MUNICIPALITY OF NORRISTON
A HOME RULE MUNICIPALITY
MONTGOMERY COUNTY, PENNSYLVNAIA

ORDINANCE NO. 23-04 of 2023

AN ORDINANCE OF THE MUNICIPAL OF NORRISTOWN, MONTGOMERY COUNTY, PENNSYLVANIA, TO ADOPT A COMPREHENSIVE REVISION OF THE ENTIRETY OF CHAPTER 276, TITLED "STORMWATER MANAGEMENT;" PROVIDING A SEVERABILITY CLAUSE AND A REPEALER CLAUSE; AND PROVIDING FOR AN EFFECTIVE DATE.

WHEREAS, the Municipality of Norristown is a Home Rule Municipality organized operating in accordance with the Charter of the Municipality of Norristown as permitted by the Home Rule Charter and Optional Plans Law, 53 Pa. C.S. 2901 *et seq*.

WHEREAS, in accordance with the Charter and Pennsylvania law, the Municipal Council has the authority to enact and amend at any time it deems proper the provisions of the Municipality's General Laws including those provisions relating to stormwater management;

WHEREAS, the Municipality, after due consideration at an advertised public meeting, has determined that the health, safety, and general welfare of the residents of the Municipality of Norristown will be served by the adoption of the comprehensive revisions as contained in Exhibit "A" to this Ordinance.

NOW, THEREFORE, be it **ORDAINED** that Norristown Municipal Council amends its General Laws as follows:

SECTION I. **Adoption of the revised Stormwater Management Ordinance.** Chapter 276 titled "Stormwater management" is hereby revised and replaced in its entirety with the provisions as set forth in Exhibit "A" as attached hereto.

SECTION 2. **SEVERABILITY**. In the event that any section, sentence, clause, or word of this Ordinance shall be declared illegal, invalid or unconstitutional by any court of competent jurisdiction, such declaration shall not prevent, preclude or otherwise foreclose the validity of the remaining portions of this Ordinance.

SECTION 3. **REPEALER.** All ordinances or resolutions or parts thereof inconsistent herewith or in conflict with any of the specific terms enacted hereby, to the extent of said inconsistencies or conflicts, are hereby specifically repealed.

SECTOIN 4: **EFFECTIVE DATE**
This Ordinance shall take effect and be in force from and after its approval as required by the law.

ENACTED AND ORDAINED this 6th day of June 2023.

Seal:

Municipality of Norristown
Municipal Council

Attest: _____
Crandall Jones
Municipal Administrator

By: _____
Thomas Lepera
Council President

DRAFT – NORRISTOWN STORMWATER ORDINANCE UPDATE

Chapter 276. Stormwater Management

Article I. General Provisions

§ 276-1. Short title.

This Chapter shall be known as the "Municipality of Norristown Stormwater Management Ordinance."

§ 276-2. Statement of findings.

The governing body of the Municipality finds that:

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

B. Inadequate planning and management of stormwater runoff resulting from land development throughout a watershed can also harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of stream beds and stream banks, thereby elevating sedimentation), destroying aquatic habitat, and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens. Groundwater resources are also impacted through loss of recharge.

C. A comprehensive program of stormwater management (SWM), including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare, and the protection of the people of the Municipality and all of the people of the Commonwealth, their resources, and the environment.

D. Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the base flow of streams.

E. Impacts from stormwater runoff can be minimized by using project designs that maintain the natural hydrologic regime and sustain high water quality, groundwater recharge, stream baseflow, and aquatic ecosystems. The most cost-effective and environmentally advantageous way to manage stormwater runoff is through nonstructural project design that minimizes impervious surfaces and sprawl, avoids sensitive areas (i.e., stream buffers, floodplains, steep slopes), and considers topography and soils to maintain the natural hydrologic regime.

F. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.

G. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their

separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES) program.

H. Nonstormwater discharges to municipal separate storm sewer systems can contribute to pollution of waters of the commonwealth by the Municipality.

I. The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.

§ 276-3. Purpose.

The purpose of this chapter is to promote the public health, safety, and welfare within the Municipality by maintaining the natural hydrologic regime and minimizing the impacts described in § **276-2** of this chapter through provisions designed to:

A. Promote alternative project designs and layouts that minimize the impacts on surface water and groundwater.

B. Promote nonstructural best management practices (BMPs).

C. Minimize increases in runoff stormwater volume.

D. Minimize impervious surfaces.

E. Manage accelerated stormwater runoff and erosion and sedimentation problems and stormwater runoff impacts at their source by regulating activities that cause these problems.

F. Provide review procedures and performance standards for stormwater planning and management.

G. Utilize and preserve existing natural drainage systems as much as possible.

H. Manage stormwater impacts close to the runoff source, requiring a minimum of structures and relying on natural processes.

I. Focus on infiltration of stormwater to maintain groundwater recharge, to prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.

J. Maintain existing baseflows and quality of streams and watercourses, where possible.

K. Meet legal water quality requirements under state law, including regulations at 25 Pennsylvania Code Chapter 93.4.a requiring protection and maintenance of existing uses and maintenance of the level of water quality to support those uses in all streams, and the protection and maintenance of water quality in special protection streams.

L. Address the quality and quantity of stormwater discharges from the development site.

M. Provide a mechanism to identify stormwater controls necessary to meet NPDES permit requirements.

N. Implement an illegal discharge detection and elimination program that addresses nonstormwater discharges into the Municipality's separate storm sewer system.

O. Preserve the flood-carrying capacity of streams.

P. Prevent scour and erosion of stream banks and stream beds.

Q. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

R. Provide proper operation and maintenance of all permanent stormwater management facilities and BMPs that are implemented in the Municipality.

§ 276-4. Statutory authority.

The Municipality is empowered to regulate land use activities that affect runoff and surface water and groundwater quality and quantity by the authority of:

A. Act of October 4, 1978, P.L. 864 (Act 167) 32 P.S. § 680.1 et seq., as amended, the "Stormwater Management Act" (hereinafter referred to as "the Act");

B. Water Resources Management Act of 2002, as amended;

C. Pennsylvania Municipalities Planning Code, Act 247, as amended.[1]

[1]
Editor's Note: See 53 P.S. § 10101 et seq.

§ 276-5. Applicability; regulated activities.

A. This chapter shall apply to all areas of the Municipality.

B. This chapter shall only apply to permanent structural and nonstructural stormwater management BMPs constructed as part of any of the regulated activities listed in this section.

C. This chapter contains only the stormwater management performance standards and design criteria that are necessary or desirable from a watershed-wide perspective. Local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by the applicable municipal codes and applicable state regulations.

D. The following activities are defined as "regulated activities" and shall be regulated by this chapter unless exempted by § **276-6**:

(1) Land development;

(2) Subdivisions;

(3) Alteration of the natural hydrologic regime;

(4) Construction or reconstruction of or addition of new impervious or semipervious surfaces (i.e., driveways, parking lots, roads, etc.);

(5) Construction of new buildings or additions to existing buildings;

(6) Redevelopment;

(7) Diversion piping or encroachments in any natural or man-made channel;

(8) Nonstructural and structural stormwater management BMPs or appurtenances thereto;

(9) Earth disturbance activities of greater than 5,000 square feet; [NOTE: This chapter applies to any earth disturbance activity greater than or equal to 5,000 square feet that is associated with a development or redevelopment project. Earth disturbance activities and associated stormwater management controls are also regulated under existing state law and implementing regulations. This chapter shall operate in coordination with those parallel requirements; the requirements of this chapter shall be no less restrictive in meeting the purposes of this chapter than state law.]

(10) Any of the above regulated activities which were approved more than five years prior to the effective date of this chapter and resubmitted for Municipality approval.

(11) Nursery or agricultural operations.

