

EAST NORRITON TOWNSHIP

ORDINANCE NO. 551

AN ORDINANCE OF EAST NORRITON TOWNSHIP, MONTGOMERY COUNTY, COMMONWEALTH OF PENNSYLVANIA, AMENDING THE CODE OF THE TOWNSHIP OF EAST NORRITON TO PROVIDE FOR A COMPREHENSIVE STORMWATER MANAGEMENT PLAN, TO INCLUDE LAND DEVELOPMENT AND REDEVELOPMENT, PROVIDING PENALTIES FOR VIOLATION OF THIS ORDINANCE; REPEALING INCONSISTENT ORDINANCES OR PARTS OF ORDINANCES; PROVIDING FOR A SAVINGS CLAUSE; AND PROVIDING AN EFFECTIVE DATE

WHEREAS, the Township of East Norriton is a second class township governed by the East Norriton Code and the Second Class Township Code, 53 P.S. § 65101 *et seq.*; and

WHEREAS, the Second Class Township Code authorizes the Township to enact ordinances for the purpose of protecting the public health, safety, and welfare; and

WHEREAS, the Board of Supervisors has determined that a comprehensive stormwater management program is necessary to adequately address the needs of the Township and its citizens and to protect the public health, safety, and welfare.

NOW THEREFORE, be it, and it is hereby ORDAINED by the Board of Supervisors of the Township of East Norriton, Montgomery County, and it is hereby ENACTED and ORDAINED by authority of same as follows:

SECTION I. SHORT TITLE

This Ordinance shall be known and may be cited as the "East Norriton Township Stormwater Management Ordinance."

SECTION II. AMENDMENT TO EAST NORRITON TOWNSHIP CODE

The East Norriton Township Code is amended to add new Chapter 166 to read as follows:

§ 166-1. Statement of findings.

The governing body of the Township finds that:

- A. Inadequate planning and management of stormwater runoff resulting from land development redevelopment throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.
- B. A comprehensive program of stormwater management, including reasonable regulation of land development and redevelopment causing loss of natural infiltration, is fundamental to the public health, safety, and welfare and the protection of the people of the Township and all the people of the Commonwealth, their resources, and the environment.
- C. Inadequate maintenance of stormwater management best management practices (BMPs) contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases pollution of water resources.
- D. Reasonable regulation of connections and discharges to municipal separate storm sewer systems is fundamental to the public health, safety, and welfare and the protection of people of the Commonwealth, their resources, and the environment.
- E. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- 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 obtain a permit for stormwater discharges from their National Pollutant Discharge Elimination System (NPDES). Permittees are required to enact, implement, and enforce a prohibition of non-stormwater discharges to the permittee's regulated small municipal separate storm sewer systems (MS4s).

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

§ 166-2. Purpose.

The purpose of this chapter is to promote health, safety, and welfare within the Township and the Stony Creek/Saw Mill Run Watershed by minimizing the hazards and maximizing the benefits described in § 166-2 of this chapter through provisions designed to:

- A. Provide standards to meet NPDES MS4 permit requirements.
- B. Meet legal water quality requirements under state law, including regulations at 25 Pa. Code § 93.4a, to protect and maintain "existing uses" and maintain the level of water quality to support those uses in all streams and to protect and maintain water quality in "special protection" streams.
- C. Maintain the existing flows and quality of streams and watercourses.
- D. Reduce accelerated erosion, scour, aggradation and degradation of stream banks and streambeds.
- E. Maintain groundwater recharge, to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Manage stormwater runoff impacts at their source by regulating activities that cause the problems.
- G. Utilize and preserve the existing natural drainage systems as much as possible.
- H. Manage stormwater impacts close to the runoff source, which requires a minimum of structures and relies on natural processes.
- I. Provide performance standards and design criteria for watershed-wide stormwater management and planning.
- J. Provide for proper operation and maintenance of all stormwater management facilities and all stormwater management BMPs that are implemented within the Township.

- K. Provide for proper operation and maintenance of all permanent stormwater management facilities and BMPs that are implemented in the Township.
- L. Provide a mechanism to identify controls necessary to meet the NPDES permit requirements.
- M. Implement an illegal discharge detection and elimination program to address non-stormwater discharges into the Township's separate storm sewer system.

§ 166-3. Statutory authority.

The Township is empowered to regulate land use activities that affect stormwater impacts by the Act of October 1978, P.L. 864 (Act 167), the Stormwater Management Act, and the Act of July 31, 1968, P.L. 805 (Act 247), the Pennsylvania Municipalities Planning Code, as amended.

§ 166-4. Applicability.

- A. This chapter shall apply to all regulated activities within the Township and all activities within the Township that may affect stormwater runoff, including land development and earth disturbance activity, and all activities that may contribute non-stormwater discharges to the Township's separate storm sewer system, unless exempted by § 166-5 of this chapter.
- B. This chapter shall apply to all activities related to proper operation and maintenance of approved stormwater management BMPs.
- C. Earth disturbance activities and associated stormwater management facilities are also regulated under existing state law and implemented 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 article than state law.

§ 166-5. Exemptions.

- A. Subject to § 166-5.D of this chapter, the following activities are exempt from the stormwater management plan, volume controls, stormwater management district and peak rate control, and BMP operation and maintenance plan requirements of this chapter:

- (1) Agricultural plowing or tilling activities, home gardening, animal heavy use areas or timber harvesting activities, municipal composting activities, pavement resurfacing activities (including pavement removal and replacement in kind) or road maintenance activities.
- (2) Regulated activities that create up to 250 square feet of new impervious area. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria. Any areas that may be designed to initially be semi-pervious (e.g. gravel, crushed stone, etc.) shall be considered as impervious areas for the purpose of exemption evaluation.
- (3) Regulated activities that create up to 1,000 square feet of earth disturbance. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria.
- (4) Clearing and grubbing activities, including earth disturbances which are directly incidental to those clearing and grubbing activities. This exemption shall not apply to those clearing and grubbing activities performed in conjunction with another regulated activity.
- (5) Any maintenance to an existing stormwater management system made in accordance with plans and/or specifications approved by the Township or the Township Engineer.
- (6) 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 shall be submitted to the Township within two (2) days of the commencement of activity. If the Township 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.

B. Subject to § 166-5.D of this chapter, the following activities are exempt from the stormwater management plan, stormwater management district and peak rate control, and BMP operation and maintenance plan requirements of this chapter:

- (1) Regulated activities that create between 250 square feet and up to 2,000 square feet of new impervious area. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria. Any areas that may be designed to initially be semi-pervious (e.g. gravel, crushed stone, etc.) shall be considered as impervious areas for the purpose of exemption evaluation.
- (2) Regulated activities that create between 1,000 square feet and up to 2,000 square feet of earth disturbance. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria.

C. Subject to § 166-5.D of this chapter, the following activities are exempt from the stormwater management district and peak rate control requirements of this chapter:

- (1) Regulated activities that create between 2,000 square feet and up to 5,000 square feet of new impervious area. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria. Any areas that may be designed to initially be semi-pervious (e.g. gravel, crushed stone, etc.) shall be considered as impervious areas for the purpose of exemption evaluation.
- (2) Regulated activities that create between 2,000 square feet and up to 5,000 square feet of earth disturbance. For development taking place in stages, the entire development plan must be used in determining conformance with this criteria.

D. 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 directly to identified high quality (HQ) or exceptional value (EV) waters and Source Water Protection Areas (SWPAs) and requirements for nonstructural design sequencing
- (3) Existing Drainage Issues - If a drainage problem is documented or is otherwise known to exist downstream or if the proposed activity is expected to result in a drainage problem, then the Township may require the applicant to comply with this chapter.
- (4) Qualifying from an exemption from this chapter does not relieve the applicant from complying with other regulations.
- (5) Activities which are exempted from stormwater management plan requirements of this chapter by § 166-5.B, must meet the simplified drainage plan requirements given in Article III.

§ 166-6. Repealer.

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

§ 166-7. Severability.

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

§ 166-8. Compatibility with Other Requirements.

- A. Approvals issued and actions taken under this chapter do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation or chapter. 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.
- B. Nothing in this chapter shall be construed to affect any of the Township's requirements regarding stormwater matters which 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 Township chapters or regulations shall be construed to retain the requirements of this chapter addressing state water quality requirements.

§ 166-9. Erroneous Permit.

Any permit or authorization issued or approved based on false, misleading or erroneous information provided by the 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 Township purporting to validate such a violation.

ARTICLE I Definitions.

§ 166-10. Definitions and word usage.

