormwater, such as those listed in Appendix B, Editor's Note: Appendix B is included at the end of this chapter. Table B-5, the creation of impervious surfaces and the degradation of waters of the commonwealth, and must maintain as much as possible the natural hydrologic regime of the site.

(2) An alternative is practicable if it is available and capable of implementation after taking into consideration existing technology and logistics in light of overall project purposes and other municipal requirements.

(3) All practicable alternatives to the discharge of stormwater are presumed to have less adverse impact on quantity and quality of waters of the commonwealth, unless otherwise demonstrated.

B. The applicant shall demonstrate that the regulated activities were designed in the following sequence. The goal of the sequence is to minimize the increases in stormwater runoff and impacts to water quality resulting from the proposed regulated activity:

(1) Prepare an existing resource and site analysis map (ERSAM) showing environmentally sensitive areas including, but not limited to, steep slopes, ponds, lakes, streams, wetlands, hydric soils, vernal pools, stream buffers and hydrologic soil groups. Land development, any existing recharge areas, potential infiltration areas or permeable soil areas and other requirements outlined in the municipal Subdivision and Land Development Ordinance (SALDO) Editor's Note: See Ch. 153, Subdivision and Land Development. shall also be included.

(2) Establish a stream buffer according to § 148-23G.

(3) Prepare a draft project layout avoiding sensitive areas identified in Subsection B(1).

(4) Identify site-specific existing conditions drainage areas, discharge points, recharge areas and hydrologic soil groups A and B (areas conducive to infiltration).

(5) Evaluate nonstructural stormwater management alternatives:

(a) Minimize earth disturbance.

(b) Minimize impervious surfaces.

(c) Break up large impervious surfaces.

(6) Satisfy groundwater recharge (infiltration) objective (§ 148-22) and provide for stormwater pretreatment prior to infiltration.

(7) Provide for water quality protection in accordance with § 148-23, Water quality requirements.

(8) (Reserved)

(9) Conduct an existing conditions runoff analysis.

(10) Prepare final project design to maintain existing conditions drainage areas and discharge points, to minimize earth disturbance and impervious surfaces, and to the maximum extent possible, ensure the remaining site development has no surface or point discharge.

(11) Conduct a proposed conditions runoff analysis based on the final design that meets the management district requirements (§ 148-25).

(12) Manage any remaining runoff prior to discharge, through detention, bioretention, direct discharge or other structural control.

§ 148-22. Groundwater recharge.

A. Maximizing the groundwater recharge capacity of the area being developed is required. Design of the infiltration facilities shall consider groundwater recharge to compensate for the reduction in the recharge that occurs when the ground surface is disturbed or impervious surface is created. It is recommended that roof runoff be directed to infiltration BMPs which may be designed to compensate for the runoff from parking areas. These measures are required to be consistent with § 148-3, and take advantage of utilizing any existing recharge areas.

B. Infiltration may not be feasible on every site due to site-specific limitations such as soil type. If it cannot be physically accomplished, then the design professional shall be responsible to show that this cannot be physically accomplished. Soils testing and geotechnical evaluation of the site soils should be performed and submitted to verify that the infiltration requirements cannot be met. If it can be physically accomplished, then the volume of runoff to be infiltrated shall be determined from Subsection C(2) depending on demonstrated site conditions and shall be the greater of the two volumes.

C. Minimum requirements. Infiltration BMPs shall meet the following minimum requirements:

(1) Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and site conditions and shall be constructed on soils that have the following characteristics:

(a) A minimum depth of 24 inches, preferably 36 inches, between the bottom of the BMP and the top of the limiting zone (e.g., seasonal high-water table, groundwater, bedrock, etc.).

(b) An infiltration rate sufficient to accept the additional stormwater load and dewater completely as determined by field tests conducted by the applicant's design professional.

(c) The infiltration facility shall be capable of completely infiltrating the retention (infiltration) volume (Rev) within four days (96 hours).

(d) Pretreatment shall be provided prior to infiltration.

(2) The recharge volume (Rev) shall be computed by first obtaining the infiltration requirement using methods in either Subsection C(2)(a) or (b) then multiplying by the total proposed impervious area. The overall required recharge volume for a site is computed by multiplying total impervious area by the infiltration requirement.