E. **Table 105.1** summarizes the applicability requirements of the chapter.[1] "Proposed Impervious Surface" in **Table 105.1** includes new, additional, or replacement impervious surface/cover. Repaving existing surfaces without reconstruction does not constitute "replacement."

[1]
Editor's Note: **Table 105.1** is included at the end of this chapter.

§ 276-6. Exemptions.

A. Exemptions for land use activities. The following land use activities are exempt from the stormwater management (SWM) plan submission requirements of this chapter.

(1) Use of land for gardening for home consumption.

(2) Agriculture when operated in accordance with a conservation plan, nutrient management plan, or erosion and sedimentation control plan approved by the County Conservation District, including activities such as growing crops, rotating crops, tilling of soil, and grazing animals. Installation of new or expansion of existing farmsteads, animal housing, waste storage, and production areas having impervious surfaces that result in a net increase in earth disturbance of greater than 5,000 square feet shall be subject to the provisions of this chapter.

(3) Forest management operations which are following the Department of Environmental Protection's (DEP) management practices contained in its publication "Soil Erosion and Sedimentation Control Guidelines for Forestry" and are operating under an approved erosion and sedimentation plan and must comply with the stream buffer requirements in § **276-21G**.

(4) Road replacement, development, or redevelopment that has less than 300 square feet of new, additional, or replaced impervious surface/cover, or in the case of earth disturbance only, less than 5,000 square feet of disturbance, is exempt from this chapter.

B. Exemptions for land development activities.

(1) The following land development and earthmoving activities are exempt from the stormwater management (SWM) plan submission requirements of this chapter.

(a) A maximum of 300 square feet of new, additional, or replacement proposed impervious surface, or in the case of earth disturbance resulting in less than 300 square feet of impervious cover (as noted above). See Subsection **B(4)** below.

(b) Up to a maximum of 5,000 square feet of disturbed earth.

(2) These criteria shall apply to the total development even if the development is to take place in phases. The date of the Municipality Code adoption shall be the starting point from which to consider tracts as "parent tracts" upon which future subdivisions and respective earth disturbance computations shall be cumulatively considered.

(3) The activities exempted above are still encouraged to implement the voluntary stormwater management practices as indicated in Chapter **Appendix B**.[1]

[1]
Editor's Note: **Appendix B** is included at the end of this chapter.

(4) The developer should first determine if the proposed activity will result in the introduction of 300 square feet or more of new, additional, or replacement impervious surface. If not, the developer should next determine if the proposed activity will involve earthmoving of over 5,000 square feet. If not, then the project is exempt from the stormwater management (SWM) plan requirements. Examples:

(a) A project introducing 2,100 square feet of impervious cover, but only 4,900 square feet of earthmoving is regulated by this chapter.

(b) A project involving 5,100 square feet of earthmoving, but resulting in 1,900 square feet of impervious cover is regulated.

(c) A project introducing 190 square feet of impervious cover and involving 4,900 square feet of earthmoving is exempt from the stormwater management (SWM) plan requirements of this chapter.

C. Additional exemption criteria.

(1) Exemption responsibilities. An exemption shall not relieve the applicant from implementing such measures as are necessary to protect public health, safety, and property.

(2) HQ and EV streams. An exemption shall not relieve the applicant from meeting the special requirements for watersheds draining to identified high quality (HQ) or exceptional value (EV) waters and source water protection areas (SWPA) and requirements for nonstructural project design sequencing (§ **276-19**).

(3) Drainage problems. If a drainage problem is documented or known to exist downstream of or is expected from the proposed activity, then the Municipality may require the applicant to comply with this chapter.

(4) Emergency exemption; emergency maintenance work performed for the protection of public health, safety, and welfare. A written description of the scope and extent of any emergency work performed shall be submitted to the Municipality of Norristown within two calendar days of the commencement of the activity. If the Municipality of Norristown finds that the work is not an emergency, then the work shall cease immediately, and the requirements of this chapter shall be addressed as applicable.

(5) Maintenance exemption: any maintenance to an existing stormwater management system made in accordance with plans and specifications approved by the Municipal Engineer or the Municipality of Norristown.

(6) Even though the developer is exempt, he is not relieved from complying with other regulations.

D. Exemptions from any provisions of this Chapter shall not relieve the applicant from the requirements of § 276-10.E to L.

E. The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality believes may pose a threat to public health and safety or the environment.

§ 276-7. Compatibility with other ordinances or legal requirements.

A. Approvals issued pursuant to this chapter do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other applicable code, rule, act, or ordinance.

B. To the extent that this chapter imposes more rigorous or stringent requirements for stormwater management, the specific requirements contained in this chapter shall be followed. If more stringent requirements concerning regulation of stormwater or erosion and sediment control are contained in other code, rule, act or ordinance, the more stringent regulation shall apply.

C. Nothing in this chapter shall be construed to affect any of the Municipality's requirements regarding stormwater matters that do not conflict with the provisions of this chapter, such as local stormwater management design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.). Conflicting provisions in other municipal codes or regulations shall be construed to retain the requirements of this chapter addressing state water quality requirements.

§ 276-7A. Repealer.

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

§ 276-7B. Severability.

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

§ 276-7C. Erroneous Permit.

Any permit or authorization issued or approved based on false, misleading, or erroneous information provided by an applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. No action may be taken by a board, agency or employee of the Municipality purporting to validate such a violation.

§ 276-7D. Waivers

A. If the Municipality determines that any requirement under this Chapter cannot be achieved for a particular regulated activity, the Municipality may, after an evaluation of alternatives, approve measures other than those in this Chapter, subject to Section 276D, paragraphs B and C.

B. Waivers or modifications of the requirements of this Chapter may be approved by the Municipality if enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question, provided that the modifications will not be contrary to the public interest and that the purpose of the Chapter is preserved. Cost or financial burden shall not be considered a hardship. Modification may be considered if an alternative standard or approach will provide equal or better achievement of the purpose of the Chapter. A request for modifications shall be in writing and accompany the Stormwater management (SWM) site planStormwater management (SWM) site plan submission. The request shall provide the facts on which the request is based, the provision(s) of the Chapter involved and the proposed modification.

C. No waiver or modification of any regulated stormwater activity involving earth disturbance greater than or equal to one acre may be granted by the Municipality unless that action is approved in advance by the Department of Environmental Protection (DEP) or the delegated county conservation district.

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Article II. Word Usage; Definitions

§ 276-8. Word usage.

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."

§ 276-9. 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 at 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, mushroom growing, nursery, and sod operations 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 § **276-5** 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 Municipal Engineer 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.

BASEFLOW
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 (BMPs)."

MUNICIPALITY
Municipality of Norristown, Montgomery County, Pennsylvania.

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 Montgomery County Conservation District.

CONVEYANCE
A facility or structure used for the transportation or transmission of something from one place to another.

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

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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 Montgomery County Planning Commission or Department, Montgomery 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 (SWM) 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 VOLUME

The volume of runoff that is captured and released into the waters of the Commonwealth at a controlled rate.

DEP

The Pennsylvania Department of Environmental Protection

DEVELOPER

A person who seeks to undertake any regulated earth disturbance activities at a project site in the Municipality.

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 § **276-5** is planned, conducted, or maintained.

DIAMETER AT BREAST HEIGHT (DBH)

The outside bark diameter at breast height which is defined as 4.5 feet (1.37 m) above the forest floor on the uphill side of the tree.

DIFFUSED DRAINAGE DISCHARGE

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

DISCHARGE

A. (verb) To release water from a project, site, aquifer, drainage basin, or other point of interest;

B. (noun) The rate and volume of flow of water such as in a stream, generally expressed in cubic feet per second. (See "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.

STORMWATER MANAGEMENT PERMIT

A permit issued by the Municipality after the stormwater management (SWM) plan has been approved.