- A. For the purposes of this article, certain terms and words used herein shall be interpreted as follows:
 - (1) 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 the feminine gender, and words of feminine gender include the masculine gender.
 - (2) 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.
 - (3) The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

B. As used in this article, the following terms shall have the meanings indicated:

ACCELERATED EROSION: The removal of the surface of the land through the combined action of human activities and the natural processes, at a rate greater than would occur because of the natural process alone.

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

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

CONSERVATION DISTRICT: The Montgomery County Conservation District.

DEP: The Pennsylvania Department of Environmental Protection.

DEVELOPER: As defined in § 175-8, and a person that seeks to undertake any regulated earth disturbance activities at a project site in the Township.

DEVELOPMENT: As defined in § 175-8, and see also "earth disturbance activity."

DEVELOPMENT SITE: The specific tract of land where any earth disturbance activities in the Township are planned, conducted or maintained.

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

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

EROSION AND SEDIMENT CONTROL PLAN: A plan for a project site which identifies BMPs to minimize accelerated erosion and sedimentation.

GROUNDWATER RECHARGE: Replenishment of existing natural underground water supplies.

IMPERVIOUS SURFACE: A surface that prevents the infiltration of water into the ground.

"Impervious surface" includes, but is not limited to, any roof, parking or driveway areas, and any new streets and sidewalks. Any surface areas designed to initially be gravel or crushed stone shall be assumed to be impervious surfaces. Any surface areas comprising paver patios or decks, including those which extend over otherwise pervious surfaces, shall be assumed to be impervious surfaces.

MUNICIPALITY: As defined in § 175-8, and see also "township."

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

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

PERSON: An individual, natural person, partnership, public or private association or corporation or a governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

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

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

REDEVELOPMENT: Earth disturbance activities on land which has previously been disturbed or developed.

REGULATED ACTIVITY: Any activity that may affect stormwater runoff and any activities that may contribute non-stormwater discharged to a regulated small municipal separate storm sewer system (MS4).

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

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.

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.

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

- (1) Each stream segment in Pennsylvania has a "designated use," such as "cold water fishery" or "potable water supply," which are listed in Chapter 93. These uses must be protected and maintained under state regulations.
- (2) "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.

- (3) Water quality involves the chemical, biological and physical characteristics of surface water bodies. After regulated earth disturbance activities are complete, these characteristics can be impacted by addition of pollutants such as sediment and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the streambank, streambed and structural integrity of the waterway, to prevent these impacts.

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

TOWNSHIP: East Norriton Township, Montgomery County, Pennsylvania.

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

WATERCOURSE: A channel or conveyance of surface water, such as a stream or creek, having defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

WATERSHED: A region or area drained by a river, watercourse or other body of water, whether natural or artificial.

ARTICLE II Stormwater Management Plan Requirements.

§ 166-11. Plan required.

For any of the regulated activities of 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 Township and an adequate erosion and sediment control plan review by the Conservation District. Activities which are exempted

from stormwater management plan requirements of this chapter by § 166-5.B must meet the simplified drainage plan requirements of § 166-12.A.

§ 166-12. Plan Contents.

A. A simplified drainage plan shall consist of general property information, a clear description of the proposed improvements, pertinent calculations and plans. All simplified drainage plan materials shall be submitted to the Township in a format that is clear, concise, legible, neat, and well organized otherwise, the simplified drainage plan shall not be accepted for review and shall be returned to the applicant. A simplified drainage plan shall include all of the following information:

- (1) General property information including the property street address, property area (in acres or square feet), the name of the current property owner along with their street address and current property zoning information.
- (2) Approximate property lines and roads within 100 feet of the project area.
- (3) A North arrow.
- (4) Existing streams, lakes, ponds or other waters of the Commonwealth.
- (5) Location of existing and proposed structures, driveways and any other impervious areas on the property. The plan must indicate the approximate dimensions and areas (in square feet) of each of these features.
- (6) Location of any existing or proposed on-site septic systems and/or potable water wells. The plan must indicate the approximate distance between these features and any proposed infiltration BMPs.
- (7) Separate calculations of the total existing pervious area and of the total proposed impervious area on the property.
- (8) Calculation of the total earth disturbance area for the project.
- (9) Show the location and construction of permanent stormwater BMPs. The Simplified Drainage Plan must describe the materials, dimensions and construction of each permanent stormwater BMP.
- (10) Proposed grading, including overland drainage patterns and swales.
- (11) Erosion and sediment controls.

B. A stormwater management plan shall consist of a general description of the project, including sequencing items, 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 plan materials shall be submitted to the Township in a format that is clear, concise, legible, neat, and well organized otherwise, the stormwater management plan shall not be accepted for review and shall be returned to the applicant. A following items shall be included in the stormwater management plan:

- (1) General.
 - (a) A general description of the project.
 - (b) A general description of the proposed stormwater 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.
- (2) Map(s). Map(s) of the project area shall be submitted on twenty-four (24) inch by thirty-six (36) inch sheets and/or prepared in a form that meets the requirements for recording at the offices of the Montgomery County Recorder of Deeds. If the East Norriton Township Subdivision and Land Development Ordinance (SALDO) has more stringent criteria than this chapter, than the more stringent criteria shall apply. The contents of the map(s) shall include, but not be limited to:
 - (a) Plans of the proposed stormwater drainage systems, including all storm drain pipes, manholes and inlets, runoff control devices and open drainage channels.
 - (b) Clear identification of the location and nature of permanent stormwater BMPs.
 - (c) The location of the project relative to highways, municipalities or other identifiable landmarks.
 - (d) Mapping of the watershed area or areas in which the proposed subdivision or land development is located (United States Coast and Geodetic Survey quadrangle map or similar).
 - (e) Existing and final contours at intervals of two (2) feet. In areas of steep slopes (greater than 15%), five foot contour intervals may be used.
 - (f) Existing streams, lakes, ponds or other waters of the Commonwealth within the project area.

- (g) Other physical features, including flood hazard boundaries, stream buffers, existing drainage courses, areas of natural vegetation to be preserved and the total extend of the upstream area draining through the site.
- (h) The locations of all existing and proposed utilities, sewers and water lines within fifty (50) feet of property lines.
- (i) Soil type names and boundaries.
- (j) Limits of earth disturbance, including the type and amount of impervious area that would be added.
- (k) Proposed changes to the land surface and vegetative cover.
- (l) Proposed structures, roads, paved areas and buildings.
- (m) 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.
- (n) The date of submission.
- (o) A graphic written scale of one (1) inch equals no more than fifty (50) feet; for tracts of 20 acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.
- (p) A North arrow.
- (q) The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
- (r) Existing and proposed land use(s).
- (s) A key map showing all existing man-made features beyond the property boundary that would be affected by the project.
- (t) Location of all open channels.
- (u) Overland drainage patterns and swales.
- (v) A fifteen (15) foot wide access easement around all stormwater management facilities that would provide ingress and egress from a public right-of-way.
- (w) The location of all existing and proposed drainage facilities and stormwater controls affecting the subject property.
- (x) The location of all erosion and sediment control facilities.
- (y) The location of the stormwater management district boundaries, as described in § 166-24 of this chapter, which are applicable to the site.
- (z) A plan showing the berm embankment and outlet structure. The plan shall indicate the top of the berm elevation, the top width of the berm, side slopes, the emergency spillway elevation, elevations of the outlet structure, including riser, and the dimensions and spacing of anti-seep collars.

- (aa) A cross section diagram through the outlet structure, emergency spillway and berm embankment.
- (bb) A detailed plan of the trash rack and anti-vortex device.
- (cc) An overall plan of the basin area, at a scale of one inch equals 40 feet or less, showing all grading and landscaping.
- (dd) A note on the plan indicating a proposed maintenance program for all stormwater management control facilities. This program must include the proposed ownership of the control facilities, the maintenance requirements for the facilities and the detail of the financial responsibility for the required maintenance period.
- (ee) 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.
- (ff) A statement, signed by the applicant, acknowledging that any revision to the approved stormwater management plan must be approved by the Township, and that a revised erosion and sediment control plan must be submitted to the Conservation District for a determination of adequacy.
- (gg) The following signature block for the design engineer:

"I, (design engineer), on this date (date of signature), hereby certify that the stormwater management plan meets all design standards and criteria of the East Norriton Township Stormwater Management Ordinance."

- (hh) Items required by the East Norriton Township Subdivision and Land Development Ordinance (SALDO).

C. Supplemental information to be submitted to the Township.

- (1) A written description of the following information shall be submitted by the applicant and shall include:
 - (a) The overall stormwater management concept for the project designed in accordance with this chapter. All existing drainage features which are to be incorporated in the design shall be so identified with an explanation of the operations of the facilities.
 - (b) Stormwater runoff computations for all points of runoff concentration before, during and after the development, including all supporting data, as specified in this chapter.