(a) NRCS curve number equation.

[1] The following criteria shall apply.

The NRCS runoff shall be utilized to calculate infiltration requirements (P) in inches.

For zero runoff: $P = I \text{ (Infiltration) (in)} = (200 / CN) - 2$ Equation: 405.1

Where:

$P = I$ = infiltration requirement (in)

CN = SCS(NRCS) curve number of the existing conditions contributing to the recharge facility

This equation can be displayed graphically in and the infiltration requirement can also be determined from Figure 405.1. Editor's Note: Figure 405.1, Infiltration Requirement Based upon NRCS Curve Number, is included at the end of this chapter.

The recharge volume (Rev) required would therefore be computed as:

$Rev = I(\text{in}) * \text{percent impervious area (SF)} / 12 \text{ (in)} = \text{Cubic Feet (CF)}$

(b) Annual recharge water budget approach. It has been determined that infiltrating 0.6 inches of runoff from the impervious areas will aid in maintaining the hydrologic regime of the watershed. If the goals of Subsection C(2)(a) cannot be achieved, then 0.6 inches of rainfall shall be infiltrated from all impervious areas, up to an existing site conditions curve number of 77. Above a curve number of 77, Equation 405.1 or the curve in Figure 405.1 Editor's Note: Figure 405.1, Infiltration Requirement Based upon NRCS Curve Number, is included at the end of this chapter. should be used to determine the infiltration requirement.

where: I = 0.6 inches

The recharge volume (Rev) required would therefore be computed as:

$$\text{Rev} = I(\text{in}) / 12 (\text{in/ft}) * \text{impervious area (SF)} = \text{Cubic Feet (CF)}$$

(3) The recharge values derived from these methods are the minimum volumes the applicant must control through an infiltration/recharge BMP facility. However, if a site has areas of soils where additional volume of infiltration can be achieved, the applicant is encouraged to recharge as much of the stormwater runoff from the site as possible.

D. Soils. A detailed soils evaluation of the project site shall be required to determine the suitability of infiltration facilities. The evaluation shall be performed by a qualified design professional, and at a minimum, address soil permeability, depth to bedrock and subgrade stability. The general process for designing the infiltration BMP shall be:

(1) Analyze hydrologic soil groups as well as natural and man-made features within the site to determine general areas of suitability for infiltration practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of subgrade stability; infiltration is not permitted to be ruled out without conducting these tests.

(2) Provide field tests such as double ring infiltrometer or hydraulic conductivity tests (at the level of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Percolation tests are not recommended for design purposes.

(3) Design the infiltration structure for the required retention (Rev) volume based on field-determined capacity at the level of the proposed infiltration surface.

(4) If on-lot infiltration structures are proposed by the applicant's design professional, it must be demonstrated to the Township that the soils are conducive to infiltrate on the lots identified.

E. Stormwater hotspots.

(1) Following is a list of examples of designated hotspots. If a site is designated as a hotspot, it has important implications for how stormwater is managed. First and foremost, untreated stormwater runoff from hotspots shall not be allowed to recharge into groundwater where it may contaminate water supplies. Therefore, the Rev requirement shall not be applied to development sites that fit into the hotspot category (the entire WQv must still be treated). Second, a greater level of stormwater treatment shall be considered at hotspot sites to prevent pollutant washoff after construction. EPA's NPDES stormwater program requires some industrial sites to prepare and implement a stormwater pollution prevention plan.

(2) Examples of hotspots:

(a) Vehicle salvage yards and recycling facilities.

(b) Vehicle fueling stations.

(c) Vehicle service and maintenance facilities.

(d) Vehicle and equipment cleaning facilities.

(e) Fleet storage areas (bus, truck, etc.).

(f) Industrial sites (based on Standard Industrial Codes defined by the U.S. Department of Labor).

(g) Marinas (service and maintenance).

(h) Outdoor liquid container storage.

(i) Outdoor loading/unloading facilities.

(j) Public works storage areas.