STORMWATER MANAGEMENT (SWM) 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 § **276-11**.

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 anti-degradation).

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 a lower curve number or Rational "c" value, such as forested lands.

FEMA

Federal Emergency Management Agency.

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 the 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 the Federal Emergency Management Agency (FEMA). In an area where no FEMA maps or studies have defined the boundary of the one-hundred-year frequency floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the stream to 50 feet from the top-of-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 lands. 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. (noun) A slope, usually of a road, channel, or natural ground specified in percent and shown on plans as specified herein.

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

GRASSED WATERWAY

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

GREEN INFRASTRUCTURE

Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse stormwater on the site where it is generated.

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 Stony Creek and Sawmill Run watershed during the Act 167 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, baseflow, storage, and groundwater supplies under natural conditions.

HYDROLOGIC SOIL GROUP

A classification of soils by the Natural Resources Conservation Service (NRCS), formerly the Soil Conservation Service (SCS), into four runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

IMPERVIOUS SURFACE

A surface that prevents the infiltration of water into the ground. Impervious surfaces include, but are not limited to, streets, sidewalks, pavements, driveway areas, or roofs. 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 in 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).

INFLOW

The flow entering the stormwater management facility and/or BMP.

INLET

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

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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.

INVERT

The lowest surface, the floor or bottom of a culvert, drain, sewer, channel, basin, BMP, or orifice.

KARST

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

LAND DEVELOPMENT

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 PA Municipalities Planning Code.[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 water.

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)

Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques

that infiltrate, filter, evaporate, and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

MAIN STEM (MAIN CHANNEL)

Any stream segment or other runoff conveyance used as a reach in watershed-specific hydrologic models.

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.

MAXIMUM DESIGN STORM

The maximum (largest) design storm that is controlled by the stormwater facility.

MUNICIPAL ENGINEER (or MUNICIPAL ENGINEER)

A professional engineer licensed as such in the Commonwealth of Pennsylvania, duly appointed as the Engineer for a Municipality, planning agency, or joint planning commission.

MUNICIPALITY

Municipality of Norristown, Montgomery County, Pennsylvania.

NATURAL CONDITION

Predevelopment condition.

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 underground and groundwater.

NONPOINT SOURCE POLLUTION

Pollution that enters a waterbody 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 SCS).

OPEN CHANNEL
A conveyance channel that is not enclosed.

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

OUTFLOW
The flow exiting the stormwater management facility and/or BMP.

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 Pennsylvania State University.

PERVIOUS AREA
Any area not defined as impervious.

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

PLANNING COMMISSION
The Planning Commission of the Municipality of Norristown.

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 Pennsylvania 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.

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PRECONSTRUCTION

Prior to commencing construction activities.

PREDEVELOPMENT CONDITION

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 § **276-21**.

PROJECT SITE

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

QUALIFIED PROFFESIONAL

Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by this Chapter.

RATIONAL FORMULA

A rainfall-runoff relation used to estimate peak flow.

REACH

Any stream segment or other runoff conveyance used in the watershed-specific hydrologic models.

RECHARGE

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

RECONSTRUCTION

Demolition and subsequent rebuilding of impervious surface.

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 reproducibles, 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.

REGULATED ACTIVITIES

Actions or proposed actions that have an impact on stormwater runoff quality or quantity and that are specified in § **276-5** of this chapter.

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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 Municipality'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.

RETENTION VOLUME/REMOVED RUNOFF

The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

RETURN PERIOD

The average interval, in years, within which a storm event of a given magnitude can be expected to 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.

RIPARIAN BUFFER

A permanent area of trees and shrubs located adjacent to streams, lakes, ponds, and wetlands.

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.

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ROOFTOP DETENTION

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

RUNOFF

Any part of precipitation that flows over the land surface.

SALDO

Subdivision and Land Development Chapter.[2]

SEDIMENT

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

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, or 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 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 by DEP as EV or HQ waters.

SPILLWAY

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 Pennsylvania 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 is 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 of 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 the 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, stream bed, 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 conveys 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 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.

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 (SWM) PLAN

The watershed plan, known as the "Stony Creek/Sawmill Run Act 167 Stormwater management (SWM) plan," for managing those land use activities that will influence stormwater runoff quality and quantity and that would impact the Stony Creek and Sawmill Run watershed, adopted by Delaware County, Chester County, Montgomery County, and Philadelphia County as required by the Act of October 4, 1978, P.L. 864 (Act 167).

STORMWATER MANAGEMENT (SWM) 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 (SWM) 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 (Tc)

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.

UNDEVELOPED CONDITION

Natural condition. (See also "predevelopment condition.")

USDA

United States Department of Agriculture.

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.

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.

WATERSHED

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

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 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.

WOODS

A natural groundcover with more than one viable tree of a DBH of six inches or greater per 1,500 square feet which existed within three years of application; a cover condition for which SCS curve numbers have been assigned or to which equivalent Rational Method runoff coefficients have been assigned.

[1]
Editor's Note: See 53 P.S. § 10503(1.1).

[2]
Editor's Note: See Ch. **282**, Subdivision of Land.

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Article III. Stormwater management (SWM) plan Requirements

§ 276-10. General requirements.

A. 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 stormwater management (SWM) plan from the Municipality and an adequate erosion and sediment control plan review by the Conservation District.

B. For all regulated activities, unless preparation of an Stormwater management (SWM) site plan is specifically exempted in § 276-6.
   (1) Preparation and implementation of an approved Stormwater management (SWM) site plan is required.
   (2) No regulated activities shall commence until the municipality issues written approval of an Stormwater management (SWM) site plan, which demonstrates compliance with the requirements of this Chapter.

C. Stormwater management (SWM) site plans approved by the municipality, in accordance with Section 276-13.J, shall be on site throughout the duration of the regulated activity.

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

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

F. Impervious areas:
   (1) The measurement of impervious areas shall include all of the impervious areas in the total proposed development even if development is to take place in stages.
   (2) For development taking place in stages, the entire development plan must be used in determining conformance with this Chapter.
   (3) For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Chapter; except that the volume controls in Section 276-20 and 276-24A and the peak rate controls of Section 276-23 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed regulated activity.

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

H. All regulated activities shall include such measures as necessary to:

(1) Protect health, safety, and property.

(2) Meet the water quality goals of this Chapter by implementing measures to:

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

(b) Maintain or extend riparian buffers.

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

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

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

(3) Incorporate methods described in the Pennsylvania Stormwater Best Management Practices Manual (BMP Manual). If methods other than the methods provided under this Chapter, green infrastructure, and LID methods are proposed to achieve the volume and rate controls required under this Chapter, the Stormwater management (SWM) site plan must include a detailed justification demonstrating that the use of LID and green infrastructure is not practicable.

I. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.

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

K. Normally dry, open top, storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 and not more than 72 hours from the end of the design storm.

L. The design storm volumes to be used in the analysis of peak rates of discharge should be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 145 can be accessed at: http://hdsc.nws.noaa.gov/hdsc/pfds/.

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

N. Various BMPs and their design standards are listed in the BMP Manual.

§ 276-11. Contents of plan.

A. The stormwater management (SWM) plan shall consist of a general description of the project, including sequencing items described in § **276-19**, 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 and erosion and sediment control plan shall refer to the associated maps by title and date. All stormwater management (SWM) plan materials shall be submitted to the Municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the stormwater management (SWM) plan shall not be accepted for review and shall be returned to the applicant.

B. The following items shall be included in the stormwater management (SWM) plan:

(1) General.

(a) General description of the project, including those areas described in § **276-19B**.

(b) General description of proposed 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 letters of adequacy from the Conservation District.

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

(f) The stormwater management (SWM) plan application and completed fee schedule form and associated fee (Chapter **Appendix C-1**).[1]

[1]
Editor's Note: **Appendix C-1** is included at the end of this chapter.