- (c) Design computations for sizing each outlet device.
 - (d) A stage-storage curve for each detention or retention basin.
 - (e) Flood routing and storage requirement calculations.
 - (f) Stormwater management techniques to be applied both during and after development.
 - (g) Expected project time schedule.
 - (h) Development stages or project phases, if so proposed. If the project is to be developed in stages, the entire project stormwater management plan shall be presented with the first stage, and appropriate stages for the drainage system shall be indicated, in accordance with DEP rules and regulations.
 - (i) An operations and maintenance plan in accordance with Article V of this chapter.
- (2) An erosion and sediment control plan.
 - (3) A description of the effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing Township stormwater collection system that may receive runoff from the project site.
 - (4) 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.

D. Stormwater Management Facilities.

- (1) All stormwater management facilities must be located on a plan and described in detail.
- (2) 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.
- (3) All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

§ 166-13. Submission Procedure.

Unless exempted by § 166-5 of this chapter, the Township shall require receipt of a complete stormwater management plan. For activities exempted by § 166-5.B of this chapter, the Township shall require receipt of a simplified drainage plan.

- A. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the complete stormwater management 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 Township's subdivision and land development process.
- C. For projects that require subdivision and land developing approval, the stormwater management plan shall be submitted by the applicant as part of the preliminary plan submission, where applicable for the regulated activity.
- D. For projects that do not require subdivision and land developing approval, see § 166-12 of this chapter.
- E. Submission of a stormwater management plan. The application shall be received by the Zoning Officer. The date of receipt shall be stamped and the filing fee received in full. A cursory examination of the application and stormwater management plan will be conducted.
- (1) Five (5) copies of the stormwater management plan shall be submitted, unless otherwise required by the Zoning Officer.
 - (2) The Zoning Officer shall keep one (1) copy and distribute copies to the following:
 - (a) The East Norriton Township Manager.
 - (b) The East Norriton Township Engineer.
 - (c) The Conservation District.
 - (d) The Montgomery County Planning Commission.

F. Submission of a simplified drainage plan. The application shall be received by the Zoning Officer. The date of receipt shall be stamped and the filing fee received in full. A cursory examination of the application and simplified drainage plan will be conducted.

- (1) Three (3) copies of the simplified drainage plan shall be submitted, unless otherwise required by the Zoning Officer.
- (2) The Zoning Officer shall keep one (1) copy and distribute copies to the following:
 - (a) The East Norriton Township Manager.
 - (b) The East Norriton Township Engineer.

§ 166-14. Plan Review.

A. The Township Engineer shall review the stormwater management plan or simplified drainage plan for consistency with this chapter and the Stony Creek/Saw Mill Run Act 167 Stormwater Management Plan. Any found incomplete shall not be accepted for review and shall be returned to the applicant.

B. The Township Engineer shall review the stormwater management plan for any subdivision or land development against the East Norriton Township Subdivision and Land Development Ordinance (SALDO) provisions not otherwise superseded by this chapter.

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

D. For activities regulated by this chapter, the Township Engineer shall notify the applicant and the Township in writing within thirty (30) calendar days, whether the stormwater management plan is consistent with the requirements of this chapter.

- (1) If the Township Engineer determines that the stormwater management plan is consistent with the requirements of this chapter, the Township Engineer shall forward a letter of consistency to the Township who will then forward a copy to the applicant.
- (2) If the Township Engineer determines that the stormwater management plan is inconsistent or noncompliant with the requirements of this chapter, the Township Engineer shall forward a

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

- E. For regulated activities under this chapter that require an NPDES permit application, the applicant shall forward a copy of the Township Engineer's letter stating that the stormwater management plan is consistent with the requirements of the East Norriton Township Stormwater Management Ordinance to the Conservation District. DEP and the Conservation District may consider the Township Engineer's review comments in determining whether to issue a permit.
- F. The Township shall not grant preliminary or final approval to any subdivision or land development for regulated activities if the stormwater management plan has been found by the Township Engineer to be inconsistent with the requirements of this chapter. All required permits from DEP must be obtained prior to approval of any subdivision or land development.
- G. No building permits for any regulated activities shall be approved by the Township if the stormwater management plan has been found to be inconsistent with the requirements of this chapter, as determined by the Township Engineer and Conservation District, or without considering the comments of the Township Engineer and Conservation District. All required permits from DEP must be obtained prior to issuance of a building permit.
- H. The applicant shall be responsible for completing record drawings of all stormwater management facilities included in the approved stormwater management plan. The record drawings and an explanation of any discrepancies with the design plans shall be submitted to the Township Engineer for final approval. In no case shall the Township approve the record drawings until the Township receives a copy of an approved declaration of adequacy and/or highway occupancy permit from the PennDOT district office, NPDES permit, and any other applicable permits or approvals from DEP or the Conservation District. The above permits and approvals must be based on the record drawings.

I. The Township's approval of a stormwater management plan shall be valid for a period not to exceed five (5) years commencing on the date that the Township signs the approved stormwater management plan. If stormwater management facilities included in the approved stormwater management plan have not been constructed, or if constructed, record drawings of these facilities have not been approved within this five (5) year time period, then the Township may consider the stormwater management plan inconsistent or noncompliant and may revoke any and all permits. Stormwater management plans that are determined to be inconsistent or noncompliant by the Township shall be resubmitted in accordance with this chapter.

§ 166-15. Modification of Plans.

A. A modification to a submitted stormwater management plan under review by the Township for a development site that involves the following shall require the resubmission to the Township of a modified stormwater management plan consistent with § 166-14 of this chapter and be subject to review as specified in § 166-15 of this chapter:

- (1) Change in stormwater management facilities or techniques;
- (2) Relocation or redesign of stormwater management facilities;
- (3) Soil or other conditions are not as stated on the stormwater management plan as determined by the Township Engineer.

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

§ 166-16. Resubmission of Inconsistent or Noncompliant Plans.

An inconsistent or noncompliant stormwater management plan may be resubmitted with the revisions addressing the Township Engineer's concerns documented in writing. It must be addressed to the Township in accordance with § 166-14 of this chapter, distributed accordingly, and be subject to review as specified in § 166-15 of this chapter. The applicable Township review and inspection fee must accompany a resubmission of an inconsistent or noncompliant stormwater management plan.

ARTICLE III Stormwater Management Requirements.

§ 166-17. General Requirements.

A. All regulated activities, unless exempted by § 166-5 of this chapter, within the Township shall be designed, implemented, operated and maintained to meet the purpose of this article, through these elements:

- (1) Erosion and sediment control during the earth disturbance activities (e.g. during construction).
- (2) Water quality protection measures after completion of earth disturbance activities (e.g. after construction), including operations and maintenance.
- (3) Providing facilities and best management practices to reduce the runoff volume, in accordance with § 166-22 of this chapter.
- (4) Providing facilities and best management practices to meet stormwater management district and peak rate control requirements, in accordance with § 166-23 and § 166-24 of this chapter.
- (5) Providing a complete plan for the continued operations and maintenance of stormwater management facilities and best management practices during and after construction, in accordance with Article V of this chapter.

B. For all regulated activities, unless preparation of a stormwater management plan is exempted by § 166-5 of this chapter:

- (1) Preparation of an approved stormwater management plan is required.
- (2) No regulated activities shall commence until the Township issues written approval of a stormwater management plan that demonstrates compliance with the requirements of this chapter.

C. Erosion and sediment control during regulated earth disturbance activities shall be addressed as required by § 166-20 of this chapter.

D. A copy of the stormwater management plan approved by the Township shall be on-site throughout the duration of the regulated activity.

- E. For all regulated earth disturbance activities, erosion and sediment (E&S) 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 Stream Law. Various BMPs and their design standards are listed in the Erosion and Sediment Control Program Manual (E&S Manual)², No. 363-2134-008 (April 15, 2000), as amended and updated.
- F. Techniques described in Appendix A (Low-Impact Development Practices) of this chapter are encouraged, because they reduce the costs of complying with the requirements of this chapter and the state water quality requirements.
- G. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s) by the developer. Such stormwater flows shall be subject to the requirements of this chapter.
- H. 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.
- I. Storage facilities should completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm.
- J. For all regulated activities, stormwater management BMPs shall be 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.
- K. All stormwater detention/retention facilities and sedimentation control measures shall be in place and functioning prior to the creation of any impervious surface.
- L. Any term not specifically defined in this chapter or in the East Norriton Township Subdivision and Land Development Ordinance (SALDO) shall have the meaning set forth in the latest edition of Urban Hydrology for Small Watersheds, Technical Release 55, and the National Engineering Handbook, Section 4, Hydrology.
- M. Various BMPs and their design standards are listed in the BMP Manual¹.