- (k) Facilities that generate or store hazardous materials.
- (l) Commercial container nursery.
- (m) Other land uses and activities as designated by an appropriate review authority.
- (3) The following land uses and activities are not normally considered hotspots:
 - (a) Residential streets and rural highways.
 - (b) Residential development.
 - (c) Institutional development.
 - (d) Office developments.
 - (e) Nonindustrial rooftops.
 - (f) Pervious areas, except golf courses and nurseries [which may need an integrated pest management (IPM) plan].
- (4) While large highways [average daily traffic volume (ADT) greater than 30,000] are not designated as a stormwater hotspot; however, it is important to ensure that highway stormwater management plans adequately protect groundwater.
- F. Extreme caution shall be exercised where infiltration is proposed in source water protection areas as defined by the local Township or Water Authority.
- G. Infiltration facilities shall be used in conjunction with other innovative or traditional BMPs, stormwater control facilities, and nonstructural stormwater management alternatives.
- H. Extreme caution shall be exercised where salt or chloride (municipal salt storage) would be a pollutant since soils do little to filter this pollutant, and it may contaminate the groundwater. The qualified design professional shall evaluate the possibility of groundwater contamination from the proposed infiltration facility and perform a hydrogeologic justification study if necessary.
- I. The infiltration requirement in high-quality or exceptional-value waters shall be subject to the Department's Chapter 93 Antidegradation Regulations.
- J. An impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the Township.
- K. The Township shall require the applicant to provide safeguards against groundwater contamination for land uses that may cause groundwater contamination should there be a mishap or spill.

§ 148-23. Water quality requirements.

The applicant shall comply with the following water quality requirements of this article.

- A. No regulated earth disturbance activities within the Township shall commence until approval by the Township of a plan which demonstrates compliance with state water quality requirements postconstruction is complete.
- B. The BMPs shall be designed, implemented and maintained to meet state water quality requirements and any other more stringent requirements as determined by the Township.
- C. To control postconstruction stormwater impacts from regulated earth disturbance activities, state water quality requirements can be met by BMPs, including site design, which provide for replication of preconstruction stormwater infiltration and runoff conditions, so that postconstruction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters. As described in the DEP Comprehensive Stormwater Management Policy (#392-0300-002, September 28, 2002), this may be achieved by the following:
 - (1) Infiltration: replication of preconstruction stormwater infiltration conditions;
 - (2) Treatment: use of water quality treatment BMPs to ensure filtering out of the chemical and physical pollutants from the stormwater runoff; and
 - (3) Stream bank and streambed protection: management of volume and rate of postconstruction stormwater discharges to prevent physical degradation of receiving waters (e.g., from scouring and downcutting).
- D. Developed areas shall provide adequate storage and treatment facilities necessary to capture and treat stormwater runoff.
 - (1) The retention volume computed under § 148-22 may be a component of the water quality volume if the applicant chooses to manage both components in a single facility. If the retention volume is less than the water

quality volume, the remaining water quality volume may be captured and treated by methods other than infiltration BMPs. The required water quality volume (WQv) is the storage capacity needed to capture and treat a portion of stormwater runoff from the developed areas of the site.

(2) To achieve this goal, the following criterion is established:

(a) The following calculation formula is to be used to determine the water quality storage volume, (WQv), in acre-feet of storage for the Neshaminy Creek watershed:

$$WQv = [(P)(Rv)(A)] / 12$$

Eqn:406.1

WQv = water quality volume (acre-feet)

P = 1 inch

A = area of the project contributing to the water quality BMP (acres)

Rv = 0.05 + 0.009(I), where I is the percent of the area that is impervious surface $[(\text{impervious area}/A) * 100]$

(b) This volume requirement can be accomplished by the permanent volume of a wet basin or the detained volume from other BMPs. Where appropriate, wet basins shall be utilized for water quality control and shall follow the guidelines of the BMP manuals referenced in Appendix F. Editor's Note: Appendix F is included at the end of this chapter.

(c) 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 provide for protection from clogging and unwanted sedimentation.