(g) The Stormwater management (SWM) plan Checklist (**Appendix C-2**).[2]

[2]
Editor's Note: **Appendix C-2** is included at the end of this chapter.

(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 Montgomery County. If the SALDO has more stringent criteria than this chapter, 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, Municipality boundaries, or other identifiable landmarks.

(b) Existing contours at intervals of two feet.

(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 and boundaries.

(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.

(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.
(r) Overland drainage patterns and swales.

(s) A 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) 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.

(v) A statement, signed by the applicant, acknowledging that any revision to the approved stormwater management (SWM) plan must be approved by the Municipality, and that a

revised erosion and sediment control plan must be submitted to the Conservation District for a determination of adequacy.

(w) The following signature block for the design engineer:
"I, (Design Engineer), on this date (date of signature), hereby certify that the stormwater management (SWM) plan meets all design standards and criteria of Chapter **276**, of the Municipality of Norristown Stormwater Management Ordinance."

(x) Items required by the Norristown Municipality Subdivision and Land Development Regulations.

(y) The following signature block for the Municipal Engineer:
"(Municipal official or designee), on this date (Signature date), has reviewed and hereby certifies that the Stormwater management (SWM) site plan meets all design standards and criteria of Chapter 276 of the Municipality of Norristown Stormwater Management Ordinance."

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

(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 § **276-19**.

[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. If the project is to be developed in stages, the entire project stormwater management (SWM) plan shall be presented with the first stage, and appropriate stages for the drainage system shall be indicated, in accordance with Pennsylvania DEP rules and regulations.

[6] An operations and maintenance plan in accordance with § **276-30** 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 Municipality stormwater collection system that may receive runoff from the project site.

(d) A declaration of adequacy and highway occupancy permit from the Pennsylvania Department of Transportation (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.

(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.

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

§ 276-12. Plan submission.

The Municipality shall require receipt of a complete stormwater management (SWM) 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 Municipality SALDO review process. The process implementing the provisions in this chapter is illustrated in Appendixes D-1 and D-2.[1]

[1]
Editor's Note: Appendixes D-1 and D-2 are on file in the Municipal offices.

C. For projects that require SALDO approval, the stormwater management (SWM) 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 approval, see § **276-10**, General requirements.

E. Six copies of the stormwater management (SWM) plan shall be submitted and distributed as follows:

(1) Two copies to the Municipality accompanied by the requisite Municipality review fee, as specified in this chapter.

(2) Two copies to the County 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.

§ 276-13. Plan review.

A. The Municipal Engineer shall review the stormwater management (SWM) plan for consistency with this chapter and the respective Act 167 stormwater management (SWM) plan. Any found incomplete shall not be accepted for review and shall be returned to the applicant.

B. The Municipal Engineer shall review the stormwater management (SWM) plan for any subdivision or land development against the Municipality SALDO provisions not otherwise superseded by this chapter.

C. The Conservation District, in accordance with established criteria and procedures, shall review the stormwater management (SWM) plan for consistency with stormwater management and erosion and sediment pollution control requirements and provide comments to the Municipality. Such comments shall be considered by the Municipality prior to final approval of the stormwater management (SWM) plan.

D. For activities regulated by this chapter, the Municipal Engineer shall notify the applicant and the Municipality in writing, within 15 calendar days, whether the stormwater management (SWM) plan is consistent with the stormwater management (SWM) plan. The Municipal Engineer may also recommend approval of the Stormwater management (SWM) site plan with conditions and, if so, shall provide the acceptable conditions for approval in writing.

(1) If the Municipal Engineer determines that the stormwater management (SWM) plan is consistent with the stormwater management (SWM) plan, the Municipal Engineer shall forward a letter of consistency to the Municipality Secretary who will then forward a copy to the applicant in writing within 45 calendar days whether the stormwater management (SWM) plan is approved or disapproved. If the stormwater management (SWM) plan involves a subdivision or land development plan, the notification shall occur within the time period allowed by the Municipalities Planning Code (90 calendar days). If a longer notification period is provided by other statute, regulation, ordinance, or justifiable reason, the applicant will be so notified by the Municipality.

(2) If the Municipal Engineer determines that the stormwater management (SWM) plan is inconsistent or noncompliant with the stormwater management (SWM) plan, the Municipal Engineer shall forward a letter to the Municipality 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 (SWM) plan. Any stormwater management (SWM) plans that are inconsistent or noncompliant may be revised by the applicant and resubmitted when consistent with this chapter. The Municipality Secretary shall then notify the applicant of the Municipal Engineer's findings. Any inconsistent or noncompliant

stormwater management (SWM) plans may be revised by the applicant and resubmitted consistent with this chapter.

E. For regulated activities specified in § **276-5** of this chapter that require a building permit, the Municipal Engineer shall notify the Municipality Building Permit Officer in writing, within a time frame consistent with the Municipality Building Code and/or Municipality SALDO, whether the stormwater management (SWM) plan is consistent with the stormwater management (SWM) plan. The Municipality Building Permit Officer shall forward a copy of the consistency/inconsistency letter to the applicant. Any stormwater management (SWM) 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 Municipal Engineer's letter stating that the stormwater management (SWM) plan is consistent with the stormwater management (SWM) plan to the Conservation District. DEP and the Conservation District may consider the Municipal Engineer's review comments in determining whether to issue a permit.

G. The Municipality shall not grant preliminary or final approval to any subdivision or land development for regulated activities specified in § **276-5** of this chapter if the stormwater management (SWM) plan has been found by the Municipal Engineer to be inconsistent with the stormwater management (SWM) plan. All required permits from DEP shall be a condition of approval of any subdivision or land development.

H. No building permits for any regulated activity specified in § **276-5** of this chapter shall be approved by the Municipality if the stormwater management (SWM) plan has been found to be inconsistent with the stormwater management (SWM) plan, as determined by the Municipal Engineer and Conservation District, or without considering the comments of the Municipal Engineer 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 stormwater management (SWM) plan. The record drawings and an explanation of any discrepancies with the design plans shall be submitted to the Municipal Engineer for final approval. In no case shall the Municipality approve the record drawings until the Municipality 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 Municipality's approval of a stormwater management (SWM) plan shall be valid for a period not to exceed two years commencing on the date that the Municipality signs the approved stormwater management (SWM) plan. If stormwater management facilities included in the approved stormwater management (SWM) plan have not been constructed, or if constructed, record drawings of these facilities have not been approved within this two-year time period, then the Municipality may consider the stormwater management (SWM) plan inconsistent or noncompliant and may revoke any and all permits. Stormwater management (SWM) plans that are determined to be inconsistent or noncompliant by the Municipality shall be resubmitted in accordance with § **276-15** of this chapter.

K. For any stormwater management (SWM) site plan that proposes to use any BMPs other than green infrastructure and LID practices to achieve the volume and rate controls required under this Chapter, the Municipality will not approve the stormwater management (SWM) site plan unless it determines that green infrastructure and LID practices are not practicable.

§ 276-14. Modification of plans.

A. A modification to a submitted stormwater management (SWM) plan under review by the Municipality for a development site that involves the following shall require a resubmission to the Municipality of a modified stormwater management (SWM) plan consistent with § **276-12** of this chapter and be subject to review as specified in § **276-13** 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 stormwater management (SWM) plan as determined by the Municipal Engineer.

B. A modification to an already approved or inconsistent or noncompliant stormwater management (SWM) plan shall be submitted to the Municipality, accompanied by the applicable Municipality review and inspection fee. A modification to a stormwater management (SWM) plan for which a formal action has not been taken by the Municipality shall be submitted to the Municipality accompanied by the applicable Municipality review and inspection fee.

§ 276-15. Resubmission of inconsistent or noncompliant plans.