N. Hardship waiver procedure.

- (1) The Township may hear requests for waivers where it is alleged that the stormwater management provisions of this chapter inflict unreasonable or undue hardship upon the applicant. The waiver request shall be in writing to the Township. The applicant shall fully document the nature of the alleged hardship.
- (2) The Township Board of Supervisors may grant a waiver from the stormwater management provisions, provided that all of the following findings are made in a given case:
 - (a) That there are unique physical circumstances or conditions including irregularity of lot size or shape, or exceptional topographic or other physical conditions peculiar to the particular property, and that the unreasonable or undue hardship is due to such conditions and not the circumstances or conditions generally created by the provisions applicable to the stormwater management district in which the property is located.
 - (b) That because of such physical circumstances or conditions, there is no possibility that the property can be developed in strict conformance with the stormwater management provisions of this chapter and that the authorization of a waiver is therefore necessary to enable the reasonable use of the property.
 - (c) That such unreasonable or undue hardship has not been created by the applicant.
 - (d) That the waiver, if authorized, will represent the minimum waiver that will afford relief and will represent the least modification possible of the regulations as set forth.
- (3) In granting any waiver, the municipality may attach such reasonable conditions and safeguards as it may deem necessary to implement the purposes of Pennsylvania Act 167.

O. Stormwater hotspots.

- (1) 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, infiltration requirements shall not apply to development sites that fit into the hotspot category (the runoff volume must be managed using appropriate methods). Second, a greater level of stormwater management 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.

Below is a list of examples of designated hotspots:

- (a) Vehicle salvage yard 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, as defined by the Resource Conservation and Recovery Act of 1976.
 - (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 hotspot:
- (a) Residential streets and rural highways.
 - (b) Residential development.
 - (c) Institutional development.
 - (d) Office development.
 - (e) Nonindustrial rooftops.
 - (f) Pervious surfaces, 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 plans adequately protect groundwater.

P. Extreme caution shall be exercised where infiltration is proposed in SWPAs as defined by the local municipal or water authority.

Q. Infiltration facilities shall be used in conjunction with other innovative or traditional BMPs, stormwater control facilities, and nonstructural stormwater management alternatives.

- R. Extreme caution shall be exercised where salt or chloride (municipal salt storage) would be a pollutant since soils do little to filter this pollutant, and it may contaminate the groundwater. The qualified design professional shall evaluate the possibility of groundwater contamination from the proposed infiltration facility and perform a hydrogeologic justification study if necessary.
- S. The infiltration requirement in HQ or EV waters shall be subject to the Department's Chapter 93 Anti-Degradation Regulations.
- T. An impermeable liner will be required in detention basins where the possibility of groundwater contamination exists. A detailed hydrogeologic investigation may be required by the Township.
- U. The Township shall require the applicant to provide safeguard against groundwater contamination for land uses that may cause groundwater contamination should there be a mishap or spill.
- V. BMP operations and maintenance requirements are described in Article V of this chapter.

§ 166-18. Permit Requirements of Other Government Entities.

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

- A. All regulated earth disturbance activities subject to permit requirements by DEP under regulations at 25 Pa. Code 102.
- B. Work within natural drainageways subject to permit by DEP under 25 Pa. Code 105.
- C. Any stormwater management facility that would be located in or adjacent to surface waters of the commonwealth, including wetlands, subject to permit by DEP under 25 Pa. Code 105.
- D. Any stormwater management facility that would be located on a state highway right-of-way or would require access from a state highway shall be subject to approval by the Pennsylvania Department of Transportation (PennDOT).

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

§ 166-19. Erosion and Sediment Control During Regulated Earth Disturbance Activities

- A. No regulated earth disturbance activities within the Township shall commence until approval by the Township of an erosion and sediment control plan for construction activities.
- B. The DEP has regulations that require an erosion and sediment control plan for any earth disturbance activity of 5,000 square feet or more, under 25 Pa. Code 102.4(b).
- C. In addition, under 25 Pa. Code, Chapter 92, a DEP NPDES construction activities permit is required for regulated earth disturbance activities.
- D. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office or Conservation District must be provided to the Township. The issuance of an NPDES construction permit (or permit coverage under the statewide general permit (PAG-2)) satisfies the requirements of Subsection A.
- E. A copy of the erosion and sediment control plan and any required permit, as required by DEP regulation, shall be available at the project site at all times.

§ 166-20. Water Quality Requirements after Earth Disturbance Activities.

- B. No regulated earth disturbance activities within the Township shall commence until approval by the Township of a plan which demonstrates compliance with state water quality requirements after construction is complete.
- C. The BMPs must be designed, implemented and maintained to meet state water quality requirements and any other more stringent requirements as determined by the Township.

D. To control postconstruction stormwater impacts from regulated earth disturbance activities, state water quality requirements can be met by BMPs, including site design, which provide for replication of preconstruction stormwater infiltration and runoff conditions, so that postconstruction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters. As described in the DEP Comprehensive Stormwater Management Policy (#392-0300-002, September 28, 2002), this may be achieved by the following:

- (1) Infiltration: replication of preconstruction stormwater infiltration conditions;
- (2) Treatment: use of water quality treatment BMPs to ensure filtering out of the chemical and physical pollutants from the stormwater runoff; and
- (3) Streambank and streambed protection: management of volume and rate of postconstruction stormwater discharges to prevent physical degradation of receiving waters (e.g., from scouring).

E. The DEP has regulations that require municipalities to ensure design, implementation and maintenance of best management practices (BMPs) that control runoff from new development and redevelopment after regulated earth disturbance activities are complete. These requirements include the need to implement postconstruction stormwater BMPs with assurance of long-term operations and maintenance of those BMPs.

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

§ 166-21. Volume Controls.

The low impact development practices provided in the BMP Manual shall be utilized for all regulated activities to the maximum extent practicable. Unless exempted from meeting volume control requirements by § 166-5 of this chapter, water volume controls shall be implemented using the Design Storm Method in Subsection A or the Simplified Method in Subsection B below. For regulated activities equal or less than one (1) acre that do not require hydrologic routing to design the stormwater facilities, this Ordinance 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 frequency, 24-hour duration precipitation.
- (2) For modeling purposes:
 - (a) Existing (pre-development) non-forested pervious areas must be considered meadow in good condition.
 - (b) 20% 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 1 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 (1) inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow (i.e. the first one (1) inch of runoff 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 one half (0.5) inch of the permanently removed runoff shall be infiltrated.
 - (a) 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 investigation of subgrade stability; infiltration may not be ruled out without conducting these tests.

- (b) 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.
- (c) Design the infiltration structure for the required retention (Re_v) volume based on field determined capacity at the level of the proposed infiltration surface.
- (d) If on-lot infiltration structures are proposed by the developer, it must be demonstrated to the Township that the soils are conducive to infiltrate on the lots identified.

§ 166-22. Stormwater Management Districts.

A. Management of stormwater management districts.

- (1) In order to implement the provisions of the Stony Creek/Saw Mill Run Act 167 Stormwater Management Plan, developed by the Montgomery County Planning Commission with input from the Montgomery County municipalities and adopted by the Montgomery County Commissioners, dated June 1, 1991 (hereinafter the "Stony Creek Plan"), the Township is hereby divided into stormwater management districts, consistent with the designated watersheds for the Stony Creek/Saw Mill Run Watershed Release Rate Map developed and adopted by the Montgomery County Planning Commission, dated October 1991 (hereinafter the "Release Rate Map"). The boundaries of the stormwater management districts are shown on an official map which, along with the Stony Creek Plan and the Release Rate Map, is incorporated herein by reference and all of which are available for inspection at the Township administrative offices.
- (2) Three broad categories of stormwater management districts, namely the Release Rate District, the Provisional No-Detention District and the One-Hundred-Percent Release Rate District, shall be applied in the Township.

B. Categories of districts. The stormwater management districts are hereinafter divided into three groups or categories as follows:

- (1) Release-Rate District. Within a given district, the post-development peak rate of stormwater runoff must be controlled to the stated percentage of the pre-development peak rate of stormwater runoff in order to protect downstream watershed areas. There are numerous Release Rate Districts which differ in the extent to which post-development stormwater runoff must be

controlled. The release rates range from 50% to 100% and a specific release rate for each district is shown on the Release Rate Map and the Stony Creek Plan.

- (2) Provisional No-Detention District. These watershed areas may discharge post-development peak stormwater runoff without detention without adversely affecting the total watershed peak flow. In certain instances, however, the local conveyance facilities, which transport stormwater runoff from the site to the main channel, may not have adequate capacity to safely transport increased peak flows associated with no-detention for a proposed development. In those instances, the developer shall either use a one-hundred-percent release rate control or provide increased capacity of downstream drainage elements to convey increased peak flows. In determining if adequate capacity exists in the local watershed drainage network, the developer must assume that the entire local watershed is developed per the existing current Chapter 205, Zoning, and that all new development would use the runoff controls specified within this chapter.
- (3) One-Hundred-Percent Release Rate District. This is an area that should use a one-hundred-percent release rate control to protect the areas downstream of the development site. A one-hundred-percent release rate control would result in the post-development peak rate stormwater runoff being controlled to the predevelopment level, as further defined in this chapter.