E. For areas within defined special protection subwatersheds which include exceptional-value (EV) and high-quality (HQ) waters, the temperature and quality of water and streams shall be maintained through the use of temperature-sensitive BMPs and stormwater conveyance systems. For other waters, use of temperature-sensitive BMPs and stormwater conveyance systems should be considered as temperature can negatively impact water quality and stream health.

F. To accomplish the above, the applicant shall submit original and innovative designs to the Township or its designee for review and approval. Such designs may achieve the water quality objectives through a combination of different BMPs.

G. If a perennial or intermittent stream passes through the site, the applicant shall create a stream buffer extending a minimum of 50 feet to either side of the top-of-bank of the channel. The buffer area shall be maintained with and encouraged to use appropriate native vegetation (Reference to Appendix H of Pennsylvania Handbook of Best Management Practices for Developing Area for plant lists). 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 (i.e., deed, covenant, easement, etc.) and it exceeds the requirements of this chapter, the existing buffer shall be maintained. This does not include lakes or wetlands.

H. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office must be provided to the Township. The issuance of a NPDES construction permit or permit coverage under the state-wide general permit (PAG-2) satisfies the requirements of Subsection A.

§ 148-24. (Reserved)

§ 148-25. Stormwater management design criteria.

A. Water quality requirement. Postdevelopment runoff volume generated from the one-year, twenty-four-hour design storm must be controlled so that it is released over a minimum of 24 hours.

B. Stormwater runoff peak rate requirements and districts.

(1) Watershed areas within the Township require that the postdevelopment peak rate of storm runoff be controlled to the stated percentage of the predevelopment peak rate of storm runoff for design storms greater than

the one-year, twenty-four-hour storm in order to protect downstream watershed areas. The release rate districts and their respective release rate control design criteria for peak flow area are as follows:

Watershed	Release Rate (percentage)
Pine Run	100
All others	75

(2) For a proposed development site located within a single release rate district, the total runoff from the site shall meet the applicable release rate criteria. For development sites within a single release rate district with multiple points of concentrated runoff discharge, individual drainage points may be designed for up to a one-hundred-percent release rate so long as the total runoff from the site is controlled to the applicable release rate. All points of concentrated discharge, however, must meet the applicable water quality requirement (Subsection A) for the specific drainage areas of the site drainage to the discharge points.

(3) For a proposed development site located within both release rate districts, the maximum peak rate of runoff that may be discharged from a given point is limited to the predevelopment peak rate of runoff multiplied by the applicable district release rate. Runoff from the site, however, is subject to the water quality requirement of Subsection A.

C. Design storms. Any stormwater management controls required by this section and subject to the water quality requirement (Subsection A) and the stormwater runoff peak rate requirements (Subsection B) shall meet the applicable water quality and peak rate requirements for the one-, two-, five-, ten-, twenty-five-, fifty- and one-hundred-year return period runoff events (design storms) consistent with the calculation methodology specified in (Subsection D). Provisions must also be made for safely passing the runoff greater than that occurring from the largest design storm.

D. Runoff calculation methodology.

(1) To calculate the potential increase in total runoff and peak flow rate resulting from a proposed site development, the Cover-Complex Method will be used, as outlined in Urban Hydrology for Small Watersheds, United States Department of Agriculture, Soil Conservation Service, Technical Release 55 (NTIS PB87-101580), and following mathematical analyses described in Computer Program for Project Formulation Hydrology (SCS Technical Release 20, 1983).

(2) Farm field or disturbed earth predevelopment cover conditions (existing conditions) of a site or portions of a site used for modeling purposes shall be considered as meadow when developing the necessary cover complex calculations.

(3) The Soil Conservation Service Type II twenty-four-hour rainfall distribution shall be used in the soil-cover-complex calculations. The twenty-four-hour rainfall depths for the return periods used in the Soil-Cover-Complex Method shall be:

Return Period	24-Hour Rainfall Depth (inches)
1-year	2.7
2- year	3.3
5- year	4.2
10-year	5.0
25-year	5.8
50-year	6.4
100-year	7.2

E. Structures. Bridges and culverts shall be designed to meet current Pennsylvania Department of Transportation standards to support expected loads and carry expected flows. They shall be constructed to the full width of the right-of-way or as required by the Township.