An inconsistent or noncompliant stormwater management (SWM) plan may be resubmitted with the revisions addressing the Municipal Engineer's concerns documented in writing. It must be addressed to the Municipality Secretary in accordance with § **276-12** of this chapter, distributed accordingly, and be subject to review as specified in § **276-13** of this chapter. The applicable Municipality review and inspection fee must accompany a resubmission of an inconsistent or noncompliant stormwater management (SWM) plan.

Article IV. Stormwater Management Requirements

§ 276-16. General stormwater management requirements.

A. Applicants proposing regulated activities in the Municipality which do not fall under the exemption criteria shown in § **276-6** shall submit a stormwater management (SWM) plan consistent with this chapter and the respective stormwater management (SWM) plan to the Municipality 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 stormwater management (SWM) plan must be designed consistent with the sequencing provisions of § **276-19** to ensure maintenance of the natural hydrologic regime, to promote groundwater recharge, and to protect groundwater and surface water quality and quantity. The stormwater management (SWM) 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 § **276-21G** 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 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 water or groundwater.

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

(1) Erosion and sediment control during 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 Municipality shall commence until the requirements of this chapter are met.

N. Postconstruction water quality protection shall be addressed as required by § **276-21**.

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

P. All 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 Municipality.

Q. Techniques described in **Appendix E** (Low Impact Development) of this chapter[1] shall be considered because they reduce the costs of complying with the requirements of this chapter and the state water quality requirements.

[1]
*Editor's Note: **Appendix E** is included at the end of this chapter.*

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's 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) Efficiency 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 shown in Chapter Appendix A.[2]

[2]
Editor's Note: Appendix A is on file in the Municipal offices.

§ 276-17. Permit requirements by other governmental 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 Pennsylvania Code Chapter 102.

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

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§ 276-18. Erosion and sediment control during regulated earth disturbance activities.

A. No regulated earth disturbance activities within the Municipality shall commence until the Municipality receives an approval from the Conservation District of 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 Pennsylvania Code § 102.4(b).

C. In addition, under 25 Pennsylvania Code Chapter 92, a DEP NPDES construction activities permit is required for regulated earth disturbance activities.

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 Municipality.

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.

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

§ 276-19. 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 F, **Table F-5**,[1] 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.

[1]
Editor's Note: Appendix F is included at the end of this chapter.

(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 Municipality 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, and other requirements outlined in the Municipality SALDO shall also be included.

(2) Establish a stream buffer according to § **276-21G**

(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 the groundwater recharge (infiltration) objective (§ **276-20**) and provide for stormwater pretreatment prior to infiltration.

(7) Provide for water quality protection in accordance with § **276-21**, Water quality requirements.

(8) Provide stream bank erosion protection in accordance with § **276-22**, Stream bank erosion requirements.

(9) Determine into what management district the site falls (Chapter Appendix A[2]) and conduct an existing conditions runoff analysis.

[2]
Editor's Note: Appendix A is on file in the Municipal offices.

(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, to ensure that 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 (§ **276-23**).

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

§ 276-20. 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 that may be designed to compensate for the runoff from parking areas. These measures are required to be consistent with § **276-3** and to 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. 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 volumes.

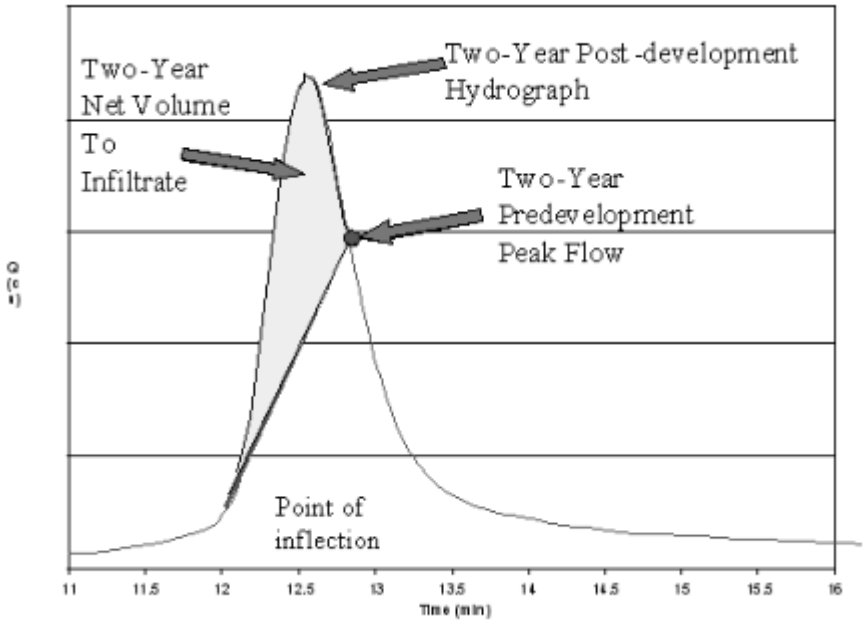
C. Infiltration BMPs shall meet the following minimum requirements:

(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 between the bottom of the BMP and the top of the limiting zone.

Figure 405.1

Infiltration Hydrograph



(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 ($Re_{v)}$ within four days (96 hours).

(d) Pretreatment shall be provided prior to infiltration.

(2) The size of the infiltration facility shall be based upon the following volume criteria:

(a) Net two-year volume approach. In HQ/EV watersheds, the retention (infiltration) volume (Re_v) to be captured and infiltrated shall be the net two-year volume. The net two-year volume shall be determined by plotting the two-year project site post-development hydrograph, drawing a straight line from the point-of-inflection of the rising limb of the hydrograph to the predevelopment two-year storm, and measuring the volume under the curve as shown in Figure 405.1.

(b) One inch from impervious surface. In other portions of the watershed that are not classified as HQ/EV, the retention (infiltration) volume (Re_v) will be equal to capturing one inch of rainfall over all proposed impervious surfaces.

Re_v = I * impervious area (square feet) ÷ 12 (inches) = cubic feet (cf)

An asterisk (*) in equations denotes multiplication.

(c) Obtaining the Re_v volume in Subsection **C(2)(a)** (above) 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 for showing that this cannot be physically accomplished. If it cannot be physically accomplished, then the retention (infiltration) volume Re_v required shall be as much as can be physically accomplished with a minimum of 0.50 inch depending on demonstrated site conditions. It has been determined that capturing and infiltrating 0.50 inch of runoff from the impervious areas will aid in maintaining the hydrologic regime (baseflow) of the watershed. If the goals of Subsection **C(2)(a)** or **(b)** cannot be achieved, then 0.50 inch of rainfall shall be retained and infiltrated from all impervious areas.

[1] The minimum recharge volume (Re_v) required would, therefore, be computed as:

Re_v = I * impervious area (square feet) ÷ 12 (inches) = cubic feet (cf)

An asterisk (*) in equations denotes multiplication.

Where:

I = The maximum equivalent infiltration amount (inches) that the site can physically accept or 0.50 inch, whichever is greater.

[2] The retention volume values derived from the methods in Subsection **C(2)(a)**, **(b)** and/or **(c)** is the minimum volume the applicant must control through an infiltration BMP facility. However, if a site has areas of soils where additional volume of retention can be achieved, the applicant is encouraged to infiltrate as much of the stormwater runoff from the site as possible.

[3] If the minimum of 0.50 inch of infiltration requirement cannot be achieved, a waiver from § **276-20**, Groundwater recharge, would be required from the Municipality.

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 may not 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 (Re_v) 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 Municipality that the soils are conducive to infiltrate on the lots identified.