§ 166-23. Stormwater Management District Implementation Provisions

- A. Compliance with release-rate criteria. Any stormwater management controls required by this chapter and subject to release rate criteria (50% to 100%) shall meet the applicable release rate criteria for each of the two-, five-, ten-, twenty-five-, fifty- and one-hundred-year return period runoff events consistent with the calculation methodology set forth in this chapter.
- B. Boundary criteria. The exact location of the stormwater management district boundaries as they apply to a given development within the Township shall be determined by mapping the boundaries using a two-foot topographic contours provided as part of the stormwater management plan. The district boundaries as originally drawn on the Stony Creek Plan coincide with topographic divides or, in certain instances, are drawn from the intersection of the watercourse and a physical feature such as the confluence with another watercourse or a potential flow obstruction (road, culvert, bridge, etc.) to the topographic divide consistent with topography.

- C. Downstream capacity analysis criteria. Any downstream capacity analysis conducted in accordance with this chapter shall use the following criteria for determining adequacy for accepting peak flow rates:
- (1) Natural or man-made channels or swales must be able to convey the increased runoff associated with a two-year return period event within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP Erosion and Sediment Pollution Control Program Manual, latest edition.
 - (2) Natural or man-made channels or swales must be able to convey the increased twenty-five year return period runoff peak within their banks or to otherwise not create any hazards to persons or property.
 - (3) Culverts, bridges or storm sewers or any other facilities that must pass or convey flows from the tributary area must have sufficient capacity to pass or convey the increased flows associated with the twenty-five year return period event, except for facilities located within a designated floodplain area that must be capable of passing or conveying the one hundred year return period runoff. Any facilities that constitute stream enclosures per DEP's Chapter 105 regulations shall be designed to convey the one hundred year return period runoff.
- D. Single release-rate criteria. For a proposed development site located within a single release-rate category area, the total runoff from the site shall meet the applicable release rate criteria. For development sites with multiple point of concentrated runoff discharge, individual drainage points may be designed for up to a one-hundred percent release rate, so long as the total runoff from the site is controlled to the applicable release rate.
- E. Two or more release-rate criteria. For a proposed development site located within two or more release-rate category areas, the total runoff that may be discharged at any point is limited to the pre-development peak rate of runoff at that point multiplied by the applicable release rate. The control rates shall apply regardless of any grading modifications that may change the drainage area that discharges to a given point.
- F. Locations of mixed categories. For proposed development sites located partially within a release rate category area and partially within a provisional no-detention area, in no event shall a significant portion of the site area subject to the release rate be drained to the discharge point(s) located in the no-detention area.

G. No-harm option. For any proposed development site not located in a provisional no-detention district, the developer has the option of using a less restrictive runoff control (including no detention) if the developer can prove that no harm would be caused by discharging at a higher runoff rate than that specified by the plan. Proof of no harm must be shown from the development site through the remainder of the downstream drainage network to the confluence of the Stony Creek or Saw Mill Run with the Schuylkill River. Proof of no harm must be shown using the capacity criteria specified in § 166-24.J of this chapter is the downstream capacity analysis is a part of the no-harm justification. Any no-harm justifications shall be submitted by the developer as part of the stormwater management plan submission. Attempts to prove no harm based upon downstream peak flow versus capacity analysis shall be governed by the following provisions:

- (1) The peak flow values to be used for the downstream areas for the design return period storms (two-year, five-year, ten-year, twenty-five-year, fifty-year and one-hundred-year) shall be the values from the calibrated Penn State Runoff Model (PSRM) for the Stony Creek/Saw Mill Run Watershed. These flow values would be supplied to the developer by the Township Engineer upon request.
- (2) Any available capacity in the downstream conveyance system as documented by a developer may be used by the developer only in proportion to his development site acreage relative to the total upstream undeveloped acreage from the identified capacity (i.e. if the developer's site is 10% of the upstream undeveloped acreage, the developer may use up to 10% of the documented downstream available capacity.).
- (3) Developer-proposed runoff controls that would generate increased peak flow rates at documented storm drainage problem areas would, by definition, be precluded from successful attempts to prove no harm, except in conjunction with proposed capacity improvements for the problem areas consistent with 166-24.J of this chapter.

H. Individual lots within a subdivision. When a site is proposed to be subdivided for the sale and development of lots on an individual basis, either by the subdividing party or other party, the subdividing party shall, as part of the subdivision proposal, show all provisions for stormwater control, in accordance with the requirements of this chapter.

I. Regional or subregional detention alternatives. For certain regions within the watershed, it may be more cost effective to provide one control facility for an entire subarea, group of subareas or portion

of a subarea incorporating more than one development site plan to provide an individual control facility for each development site. The initiative and funding for any regional or subregional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. "Hydrologic Model" refers to the calibrated Stony Creek/Sawmill Run version of the Penn State Runoff Model as developed for the requirements of this chapter.

J. Capacity Improvements.

- (1) In certain instances, primarily within the provisional no-detention and provisional 100% release rate category areas, local drainage conditions may dictate more stringent levels of runoff control than those based upon protection of the entire watershed. In these instances, if the developer could prove that it would be feasible to provide capacity improvements to relieve the capacity deficiency in the local drainage network, then the capacity improvements could be provided by the developer in lieu of development controls on the development site. Any capacity improvements would be designed based upon the development of all areas tributary to the proposed improvement and the capacity criteria specified in 166-24.C of this chapter. In addition, all new development upstream of a proposed capacity improvement shall be assumed to implement the applicable runoff controls consistent with this chapter except that all new development within the entire subarea(s) within which the proposed development site is located shall be assumed to implement the developer's proposed discharge control, if any.
- (2) Capacity improvements may also be provided as necessary to implement any regional or subregional detention alternatives or to implement a modified no-harm option which proposes specific capacity improvements to document the validity of a less stringent discharge control that would not create any harm downstream.

§ 166-24. Calculation Methodology.

- A. Approved methodology. 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. The Township may allow the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres. The Soil

Complex Method shall be used for drainage areas greater than 200 acres. The following computation methods may be selected by the design professional, based on the individual limitations and suitability of each method for a particular use:

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

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 the PennDOT Drainage Manual (Publication 584). 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 twenty-four (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.

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 number (CN) or Rational "c" value (i.e. woods) as presented in the PennDOT Drainage Manual (Publication 584).

- D. All calculations using the Rational Method shall use the 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 the PennDOT Drainage Manual (Publication 584).
- F. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from the PennDOT Drainage Manual (Publication 584).
- 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 the PennDOT Drainage Manual (Publication 584).
- 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. Basin Designs. The design of any stormwater detention facilities intended to meet the requirements of this chapter shall be verified by routing the design storm hydrograph through the facilities using the Storage-Indication Method. The storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The Township 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. For basins designed using the modified Rational Method technique, the detention volume shall, at a minimum, equal the volume derived from the approximate routing process as contained in SCS Technical Release Number 55 (TR-55).
- J. Freeboard requirements. All stormwater detention facilities shall provide a minimum of one (1) foot freeboard above the maximum pool elevation associated with the two-year through twenty-five-year events. An emergency spillway shall be designed to pass the one-hundred-year runoff event with a minimum six (6) inch freeboard.

§ 166-25. Other Requirements.

A. General.

- (1) The developer shall construct and/or install such drainage structures as necessary to:
 - (a) Prevent erosion damage and to satisfactorily carry off or detain and control the rate of release of surface waters.
 - (b) Encourage all runoff control measures to percolate the stormwater into the ground to aid in the recharge of groundwater.
 - (c) Carry surface water to the nearest adequate street, storm drain, detention basin, natural watercourse or drainage facility.
 - (d) Take surface water from the bottom of grades, to lead water away from springs and to avoid excessive use of cross gutters at street intersections and elsewhere.
 - (e) Control the anticipated peak discharge from the property being subdivided or developed and the existing runoff contributed from all land at higher elevation in the same watershed.
 - (f) Maintain the adequacy of the natural stream channels. Accelerated bank erosion shall be prevented by controlling the rate and velocity of runoff discharge to these watercourses so as to avoid increasing the occurrence of streambank overflow.
 - (g) Preserve the adequacy of existing culverts and bridges by suppressing the new flood peaks created by new land development.
- (2) If, in the course of preparing or reviewing the stormwater management plan, the Township determines that off-site improvements are necessary to satisfactorily control the stormwater from the proposed development, the developer shall be responsible for the off-site improvements.
- (3) All stormwater detention/retention facilities and erosion and sedimentation control measures shall be in place and functioning prior to the creation of any impervious surface.
- (4) Any term not specifically defined in this § 166-11 or in the Subdivision and Land Development Ordinance of East Norriton Township shall have the meaning set forth in the latest edition of Urban Hydrology for Small Watersheds, Technical Release 55, and the National Engineering Handbook, Section 4, Hydrology.