F. Approvals. Approval of the Division of Dams and Encroachments, Department of Environmental Resources of the Commonwealth of Pennsylvania, is required when the area drained upstream of the point under consider-

ation exceeds an area of 1/2 square mile.

§ 148-26. (Reserved)

§ 148-27. Other requirements.

A. Any stormwater facility located on state highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

B. All wet basin designs shall incorporate biologic controls consistent with the West Nile Guidance found in Appendix G. Editor's Note: Appendix G is included at the end of this chapter.

C. Any stormwater management facility (i.e., detention basin) required or regulated by this chapter designed to store runoff and requiring a berm or earthen embankment shall be designed to provide an emergency spillway to handle flow up to and including the one hundred-year proposed conditions. The height of embankment must provide a minimum one foot of freeboard above the maximum pool elevation computed when the facility functions for the one-hundred-year proposed conditions 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. Chapter 105 may be required to pass storms larger than the one-hundred-year event.

D. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands governed by 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.

E. Any other drainage conveyance facility that does not fall under Chapter 105 regulations must be able to convey, without damage to the drainage structure or roadway, runoff from the twenty-five-year design storm with a minimum 1.0 foot of freeboard measured below the lowest point along the top of the roadway. 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.

F. Any drainage conveyance facility and/or channel not governed by Chapter 105 Regulations, must be able to convey, without damage to the drainage structure or roadway, runoff from the twenty-five-year design storm. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a one-hundred-year design storm. Any facility located within a PennDOT right-of-way must meet PennDOT minimum design standards and permit submission requirements.

G. Storm sewers must be able to convey proposed conditions runoff from a one-hundred-year design storm without surcharging inlets, where appropriate.

H. Adequate erosion protection shall be provided along all open channels and at all points of discharge.

I. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Township reserves the right to disapprove any design that would result in the construction in or continuation of a stormwater problem area.

ARTICLE V Inspections

§ 148-28. Inspections.

A. The Township or its designee shall inspect all phases of the installation of the permanent BMPs and/or stormwater management facilities as deemed appropriate by the Township or its designee.

B. During any stage of the work, if the Township or its designee determines that the permanent BMPs and/or stormwater management facilities are not being installed in accordance with the approved stormwater management plan, the Township shall suspend or revoke any existing permits or other approvals and issue a cease-and-desist order until the deficiencies are corrected.

C. A final inspection of all BMPs and/or stormwater management facilities shall be conducted by the Township or its designee to confirm compliance with the approved drainage plan prior to the issuance of any occupancy

permit.

ARTICLE VI Fees and Expenses

§ 148-29. Drainage plan review and inspection fee.

Fees shall be established by the Board of Supervisors of the Township, from time to time, and are intended to defray planning review and construction inspection costs incurred by the Township. All fees shall be paid by the applicant at the time of drainage plan submission. A review and inspection fee schedule shall be established by resolution of the municipal governing body based on the regulated activity and based on the Township's costs for reviewing drainage plans and conducting inspections pursuant to § 148-28. The Township shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

§ 148-30. 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 Township and/or its designee.
- 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.
- F. Any additional work required to enforce any permit provisions regulated by this chapter, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VII Maintenance Responsibilities

§ 148-31. Performance guarantee.

A. For subdivisions and land developments, the applicant shall provide a financial guarantee to the Township for the timely installation and proper construction of all stormwater management controls as:

(1) Required by the approved drainage plan equal to or greater than the full construction cost of the required controls; or

(2) The amount and method of payment provided for in the Subdivision and Land Development Ordinance.

Editor's Note: See Ch. 153, Subdivision and Land Development.

B. For other regulated activities, the Township may require a financial guarantee from the applicant.

§ 148-32. Responsibilities for operations and maintenance of stormwater controls and BMPs.

A. No regulated earth disturbance activities within the Township shall commence until approval by the Township of a stormwater control and BMP operations and maintenance plan that describes how the permanent (e.g., postconstruction) stormwater controls and BMPs will be properly operated and maintained.