E. Stormwater hotspots. Below 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 Re_v requirement shall not be applied to development sites that fit into the hotspot category (the entire WQ_v must still be treated). Second, a greater level of stormwater treatment shall be considered at hotspot sites to prevent pollutant washoff after construction. The Environmental Protection Agency's (EPA) NPDES stormwater program requires some industrial sites to prepare and implement a stormwater pollution prevention plan.

(1) 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.

(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.

(2) 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).

(3) While large highways [average daily traffic volume (ADT) greater than 30,000] are not designated as stormwater hotspots, it is important to ensure that highway stormwater management (SWM) plans adequately protect groundwater.

F. Extreme caution shall be exercised where infiltration is proposed in SWPAs as defined by the local Municipality 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 (Municipality 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 HQ or EV waters shall be subject to the Department's Chapter 93 Anti-degradation 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 Municipality.
K. The Municipality 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.

§ 276-21. Water quality requirements.

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

A. No regulated earth disturbance activities within the Municipality shall commence until approval by the Municipality of a plan which demonstrates compliance with postconstruction state water quality requirements.

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 Municipality.

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 (No. 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 stream bed protection: management of volume and rate of postconstruction stormwater discharges to prevent physical degradation of receiving waters (e.g., from scouring).

D. Developed areas shall provide adequate storage and treatment facilities necessary to capture and treat stormwater runoff. The retention volume computed under Section 405 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. To achieve this goal, the following criterion is established:

(1) The following calculation formula is to be used to determine the water quality storage volume (WQv) in acre-feet of storage required by this chapter:

$$WQv = [(P)(Rv)(A)] \div 12$$

Where:

WQv = Water quality volume (acre-feet)

P = one 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 [(impervious area/A)*100].

(2) 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 Chapter **Appendix G**.[1]

[1]
*Editor's Note: **Appendix G** is included at the end of this chapter.*

(3) 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 that include EV and HQ waters, the temperature and quality of water and streams shall be maintained through the use of temperature sensitive BMPs and stormwater conveyance systems.

F. To accomplish the above, the applicant shall submit original and innovative designs to the Municipal Engineer 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 100 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 (refer to **Appendix H** of the Pennsylvania Handbook of Best Management Practices for Developing Areas for plant lists). If the applicable rear or side yard setback is less than 100 feet, the buffer width may be reduced to a minimum of 75 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 Municipality.

§ 276-22. Stream bank erosion requirements.

A. In addition to the control of water quality volume (in order to minimize the impact of stormwater runoff on downstream stream bank erosion), the primary requirement is to design a BMP to detain the proposed conditions two-year, twenty-four-hour design storm to the existing conditions one-year flow using the SCS Type II distribution. Additionally, provisions shall be made (such as adding a small orifice at the bottom of the outlet structure) so that the proposed conditions one-year storm takes a minimum of 24 hours to drain from the facility from a point where the maximum volume of water from the one-year storm is captured (i.e., the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the water quality orifice is at the invert of the facility).

B. The minimum orifice size in the outlet structure to the BMP shall be three inches in diameter where possible, and a trash rack shall be installed to prevent clogging. On sites with small drainage areas contributing to this BMP that do not provide enough runoff volume to allow a twenty-four-hour attenuation with the three-inch orifice, the calculations shall be submitted showing this condition. Orifice sizes less than three inches can be utilized, provided that the design will prevent clogging of the intake.

C. In Conditional Direct Discharge Districts (District C) only (see § **276-23A**.), the objective is not to attenuate the storms greater than the two-year recurrence interval. This can be accomplished by configuring the outlet structure not to control the larger storms or by a bypass channel that diverts only the two-year stormwater runoff into the basin or conversely, diverts flows in excess of the two-year storm away from the basin.

§ 276-23. Stormwater peak rate control and management districts.

A. Stony Creek and Sawmill Run Watershed. The Stony Creek and Sawmill Run Watershed has been divided into three stormwater management districts as shown on the Management District Map in Appendix A.[1] The districts represent three common release rates from the 15 Norristown subareas previously identified in the Act 167 Stormwater management (SWM) plan, Montgomery County, 1991.

(1) In addition to the requirements specified in Table 408.1 below, the erosion and sedimentation control (Section 276-18), the nonstructural project design (Section 276-19), the groundwater recharge (Section 276-20), the water quality (Section 276-21), and the stream bank erosion (Section 276-22) requirements shall be implemented.

(2) Standards for managing runoff from each subarea in the Stony Creek and Sawmill Run Watershed for the two-, five-, ten-, twenty-five-, fifty-, and one-hundred-year design storms are shown in Table 408.1. Development sites located in each of the management districts must control proposed conditions runoff rates to existing conditions runoff rates for the design storms in accordance with Table 408.1.

Table 408.1

Peak Rate Control Standards by Stormwater Management District in the Stony Creek/Sawmill Run Watershed

District	Proposed Condition Design Storm	Existing Condition Design Storm
A	2-year	1-year
	5-year	5-year
	10-year	10-year
	25-year	25-year
	100-year	100-year
B	2-year	1-year
	10-year	5-year
	25-year	10-year
	50-year	25-year
	100-year	50-year
C	Conditional Direct Discharge District	

(3) In District C, development sites that can discharge directly to the Stony Creek or Sawmill Run main channel, major tributaries, or indirectly to either main channel through an existing stormwater drainage system (i.e., storm sewer or tributary) may do so without control of the proposed conditions peak rate of runoff greater than the twenty-five year storm. Sites in District C will still have to comply with the groundwater recharge criteria, the water quality criteria, and stream bank erosion criteria. If the proposed conditions runoff is intended to be conveyed by an existing stormwater drainage system to the main channel, assurance must be provided that such

system has adequate capacity to convey the flows greater than the two-year existing conditions peak flow or will be provided with improvements to furnish the required capacity. When adequate capacity in the downstream system does not exist and will not be provided through improvements, the proposed conditions peak rate of runoff must be controlled to the existing conditions peak rate as required in District A provisions (i.e., ten-year proposed conditions flows to ten-year existing conditions flows) for the specified design storms.

[1]
Editor's Note: Appendix A is on file in the Municipal offices.

B. General. Proposed conditions rates of runoff from any regulated activity shall not exceed the peak release rates of runoff from existing conditions for the design storms specified on the Stormwater Management District Watershed Map (Chapter Appendix A[2]) and this section of the chapter.

1. For areas within the Municipality that may not be covered by a stormwater management district:
    a. the post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

2. For areas within the Municipality that are located within a stormwater management district:
    a. For the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storm events, the post-development peak discharge rates will follow the applicable approved release rate maps. For any areas not shown on the release rate maps, the post-development discharge rates shall not exceed the pre-development discharge rates.

[2]
Editor's Note: Appendix A is on file in the Municipal offices.

C. District boundaries. The boundaries of the stormwater management districts are shown on an official map that is available for inspection at the Municipality and County Planning offices. A copy of the official map at a reduced scale is included in Chapter Appendix A. The exact location of the stormwater management district boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the stormwater management (SWM) plan.

D. Sites located in more than one district. For a proposed development site located within two or more stormwater management district category subareas, the peak discharge rate from any subarea shall meet the management district criteria for which the discharge is located. The calculated peak discharges shall apply regardless of whether the grading plan changes the drainage area by subarea. An exception to the above may be granted if discharges from multiple subareas recombine in proximity to the discharge site. In this case, peak discharge in any direction may follow Management District A criteria, provided that the overall site discharge meets the management district criteria for which the discharge is located.

E. Off-site areas. Off-site areas that drain through a proposed development site are not subject to release rate criteria when determining allowable peak runoff rates. However, on-site drainage facilities shall be designed to safely convey off-site flows through the development site.

F. Site areas. Where the site area to be impacted by a proposed development activity differs significantly from the total site area, only the proposed impact area utilizing stormwater management measures shall be subject to the management district criteria. In other words, unimpacted areas bypassing the stormwater management facilities would not be subject to the management district criteria.