B. Retention of existing watercourses and natural drainage features.

- (1) Whenever a watercourse, stream or intermittent stream is located within a development site, it shall remain open in its natural state and location and shall not be piped. However, if the streambanks are of excessive slope (steeper than 3:1), it shall be the responsibility of the developer to improve the streambanks along the watercourse.
- (2) The existing points of natural drainage discharge onto adjacent property shall not be altered without the written approval of the affected landowners in form satisfactory to the Township Solicitor.
- (3) No stormwater runoff or natural drainage shall be so diverted as to overload existing drainage systems or create flooding or the need for additional drainage structures on other private properties or public lands.

C. Requirements for drainage structures and/or pipes.

- (1) Drainage easements. Drainage easements to accommodate all storm drainage requirements shall be a minimum of 20 feet in width and shall be offered for dedication to the Township. Easements shall be provided for all improved watercourses and storm drainage piping that are not located within street rights-of-way.
- (2) Storm drainage pipe. The minimum diameter of all storm drainage pipe shall be 18 inches or an equivalent with equal area. No storm drainage piping shall be permitted under buildings. The minimum grade of piping shall be reinforced concrete and conform to Pennsylvania Department of Transportation specifications. All joints shall be mortared.
- (3) Stormwater detention/retention. The following criteria shall be used for design of retention/detention areas. Any reference to detention basin shall also include retention basin.
 - (a) The design of stormwater detention areas shall be based upon criteria set forth in the latest edition of Urban Hydrology for Small Watersheds, Technical Release 55, and the National Engineering Handbook, Section 4, Hydrology, as published by the United States Department of Agriculture, Soil Conservation Service, as revised.
 - (b) Detention areas shall be designed so that the time and rate of runoff from the site, when developed at its maximum potential use or development, will not exceed the rate of runoff for the stormwater management district in which the site is located. Further definitions and limitations affecting the rate of runoff are set forth within the Stony Creek Plan and Release Rate Map for the particular stormwater management districts.

- (c) Discharge from detention basins and from detention areas shall be designed to control the time and rate of runoff as referred to in § 166-26.C(3)(b) above and also as set forth within the stormwater management district and within the Stony Creek Plan.
- (d) If permanent ponds are used, the developer shall demonstrate, by a report to be submitted by a Commonwealth of Pennsylvania registered certified professional engineer, that such ponds are designed to protect the public health and safety.
- (e) Prior to the granting of final approval of any subdivision or land development plan, the Township must be satisfied through contractual arrangements that all stormwater facilities will be properly maintained.
- (f) When detention basins are provided, they shall be designed to utilize the natural contours of the land wherever possible. When such design is impracticable, the construction of the basin shall utilize slopes as flat as possible to blend the structure into the terrain. All basins shall have slopes of four horizontal to one vertical or less.
- (g) Detention basins shall be designed so that they return to normal conditions within 12 hours after the termination of the storm, unless the Township Engineer finds that downstream conditions may warrant other design criteria for stormwater release.
- (h) Emergency overflow facilities (emergency spillways) shall be provided for all detention facilities.
- (i) If the land of the proposed subdivision or land development will be conveyed to two or more separate owners, the developer shall provide written assurance and deed restrictions to the Township that the detention basins will be properly maintained by the owners.
- (j) The detention basin area will be enclosed by a four-foot-high chain link fence (green) or an equal approved by the Township Engineer constructed along the berm of the basin. A double gate shall be provided for access of maintenance equipment.
- (k) In all cases, the bottom of the detention basin shall be provided with a pipe underdrain and outletted from the basin.

D. Design criteria.

- (1) Stormwater release rate.
 - (a) For a proposed development site located within a single Release Rate District, the total stormwater runoff from the site shall meet the applicable release rate criteria. For a development site with multiple points of concentrated stormwater runoff discharge,

- individual drainage points may be designed for up to a one-hundred-percent release rate, so long as the total stormwater runoff from the site is controlled to the applicable release rate.
- (b) For a proposed development site located within two or more Release Rate Districts, the maximum peak rate of stormwater runoff that may be discharged at any point is limited to the predevelopment peak rate of runoff at that point, multiplied by the applicable release rate. The control rates shall apply regardless of any grading modifications that may change the drainage area that discharges to a given point.
 - (c) For a proposed development site located partially within a Release Rate District and partially within a Provisional No-Detention District, in no event shall a significant portion of the site area subject to the release rate control be drained to the discharge points located in the no-detention area.
- (2) The following rainfall intensities shall be used for the twenty-four-hour Type II distribution storm with average antecedent moisture conditions for the frequencies shown:
- (a) Two-year frequency: 3.16 inches.
 - (b) Five-year frequency: 3.91 inches.
 - (c) Ten-year frequency: 4.57 inches.
 - (d) Twenty-five-year frequency: 5.60 inches.
 - (e) Fifty-year frequency: 6.53 inches.
 - (f) One-hundred-year frequency: 7.63 inches.
- (3) All developments shall limit the rate of stormwater runoff as previously set forth within this chapter to be in strict conformance with the Stony Creek Plan and this section.
- (4) The increased stormwater runoff which may result from subdivision or land development shall be controlled by permanent stormwater runoff control measures and facilities. The design for such facilities is as follows:
- (a) For the two-, five- and ten-year storm frequencies, the control facility must achieve the required release rate as set forth in this section and within the Stony Creek Plan.
 - (b) For storms greater than a ten-year storm frequency, but up to and including the one-hundred-year storm frequency, the control facility must achieve a release rate of 100%.
- (5) An overflow system shall be provided to carry runoff to the detention basin when the capacity of the storm drainage pipe system is exceeded. The overflow system shall have sufficient capacity to carry runoff difference between the one-hundred-year-storm peak flow rate and the capacity of the storm drain pipe. The one-hundred-year-storm peak shall be calculated by the Soil Cover Complex Method or by an equal method as may be approved by the Township Engineer.

- (6) Detention basins shall be designed to facilitate regular maintenance, mowing and periodic desilting and reseedling. Basins shall not be located within floodplains or floodplain soils. In residential subdivisions and residential developments, shallow broad basins shall be used.
- (7) If the side slopes of the basin area exceed 3:1 over at least a five-foot area, a four-foot-high chain link fence (green) shall be required. The fence should be located on the outside of the berm or slope. Plantings as required in this section shall be located next to the fence on the outside to soften appearance. If the side slopes are less than 3:1, no fencing is required.
- (8) The minimum top width of the detention basin berm shall be 10 feet. A cutoff trench (keyway) comprised of impervious material shall be provided under all embankments that require fill material. The cutoff trench shall be a minimum of eight feet wide and two feet deep and have side slopes of 1:1.
- (9) In order to ensure proper drainage on the floor of the basin, a minimum grade of 2% shall be maintained for grassed areas. For concrete channel flow, a minimum grade of 1% shall be maintained.
- (10) All detention/retention basin embankments shall be placed in a maximum of eight-inch concrete lifts to a minimum of 95% of maximum dry density as established by the American Society for Testing and Materials D-1557. Prior to proceeding to the next lift, the compaction shall be checked by the Township Engineer or Soils Engineer. Compaction test will be run on the leading and the trailing edge of the berm as well as the top of the berm.
- (11) Whenever possible, the emergency spillway for detention basins shall be constructed on undisturbed ground. In situations where the spillway is constructed within a fill area, the emergency spillways shall be constructed of reinforced concrete checker blocks. All emergency spillways shall be constructed so that the detention basin berm is protected against erosion. The minimum capacity of all emergency spillways shall be the peak flow rate from the one-hundred-year design storm after development. The construction material of the emergency spillway shall extend along the upstream and downstream berm embankment slopes. The upstream edge of the emergency spillway shall be a minimum of three feet below the spillway crease elevation. The downstream slope of the spillway shall, as a minimum, extend to the toe of the berm embankment. The emergency spillway shall not discharge over earth fill and/or easily erodible material.
- (12) All stormwater management detention facilities shall provide a minimum one foot of freeboard above the maximum pool elevation associated with the storm event. Any emergency spillway shall be designed to pass the one-hundred-year after-construction stormwater runoff event with

a minimum one foot of freeboard from the design flow elevation in the emergency spillway to the top of a settled detention basin embankment.