B. The following items shall be included in the stormwater control and BMP operations and maintenance plan:

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

- (a) Clear identification of the location and nature of permanent stormwater controls and BMPs;
- (b) The location of the project site relative to highways, municipal boundaries or other identifiable landmarks;
- (c) Existing and final contours at intervals of two feet, or others as appropriate;
- (d) Existing streams, lakes, ponds, or other bodies of water within the project site area;
- (e) Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, and areas of natural vegetation to be preserved;

- (f) The locations of all existing and proposed utilities, sanitary sewers, and water lines within 50 feet of property lines of the project site;
 - (g) Proposed final changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added;
 - (h) Proposed final structures, roads, paved areas, and buildings; and
 - (i) A minimum fifteen-foot-wide access easement around all stormwater controls and BMPs that would provide ingress to and egress from a public right-of-way.
- (2) A description of how each permanent stormwater control and BMP will be operated and maintained, and the identity and contact information associated with the person(s) responsible for operations and maintenance.
 - (3) The name of the project site, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.
 - (4) A statement, signed by the landowner, acknowledging that the stormwater controls and BMPs are fixtures can be altered or removed only after approval by the Township.

C. The stormwater control and BMP operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater controls and BMPs, as follows:

- (1) If a plan includes structures or lots which are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the Township, stormwater controls and BMPs may also be dedicated to and maintained by the Township; and
- (2) If a plan includes operations and maintenance by a single ownership, or if sewers and other public improvements are to be privately owned and maintained, then the operation and maintenance of stormwater controls and BMPs shall be the responsibility of the owner or private management entity.

D. The Township shall make the final determination on the continuing operations and maintenance responsibilities. The Township reserves the right to accept or reject the operations and maintenance responsibility for any or all of the stormwater controls and BMPs.

§ 148-33. Municipal review of stormwater control and BMP operations and maintenance plan.

- A. The Township shall review the stormwater control and BMP operations and maintenance plan for consistency with the purposes and requirements of this chapter and any permits issued by DEP.
- B. The Township shall notify the applicant in writing whether the stormwater control and BMP operations and maintenance plan is approved.
- C. The Township shall require a record drawing of all stormwater controls and BMPs, and an explanation of any discrepancies with the operations and maintenance plan.

§ 148-34. Adherence to approved stormwater control and BMP operations and maintenance plan.

It shall be unlawful to alter or remove any permanent stormwater control and BMP required by an approved stormwater control and BMP operations and maintenance plan, or to allow the property to remain in a condition which does not conform to an approved stormwater control and BMP operations and maintenance plan.

§ 148-35. Operations and maintenance agreement for privately owned stormwater controls and BMPs.

- A. The applicant shall sign an operations and maintenance agreement with the Township covering all stormwater controls and BMPs that are to be privately owned. The maintenance agreement shall be transferred with transfer of ownership. The agreement shall be similar to the agreement in Appendix A. Editor's Note: Appendix A is included at the end of this chapter.
- B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory operation and maintenance of all permanent stormwater controls and BMPs. The agreement shall be subject to the review and approval of the Township.

§ 148-36. Stormwater management easements.

A. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Township.

B. Stormwater management easements shall be provided by the applicant or property owner if necessary for access for inspections and maintenance, or the preservation of stormwater runoff conveyance, infiltration, and detention areas and other stormwater controls and BMPs, by persons other than the property owner. The purpose of the easement shall be specified in any agreement under § 148-35.

§ 148-37. Recording of approved stormwater control and BMP operations and maintenance plan and related agreements.

A. The owner of any land upon which permanent stormwater controls and BMPs will be placed, constructed or implemented, as described in the stormwater control and BMP operations and maintenance plan, shall record the following documents in the Office of the Recorder of Deeds for Bucks County, within 15 days of approval of the stormwater control and BMP operations plan by the Township:

- (1) The operations and maintenance plan, or a summary thereof;
- (2) Operations and maintenance agreements under § 148-35; and
- (3) Easements under § 148-36.

B. The Township may suspend or revoke any approvals granted for the project site upon discovery of failure on the part of the owner to comply with this section.

§ 148-38. Municipal Stormwater Control and BMP Operation and Maintenance Fund.