G. Alternate criteria for redevelopment sites. For redevelopment sites, one of the following minimum design parameters shall be accomplished, whichever is most appropriate for the given site conditions as determined by the Municipality of Norristown.

(1) Meet the full requirements specified by Table 408.1 and Subsections **A** through **G**; or

(2) Reduce the total impervious surface on the site by at least 20% based upon a comparison of existing impervious surface to proposed impervious surface.

§ 276-24. Calculation methodology.

A. Stormwater runoff from all development sites with a drainage area of greater than 200 acres shall be calculated using a generally accepted calculation technique that is based on the NRCS Soil Cover Complex Method. Table 409.1 summarizes acceptable computation methods, and the method selected by the design professional shall be based on the individual limitations and suitability of each method for a particular site. The Municipality may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres. The Soil Cover Complex Method shall be used for drainage areas greater than 200 acres.

Table 409.1

Acceptable Computation Methodologies for Stormwater management (SWM) plans

Method	Developed By	Applicability
TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary
TR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans within limitations described in TR-55
HEC-1/HEC-HMS	US Army Corps of Engineers	Applicable where use of a full hydrologic computer is desirable or necessary
PSRM	Penn State University	Applicable where use of a hydrologic model is desirable or necessary; simpler than TR-20 or HEC-1
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For sites less than 200 acres, or as approved by the Municipality and/or Municipal Engineer.
Other methods	Varies	Other computation methodologies approved by the Municipality and/or Municipal Engineer

B. All calculations consistent with this chapter using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms according to the region in which they are located as presented in **Table F-1** in Appendix F of this chapter.[1] If a hydrologic computer model such as PSRM or HEC-1/HEC-HMS is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The Alternating Block Method shown in **Figure F-1** or the SCS Type II S Curve, **Figure F-3** in Chapter Appendix F, shall be used for the rainfall distribution.

[1]

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

C. The following criteria shall be used for runoff calculations:

(1) For development and redevelopment sites, the ground cover used in determining the existing conditions flow rates for the developed portion of the site shall be considered as "meadow in

good condition," unless the natural ground cover generates a lower curve (CN) number or Rational "c" value (i.e., woods) as listed in Tables F-2 or F-3 in Appendix F of this chapter.

D. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods presented in the Region 5 Curves from the PennDOT Storm-Duration-Frequency Chart (**Figure F-4**). Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times of concentration for channel and pipe flow shall be computed using Manning's equation.

E. Runoff curve numbers (CN) for both existing and proposed conditions to be used in the Soil Cover Complex Method shall be obtained from **Table F-2** in Appendix F of this chapter.

F. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from **Table F-3** in Appendix F of this chapter.

G. Where uniform flow is anticipated, the Manning equation shall be used for hydraulic computations and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with **Table F-4** in Appendix F of the Chapter.

H. Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this chapter using any generally accepted hydraulic analysis technique or method.

I. The design of any stormwater detention facilities intended to meet the performance standards of this chapter shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. The design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The Municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.

§ 276-24A. Volume Controls.

The green infrastructure and low impact development practices provided in the BMP Manual shall be utilized for all regulated activities wherever possible. Water volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. For regulated activity areas equal or less than one acre that do not require hydrologic routing to design the stormwater facilities, this Chapter establishes no preference for either methodology; therefore, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology and other factors.

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

1. Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.

2. For modeling purposes:

   a. Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.

   b. A minimum of 20% to a maximum of 100% of existing impervious area, when present, shall be considered meadow in good condition in the model for existing conditions.

B. The Simplified Method (CG-2 in the BMP Manual) provided below is independent of site conditions and should be used if the Design Storm Method is not followed. This method is not applicable to regulated activities greater than one acre or for projects that require design of stormwater storage facilities. For new impervious surfaces:

1. Stormwater facilities shall capture at least the first two (2) inches of runoff from all new impervious surfaces.

2. At least the first one inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow, i.e., it shall not be released into the surface waters of this Commonwealth. Removal options include reuse, evaporation, transpiration, and infiltration.

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

4. This method is exempt from the requirements of § 276-23 for rate controls.

§ 276-24B. Riparian Buffers.

A. In order to protect and improve water quality, a Riparian Buffer Easement shall be created and recorded as part of any subdivision or land development that encompasses a Riparian Buffer.

B. Except as required by 25 Pennsylvania Code Chapter 102, the Riparian Buffer Easement shall be measured to be the greater of the limit of the 100 year floodplain or a minimum of 35 feet from the top of the streambank (on each side).

C. Minimum Management Requirements for Riparian Buffers.

1. Existing native vegetation shall be protected and maintained within the Riparian Buffer Easement.

2. Whenever practicable invasive vegetation shall be actively removed and the Riparian Buffer Easement shall be planted with native trees, shrubs and other vegetation to create a diverse native plant community appropriate to the intended ecological context of the site.

D. The Riparian Buffer Easement shall be enforceable by the municipality and shall be recorded in the appropriate County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership

and shall count toward the minimum lot area a required by Zoning, unless otherwise specified in the municipal Zoning Chapter.

E. Any permitted use within the Riparian Buffer Easement shall be conducted in a manner that will maintain the extent of the existing 100-year floodplain, improve or maintain the stream stability, and preserve and protect the ecological function of the floodplain.

F. The following conditions shall apply when public and/or private recreation trails are permitted within Riparian Buffers:

1. Trails shall be for non-motorized use only.

2. Trails shall be designed to have the least impact on native plant species and other sensitive environmental features.

G. Septic drainfields and sewage disposal systems shall not be permitted within the Riparian Buffer Easement and shall comply with setback requirements established under 25 Pa. Code Chapter 73.

§ 276-25. Other requirements.

A. Any stormwater facility located on state highway rights-of-way shall be subject to approval by PennDOT.

B. All wet basin designs shall incorporate biologic controls consistent with the West Nile Guidance found in **Appendix H**.[1]

[1]
*Editor's Note: **Appendix H** 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 spillway 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 one-hundred year design storm with a minimum one 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 or fully comply with this Chapter, whichever is more stricter.

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 one-hundred 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 or fully comply with this Chapter, whichever is stricter.

G. Stormwater bmps and 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 Municipality reserves the right to disapprove any design that would result in construction in or continuation of a stormwater problem area.

Article V. Inspections

§ 276-26. Conduct; revocation of permits; final inspections.

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

B. During any stage of the work, if the Municipal Engineer or his Municipality designee determines that the permanent BMPs and/or stormwater management facilities are not being installed in accordance with the approved stormwater management (SWM) plan, the Municipality shall revoke any existing permits or other approvals and issue a cease and desist order until a revised stormwater management (SWM) plan is submitted and approved, as specified in this chapter, and until the deficiencies are corrected.

C. A final inspection of all BMPs and/or stormwater management facilities shall be conducted by the Municipal Engineer or appointed designee to confirm compliance with the approved stormwater management (SWM) plan prior to the issuance of any occupancy permit.

Article VI. Fees and Expenses

§ 276-27. Stormwater management (SWM) plan review and inspection fee.

Fees shall be established by the Municipality to defray plan review and construction inspection costs incurred by the Municipality. All fees shall be paid by the applicant at the time of stormwater management (SWM) plan submission. A review and inspection fee schedule shall be established by resolution of the Municipality governing body based on the size of the regulated activity and based on the Municipality's costs for reviewing stormwater management (SWM) plans and conducting inspections pursuant to § **276-26**. The Municipality shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.

§ 276-28. Expenses covered by fees.

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

A. Administrative costs.

B. The review of the stormwater management (SWM) plan by the Municipality and the Municipal Engineer.

C. The site inspections.

D. The inspection of stormwater management facilities and drainage improvements during construction.

E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the stormwater management (SWM) 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

§ 276-29. Performance guarantee.