- (13) Antiseep collars shall be installed around the pipe barrel within the normal saturation zone of the detention basin berms. The antiseep collars and their connections to the pipe barrel shall be watertight. The antiseep collars shall extend a minimum of two feet beyond the outside of the principal pipe barrel. The maximum spacing between collars shall be 14 times the minimum projection of the collar measured perpendicular to the pipe. A minimum of two antiseep collars shall be installed on each pipe outlet.
- (14) All outlet pipes through the basin berm shall be reinforced concrete pipe having O-ring joints. All joints shall be mortared.
- (15) Energy dissipating devices, including, but not limited to riprap and endwalls, shall be placed at all basin outlets.
- (16) During construction, a perforated riser pipe shall be provided at each outlet of all detention basin for sediment control. The riser shall be constructed of metal or concrete. The riser shall extend to a maximum elevation of two feet below the crest elevation of the emergency spillway. The perforated riser shall be designed so that the rate of outflow is controlled by the pipe barrel through the basin berm when the depth of water within the basin exceeds the height of the riser. Circular perforations with a maximum diameter of 1 1/2 inches shall be spaced eight inches vertically and 12 inches horizontally on the upper 2/3 of the pipe. The perforations shall be cleanly cut and shall not be susceptible to enlargement. All metal risers shall be coated to prevent rust. A trash rack or similar appurtenances shall be provided to prevent debris from entering the riser. All risers shall have a concrete base attached with a watertight connection. The base shall be of sufficient weight to prevent flotation of the riser. An antivortex device, consisting of a thin vertical plat normal to the basin berm, shall be provided on the top of the riser.
- (17) All drainage channels shall be designed to prevent erosion of the bed and banks. The maximum permissible flow velocity shall not exceed those outlined in the following table. Suitable stabilization shall be provided where required to prevent erosion of the drainage channels. Allowable Water Velocities shall be as follows:
 - (a) Well-established grass on good soil, Short pliant bladed: 5 to 6 feet per second.
 - (b) Well-established grass on good soil, Bunch grass, soil exposed: 2 to 4 feet per second.
 - (c) Well-established grass on good soil, Stiff-stemmed grass: 2 to 3 feet per second.
 - (d) Earth without vegetation, Fine sand and silt: 1 to 2 feet per second.
 - (e) Earth without vegetation, Ordinary firm loam: 2 to 3 feet per second.

- (f) Earth without vegetation, Stiff clay: 3 to 5 feet per second.
 - (g) Earth without vegetation, Clay and gravel: 4 to 5 feet per second.
 - (h) Earth without vegetation, Coarse gravel: 4 to 5 feet per second.
 - (i) Earth without vegetation, Soft shale: 5 to 6 feet per second.
 - (j) Shoulders, Earth: (see Earth without vegetation entry above).
 - (k) Shoulders, Stabilized: 6 feet per second.
 - (l) Shoulders, Paved: 10 to 15 feet per second.
- (18) All vegetated drainage channels shall have a maximum side slope grade of three horizontal to one vertical.
- (19) Because of the critical nature of vegetated drainage channels, the design of all vegetated drainage channels shall, as a minimum, conform to the design procedures outlined in the Pennsylvania Department of Environmental Resources Erosion and Sediment Control Handbook (April 1990 or as further revised).
- (20) Access ramps (for maintenance equipment) shall be 12 feet in width and have a maximum slope of 12 1/2% for all detention/retention basins. These ramps shall be constructed of concrete checker blocks on a six-inch compacted layer of PennDOT No. 2A coarse aggregate or approved equal.
- (21) The following standards shall apply to underground detention basins:
- (a) All underground storage shall be constructed of approved culvert pipes or concrete vaults. No storage shall be permitted within the voids of stone bedding.
 - (b) All underground storage pipes shall meet the requirements of storm drainage pipe as outlined in § 166-26.C(2) and § 166-26.L. All underground vaults shall have a minimum wall thickness of eight inches and be designed to withstand the anticipated vehicular loads.
 - (c) If an underground detention basin is to be privately owned, operated, and maintained, underground storage pipes may be constructed of a material other than reinforced concrete. The pipe and material shall meet all applicable PennDOT standards and shall be subject to the approval of the Township Engineer. The applicant shall provide satisfactory documentation on the strength, durability and installation requirements of the proposed material.
 - (d) All pipes, regardless of material, shall be installed on a six-inch stone bedding. The remaining backfill shall be of crushed stone if required by the manufacturer's specification or the Township Engineer.

- (e) All parts of an underground detention basin shall lie completely outside and be adequately separated from proposed or existing public rights-of-way, utility easements, foundations, wetlands and floodplains, woods and landscaping, or other sensitive areas.
- (f) The design of underground detention basins shall provide for complete access for regular cleaning and inspection. The design shall incorporate an emergency spillway or other fail-safe means of addressing overflow conditions.

E. General storm and surface drainage.

- (1) All subdivisions and land development plans shall include methods to withhold and release stormwater at a controlled rate onto adjacent property.
- (2) Lots shall be laid out and graded to provide positive drainage away from buildings.
- (3) Storm sewers, culverts and related installations shall be provided to:
 - (a) Permit the unimpeded flow of natural watercourses in such a manner as to protect the natural character of the watercourses and to provide regulated discharge.
 - (b) Ensure adequate drainage of all low points along the line of streets.
 - (c) Intercept stormwater runoff streets at intervals reasonably related to the extent and grade of the area drained and to prevent substantial flow of water across intersections.
- (4) Storm sewers are required and shall be placed in the right-of-way parallel to the roadway. When located in undedicated land, they shall be placed within an easement not less than 20 feet wide.
- (5) Manholes shall be spaced not more than 300 feet apart on pipe sizes up to and including 24 inches in diameter and not more than 450 feet apart for pipe sizes greater than 24 inches in diameter. Inlets may be substituted for manholes, on approval by the Township Engineer, at the same spacing as required for manholes. In no case shall inlets be spaced more than 450 feet apart. Manholes or inlets shall be provided at all changes of direction of storm sewer piping.
- (6) Inlets and manhole cover frames shall conform to Pennsylvania Department of Transportation specifications. At street intersections, inlets shall be placed in the tangent and not in the curved portion of the curbing. Manhole covers shall have the word "STORM" cast in two-inch-high letters on the top of the cover.
- (7) Stormwater roof drains and sump pumps shall not discharge water directly onto a sidewalk or a street and shall be constructed to discharge wholly to a storm sewer system.

- (8) Drainage structures which drain watershed areas in excess of 1/2 square mile (320 acres) or which have a span of eight feet or more shall be designed for a maximum expected runoff as calculated using the Soil Conservation Service Technical Release 55, Urban Hydrology for Small Watersheds (Less Than 2,000 Acres). The design storm shall be a minimum one-hundred-year storm. A water obstruction and encroachment permit shall be obtained from the Pennsylvania Department of Environmental Resources or a waiver from the Pennsylvania Department of Environmental Resources for all waterway openings prior to final plan approval. The cartway width over a structure shall be as wide as the widest road connecting with the structure, or, if the character of the road is expected to change for the future planning, the cartway over the structure shall be made to anticipate this condition.

F. Storm sewer design.

(1) Storm frequency.

- (a) Design flow rate. The storm drain system shall be designed to carry the ten-year peak flow rate. The design ten-year peak flow rate into each inlet shall be indicated on the stormwater drainage plan. The ten-year flow rate shall be determined by the rational formula.

$$Q = C \cdot I \cdot A$$

Where: Q	=	Peak runoff rate measured in cubic feet per section (CFS).
C	=	Runoff coefficient. The coefficient of stormwater runoff includes many variables such as ground slope, ground cover, shape of drainage area, etc.
I	=	Intensity. Average rainfall intensity in inches per hour for a time equal to the time of concentration.
A	=	Area (drainage area in acres).

- (b) Overflow system. An overflow system shall be provided to carry flow to the detention basin when the capacity of the storm drain pipe system is exceeded. The overflow system shall be of sufficient capacity to carry the difference between the one-hundred-year and ten-year peak flow rates.

G. Storm duration.

- (1) A five-minute storm duration shall be used if the duration does not result in a maximum expected discharge that exceeds the capacity of a thirty-inch pipe.
- (2) If a five-minute storm duration results in a pipe size exceeding 30 inches, the time of concentration approach shall be used in determining storm duration.
- (3) If a five-minute storm duration results in a pipe size exceeding 30 inches, within any run of pipe, the time of concentration approach may be used for the sizing of pipes from that point on by adjusting the time of concentration.