A. Persons installing stormwater controls or BMPs shall be required to pay a specified amount to the Municipal Stormwater Control and BMP Operation and 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 stormwater control or BMP is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Township for a period of 10 years, as estimated by the Township or its designee. After that period of time, inspections will be performed at the expense of the Township.
- (2) If the stormwater control or BMP is to be owned and maintained by the Township, the deposit shall cover the estimated costs for maintenance and inspections for 10 years. The Township or its designee will establish the estimated costs utilizing information submitted by the applicant.
- (3) The amount of the deposit to the fund shall be converted to present worth of the annual series values. The Township or its designee shall determine the present worth equivalents, which shall be subject to the approval of the governing body.

B. If a stormwater control or BMP is proposed that also serves as a recreation facility (e.g., ballfield or lake), the Township may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.

C. If at some future time a stormwater control or BMP (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 retained by the Township to defray other cost of operation, inspection and maintenance activities.

D. If stormwater controls or BMPs are accepted by the Township for dedication, the Township may require persons installing stormwater controls or BMPs to pay a specified amount to the Municipal Stormwater Control and BMP Operation and Maintenance Fund, to help defray costs of operations and maintenance activities. The amount may be determined as follows:

- (1) If the stormwater control or BMP is to be owned and maintained by the Township, the amount shall cover the estimated costs for operations and maintenance for 10 years, as determined by the Township.
- (2) The amount shall then be converted to present worth of the annual series values.

E. If a stormwater control or BMP is proposed that also serves as a recreation facility (e.g., ballfield or lake), the Township may adjust the amount due accordingly.

F. Long-term maintenance. The Township may require applicants to pay a fee to the Municipal Stormwater

Maintenance Fund to cover long-term maintenance of stormwater control and best management practices.

G. Stormwater-related problems. The Township may require applicants to pay a fee to the Municipal Stormwater Maintenance Fund to cover stormwater-related problems which may arise from the land development and earth disturbance.

ARTICLE VIII Prohibitions

§ 148-39. Prohibited discharges.

A. No person in the Township shall allow, or cause to allow, stormwater discharges into the Township's separate storm sewer system which are not composed entirely of stormwater, except as provided in Subsection B below and discharges allowed under a state or federal permit.

B. Discharges that may be allowed based on a finding by the Township that the discharge(s) do not significantly contribute to pollution to surface waters of the commonwealth are:

- (1) Discharges from fire-fighting activities.
- (2) Potable water sources including dechlorinated water line and fire hydrant flushings.
- (3) Irrigation drainage.
- (4) Routine external building washdown (which does not use detergents or other compounds).
- (5) Air-conditioning condensate.
- (6) Water from individual residential car washing.
- (7) Spring water from crawl space pumps.
- (8) Uncontaminated water from foundation or from footing drains.
- (9) Flows from riparian habitats and wetlands.
- (10) Lawn watering.
- (11) Pavement washwaters 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.
- (12) Dechlorinated swimming pool discharges.
- (13) Uncontaminated groundwater.

C. In the event that the Township determines that any of the discharges identified in Subsection B significantly contribute to pollution of waters of the commonwealth, or is so notified by DEP, the Township will notify the responsible person to cease the discharge.

D. Upon notice provided by the Township under Subsection C, the discharger will have a reasonable time, as determined by the Township, to cease the discharge consistent with the degree of pollution caused by the discharge.

E. Nothing in this section shall affect a discharger's responsibilities under state law.

§ 148-40. Prohibited connections.

The following connections are prohibited, except as provided in § 148-39B above:

A. Any drain or conveyance, whether on the surface or subsurface, which allows any nonstormwater 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; and

B. 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 Township.

§ 148-41. Roof drains.

A. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches in order to promote overland flow and infiltration/percolation of stormwater where advantageous to do so.

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 as determined by the Township.

C. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

§ 148-42. Alteration of BMPs.

A. No person shall modify, remove, fill, landscape or alter any existing stormwater control or BMP, unless it is part of an approved maintenance program, without the written approval of the Township.

B. No person shall place any structure, fill, landscaping or vegetation into a stormwater control or BMP or within a drainage easement which would limit or alter the functioning of the stormwater control or BMP without the written approval of the Township.