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

(1) Required by the approved stormwater management (SWM) 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 SALDO.

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

§ 276-30. Responsibilities for operations and maintenance of stormwater controls and BMPs.

A. No regulated earth disturbance activities within the Municipality shall commence until approval by the Municipality 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 Montgomery County, shall be submitted. 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, Municipality 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 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; and

(4) A statement, signed by the landowner, acknowledging that the stormwater controls and BMPs are fixtures that can be altered or removed only after approval by the Municipality.

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 Municipality, stormwater controls and BMPs may also be dedicated to and maintained by the Municipality;

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

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

F. The operations and maintenance plan shall be recorded as a restrictive deed covenant that runs with the land.

§ 276-31. Review of stormwater control and BMP operations and maintenance plan.

A. The Municipality 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 Municipality shall notify the applicant in writing whether or not the stormwater control and BMP operations and maintenance plan is approved.

C. The Municipality may require a record drawing of all stormwater controls and BMPs and an explanation of any discrepancies with the operations and maintenance plan.

§ 276-32. Adherence to approved plan required.

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.

§ 276-33. Privately owned stormwater controls and BMPs.

A. The applicant shall sign an operations and maintenance agreement with the Municipality 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 substantially the same as the agreement in **Appendix I** of this chapter.[1]

[1]
*Editor's Note: **Appendix I** 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 Municipality.

§ 276-34. 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 Municipality.

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 § **276-33**.

§ 276-35. Privately owned stormwater facilities.

A. Prior to final approval of the site's stormwater management (SWM) plan, the applicant shall sign and record the maintenance agreement contained in **Appendix I** which is attached and made part hereof covering all stormwater control facilities that are to be privately owned.

B. Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the Municipality Solicitor and governing body.

§ 276-36. Recording of approved 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 Montgomery County, within 15 days of approval of the stormwater control and BMP operations and maintenance plan by the Municipality:

(1) The operations and maintenance plan, or a summary thereof;

(2) Operations and maintenance agreements under § **276-33**; and

(3) Easements under § **276-34**.

B. The Municipality 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.

§ 276-37. 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 Municipality 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 Municipality for a period of 10 years, as estimated by the Municipal Engineer. After that period of time, inspections will be performed at the expense of the Municipality.

(2) If the stormwater control or BMP is to be owned and maintained by the Municipality, the deposit shall cover the estimated costs for maintenance and inspections for 10 years. The Municipal Engineer will establish the estimated costs utilizing information submitted by the applicant.

(3) The amount of the deposit to the fund shall be converted to present worth of the annual series values. The Municipal Engineer 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 recreational facility (e.g., ball field or lake), the Municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreational purpose.

C. If at some future time, a 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 returned to the depositor.

D. If stormwater controls or BMPs are accepted by the Municipality for dedication, the Municipality may require persons installing stormwater controls or BMPs to pay a specified amount to the Municipality

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) The amount shall cover the estimated costs for operations and maintenance for 10 years, as determined by the Municipality.

(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 recreational facility (e.g., ball field or lake), the Municipality may adjust the amount due accordingly.

F. The Municipality may require applicants to pay a fee to the Municipality Stormwater Control and BMP Operation and Maintenance Fund to cover long-term maintenance of stormwater controls and BMPs.

G. The Municipality may require applicants to pay a fee to the Municipality Stormwater Control and BMP Operation and Maintenance Fund to cover stormwater related problems which may arise from the land development and earth disturbance.

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Article VIII. Prohibitions

§ 276-38. Prohibited discharges.

[NOTE: The following language taken from DEP's NPDES program and model NPDES ordinance is required to be incorporated into this chapter.]

A. No person in the Municipality shall allow, or cause to allow, stormwater discharges into the Municipality's separate storm sewer system which are not composed entirely of stormwater, except 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 Municipality 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 wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used.

(12) Dechlorinated swimming pool discharges.

(13) Uncontaminated groundwater.

(14) Diverted stream flows and springs.

(15) Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

C. In the event that the Municipality 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 Municipality will notify the responsible person to cease the discharge.

D. Upon notice provided by the Municipality under Subsection **C**, the discharger will have a reasonable time, as determined by the Municipality, 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.

§ 276-39. Prohibited connections.

The following connections are prohibited, except as provided in § **276-38B** 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 Municipality.

§ 276-40. 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 Municipality.

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

§ 276-41. 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 Municipality.

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 Municipality.

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Article IX. Enforcement and Penalties

§ 276-42. Right-of-entry.

A. Upon presentation of proper credentials, duly authorized representatives of the Municipality may enter at reasonable times upon any property within the Municipality to inspect the 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 Municipality ready access to all parts of the premises for the purposes of determining compliance with this chapter.

C. Persons working on behalf of the Municipality shall have the right to temporarily locate on any stormwater control or BMP in the Municipality 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 Municipality access to a stormwater control or BMP is a violation of this article.

E. In the event the Landowner fails to operate and maintain the BMPs per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.

§ 276-42A. Owner Inspections.

The landowner or the owner's designee (including the Municipality for dedicated and owned facilities) shall inspect SWM BMPs, facilities and/or structures installed under this Chapter according to the following frequencies, at a minimum, to ensure the BMPs, facilities and/or structures continue to function as intended:

1. Annually for the first 5 years.

2. Once every 3 years thereafter.

3. During or immediately after the cessation of a 10-year or greater storm.

Inspections should be conducted during or immediately following precipitation events. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, facility or structure inspected, observations on performance, and recommendations for improving performance, if applicable. Inspection reports shall be submitted to the Municipality within 30 days following completion of the inspection.

§ 276-43. Violations deemed to be 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.

§ 276-44. Notification of violation.

A. Whenever the Municipality finds that a person has violated a prohibition or failed to meet a requirement of this chapter, the Municipality 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 Municipality 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 Municipality from pursuing any and all other remedies available in law or equity.

§ 276-45. Suspension and revocation of permits and approvals.

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

(1) The Municipal Engineer or 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 Municipality is satisfied that the violation of the Code, law, or rule and regulation has been corrected.

C. A permit or approval that has been revoked by the Municipality cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this chapter.

§ 276-46. Violations and penalties.

A. Any person violating the provisions of this chapter shall be guilty of a misdemeanor and, upon conviction, shall be subject to a fine of not more than $1,000 for each violation, recoverable with costs, or imprisonment for not more than 30 days, or both. Each day that the violation continues shall be a separate offense.

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

§ 276-47. Compliance required.

In the event that a person fails to comply with the requirements of this chapter or fails to conform to the requirements of any permit issued hereunder, the Municipality shall provide written notification of the violation. Such notification shall 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 Municipality 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.

§ 276-48. Enforcement.

The Municipality governing body is hereby authorized and directed to enforce all of the provisions of this chapter. All inspections regarding compliance with the stormwater management (SWM) plan shall be the responsibility of the Municipal Engineer or other qualified persons designated by the Municipality.

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

B. It shall be unlawful for any person, firm, or corporation to undertake any regulated activity under § **276-5** on any property except as provided for in the approved stormwater management (SWM) plan and pursuant to the requirements of this chapter. It shall be unlawful to alter or remove any control structure required by the stormwater management (SWM) plan pursuant to this chapter or to allow the property to remain in a condition which does not conform to the approved stormwater management (SWM) 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 Municipality, a final inspection shall be conducted by the Municipal Engineer or designated representative 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 developments in the Municipality.

§ 276-49. Appeals.

A. Any person aggrieved by any action of the Municipality of Norristown or its designee may appeal to the Municipality of Norristown Municipality Council within 30 days of that action.

B. Any person aggrieved by any decision of the Municipality of Norristown Municipality Council may appeal to the Montgomery County Court of Common Pleas where the activity has taken place within 30 days of the Municipality decision.