ARTICLE IX Enforcement and Penalties

§ 148-43. Right-of-entry.

A. Upon presentation of proper credentials, duly authorized representatives of the Township may enter at reasonable times upon any property within the Township to inspect the implementation, condition, or operation and maintenance of the stormwater controls or BMPs in regard to any aspect governed by this chapter.

B. Stormwater control and BMP owners and operators shall allow persons working on behalf of the Township ready access to all parts of the premises for the purposes of determining compliance with this chapter.

C. Persons working on behalf of the Township shall have the right to temporarily locate on any stormwater control or BMP in the Township such devices as are necessary to conduct monitoring and/or sampling of the discharges from such stormwater control or BMP.

D. Unreasonable delays in allowing the Township access to a stormwater control or BMP is a violation of this article.

§ 148-44. 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.

§ 148-45. Written notice of violation.

A. Whenever the Township finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Township may order compliance by written notice to the responsible person. Such notice may, without limitation, require the following remedies:

(1) Performance of monitoring, analyses, and reporting;

(2) Elimination of prohibited connections or discharges;

(3) Cessation of any violating discharges, practices, or operations;

(4) Abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;

(5) Payment of a fine to cover administrative and remediation costs;

(6) Implementation of stormwater controls and BMPs; and

(7) Operation and maintenance of stormwater controls and BMPs.

B. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Said notice may further advise that, if applicable, should the violator fail to take the required action within the established deadline, the work will be done by the Township or designee, and the expense thereof shall be charged to the violator.

C. Failure to comply within the time specified shall also subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the Township from pursuing any and all other remedies available in law or equity.

§ 148-46. Suspension and revocation of permits and approvals.

A. Any building, land development or other permit or approval issued by the Township may be suspended or revoked by the Township for:

(1) Noncompliance with or failure to implement any provision of the permit;

- (2) A violation of any provision of this chapter; or
 - (3) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life, health, or property of others.
- B. A suspended permit or approval shall be reinstated by the Township when:
- (1) The Township or its designee has inspected and approved the corrections to the stormwater controls and BMPs, or the elimination of the hazard or nuisance; and/or
 - (2) The Township is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.
- C. A permit or approval that has been revoked by the Township cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this chapter.

§ 148-47. Civil penalties.

A. Any person violating the provisions of this chapter shall be subject to a fine of not less than \$500 nor more than \$1,000 for each violation, recoverable with costs. Each day that the violation continues shall constitute a separate offense, and the applicable fines are cumulative.

B. In addition, the Township, through its Solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding in 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.

§ 148-48. 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 Township shall provide written notification of the violation. Such notification shall state the nature of the violation(s) and establish a time limit for correction of these violation(s). Failure to comply within the time specified shall subject such person to the penalty provisions of this chapter. All such penalties shall be deemed cumulative and shall not prevent the Township from pursuing any and all 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.

§ 148-49. Enforcement.

The municipal governing body 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 Township or its designee.

A. A set of design plans approved by the Township shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the Township or designee during construction.

B. Adherence to approved plan. It shall be unlawful for any person, firm or corporation to undertake any regulated activity under § 148-5 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 which 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 set of as-built (record) drawings.

D. After receipt of the certification by the Township, a final inspection shall be conducted by the Township or its designee to certify compliance with this chapter.

E. Prior to revocation or suspension of a permit and at the request of the applicant, the governing body will schedule a hearing to discuss the noncompliance if there is no immediate danger to life, public health or property. The expense of a hearing shall be the applicant's responsibility.

F. Occupancy permit. An occupancy permit shall not be issued unless the certification of completion pursuant to Subsection C(1) has been secured. The occupancy permit shall be required for each lot owner and/or applicant for all subdivisions and land development in the Township.

§ 148-50. Appeals.

A. Any person aggrieved by any action of the Township or its designee may appeal to the Township's governing body within 30 days of that action.

B. Any person aggrieved by any decision of the Township's governing body may appeal to the County Court of Common Pleas in the county where the activity has taken place within 30 days of the municipal decision