H. Additional design criteria. Additional design criteria for specific drainage facilities are required as follows:

- (1) Shoulders in cut areas (without swales).
 - (a) Water flowing in the shoulder shall not encroach more than 2/3 of the shoulder width during a ten-year-frequency storm of five-minute duration.
 - (b) The maximum velocity as determined by Manning's Equation shall not exceed the allowable velocities as shown in § 166-26.D(17) for the specific type of shoulder material.
 - (c) Inlets shall be provided to control the shoulder encroachment and water velocity.

I. Swales adjacent to shoulders.

- (1) When swales are provided in cut areas, the water shall not encroach upon the roadway area during a ten-year-frequency storm of five-minute duration.
- (2) The maximum velocity as determined by Manning's Equation shall not exceed the allowable velocities as shown in § 166-26.D(17) for the specific type of swale material.

J. Curbed sections.

- (1) The maximum encroachment of water on the roadway pavement shall not exceed three inches in depth at the curblines or 1/2 of a vehicular travel lane during a ten-year-frequency storm of five-minute duration.
- (2) Inlets shall be provided to control the encroachment of water on the pavement.

K. Inlets.

- (1) When there is a change in pipe size in the inlet, the elevation of the top of pipes shall be the same or the smaller pipe higher. A minimum drop of two inches shall be provided at the inlet pipe invert elevation and the outlet pipe invert elevation.
- (2) If the capacity of the shoulder, swale, curb section or depressed median section is less than the inlet capacity, the shoulder, swale, curb section or depressed medial section capacity shall govern inlet spacing.
- (3) Inlet capacities shall be based on a maximum flow of 5.0 cubic feet per section.

L. Storm pipes.

- (1) To facilitate the solution of Manning's Equation as applied to storm pipes, charts are presented in Design Charts for Open Channel Flow, prepared by the United States Department of Commerce, as last revised, which permit a direct determination of the capacity of circular pipes.
- (2) Where headroom is restricted, equivalent pipe arches may be used in lieu of circular pipe.
- (3) The minimum diameter of storm pipe shall be 18 inches.
- (4) Inlets or manholes shall be placed at changes in vertical or horizontal direction of pipe.
- (5) Pipe shall be designed with a slope such that the minimum velocity of 2.5 feet per second will be attained; however, the slope shall not be less than 0.5%.
- (6) All inlets, manholes and piping shall be designed to provide a minimum of 1.0 feet of freeboard at all inlets and manholes. The stormwater piping system shall be designed to meet inlet and outlet control.
- (7) All pipes shall be designed to have a minimum of 18 inches of cover over the bell of the pipe.
- (8) Subbase and U-drains in combination with six-inch pipe U-drains and/or combination storm sewers and U-drains shall be installed on roadways where the finished roadway grade is within one foot of the seasonal high water table as designated for the soils by the Montgomery County Soil Survey.
- (9) All plans showing the proposed storm sewer construction must be accompanied by complete design submitted by the registered engineer.
- (10) When subdivisions or land development are submitted to the Township for approval in sections a complete storm sewer design for the proposed subdivision and land development shall be submitted. The proposed design must include the entire tract and not a portion.

- (11) If only a section of a subdivision or land development is contemplated for construction, the engineer shall show how he proposes to handle stormwater from this section in order to prevent damage to adjacent properties. If temporary construction is required, the engineer shall include such structures in the plans submitted.
- (12) In the event that such temporary measures cannot ensure protection to adjacent properties, then the main outfall line of the storm sewer shall be included as part of the construction for the proposed section.

M. Stormwater basin landscaping. It is the intent of this section to conserve the value of land and buildings on surrounding properties and neighborhoods by mitigating the visual impact of stormwater management facilities, and to minimize soil erosion. Landscaping shall be required in and around all stormwater management facilities with a minimum surface area of 1,000 square feet. Basins may be natural or maintained as described below. A planting plan shall be submitted in accordance with the one of the following two types of landscape treatments for stormwater basins:

- (1) Landscaping for naturalized basins. The following shall apply to basins left in a natural state, especially those in parks or large open spaces:
 - (a) Basin floors. Basin floors shall be planted with wildflowers and grasses, the intent being to create a mixed meadow of such plantings, where appropriate. Selection of plantings should be based on whether the area in question is usually well-drained or permanently wet.
 - (b) Wet edges. Wet edges which remain wet all or most of the year shall be planted with wildflowers, grasses and shrubs tolerant of wet conditions. Plants to be located on rims or banks which remain dry most of the year should be planted with species tolerant to dry soil conditions.
 - (c) Wooded areas.
 - (i) Where basins adjoin wooded areas, trees and shrubs shall be selected and planted so as to blend with existing surroundings.
 - (ii) Plantings in such areas shall be of sufficient density to eliminate the need for mowing.
 - (d) Slopes.
 - (i) Where slopes are 30% or less, a mixture of wildflowers and/or grasses shall be planted.
 - (ii) No woody plant materials or trees shall be located on a berm acting as the impoundment structure of a detention/retention basin. Trees shall be located

around the perimeter of the downstream side of a berm a sufficient distance from the toe of the slope to assure that the toe of the slope is outside the dripline of the mature species planted.

- (2) Landscaping for maintained basins. The following shall be applied for basins in developed areas where a manicured lawn is possible. Lawn mowing shall take place at intervals sufficient to maintain the grass ground cover at no higher than six inches.
 - (a) Basin floors and slopes. Basin floors and slopes shall be planted with lawn grass and maintained as a lawn with a height of not more than six inches.
 - (b) Wet areas. Low areas subject to prolonged wet conditions, such as low-flow channels or areas with poor drainage, shall be stabilized to allow mowing and prevent erosion. Such stabilization may include geotextile fabrics or other porous materials such as grass pavers or PVC stabilizers.
 - (c) Drainage structures in residential districts. Embankments surrounding drainage structures, such as head- or endwalls, are to be planted with shrubs or ornamental trees along the top of the structure. Shrubs shall be planted three feet apart.
 - (d) No trees shall be located on a berm acting as the impoundment structure of a detention/retention basin. Trees shall be located around the perimeter of the downstream side of a berm a sufficient distance from the toe of the slope to assure that the toe of the slope is outside the dripline of the mature species planted.

ARTICLE IV Operation and Maintenance.

§ 166-26. Responsibilities of Developers and Landowners.

- A. The BMP Operations and maintenance plan for the project site shall establish responsibilities for the continuing operation and maintenance of all permanent stormwater 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 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 BMPs shall be the responsibility of the owner or private management entity.

- B. Stormwater Management BMPs should be inspected by the landowner, or the owner's designee (including the Township for dedicated and owned facilities), according to the following list of minimum frequencies:
- (1) Annually for the first five (5) years following construction;
 - (2) Once every three (3) years after;
 - (3) During or immediately after the cessation of a 10-year or greater storm.
- C. The Township shall make the final determination on the continuing maintenance responsibilities prior to final approval of the stormwater management plan. The Township may require a dedication of such facilities as part of the requirements of the approved stormwater management plan. Such a requirement is not an indication that the Township will accept the facilities. The Township reserves the right to accept or reject ownership and operating responsibility for any portion of the stormwater management controls.
- D. Facilities, areas, or structures used as Stormwater Management BMPs shall be enumerated as permanent real estate appurtenances and recorded as deed restrictions or conservation easements that run with the land.
- E. Operation and Maintenance (O&M) Plans for stormwater management approved pursuant to 25 Pa. Code § 102 after the date of this chapter shall be recorded as a restrictive deed covenant that runs with the land.
- F. In the absence of an Operation and Maintenance Plan or an Operation and Maintenance Agreement, the property owner is responsible for operation and maintenance (O&M), including periodic inspections, of privately owned stormwater management BMPs.
- G. The Township may take enforcement actions against an owner for any failure to satisfy the provisions of this chapter.

§ 166-27. Municipal Review of BMP Operations and Maintenance.

- A. The Township shall review the BMP operations and maintenance plan for consistency with the purposes and requirements of this article and any permits issued by the DEP.

- B. The Township shall notify the applicant, in writing, whether the BMP operations and maintenance plan is approved.
- C. The Township may require an as-built survey of all stormwater BMPs and an explanation of any discrepancies with the operations and maintenance plan.

§ 166-28. Adherence to approved BMP Operations and Maintenance Plan Required.

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

§ 166-29. Operation and Maintenance Agreements.

- A. Prior to completing construction of a stormwater management site plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement covering all stormwater control facilities which are to be privately owned. The agreement shall be substantially the same as the agreement in Appendix B of this chapter.
 - (1) The owner, successor and assigns shall operate and maintain all facilities in accordance with the approved schedule(s) in the O&M Agreement.
 - (2) The owner shall convey to the Township conservation easements to assure access for periodic inspections by the Township and maintenance, as necessary.
 - (3) The owner shall keep on file with the Township the name, address, and telephone number of the person or company responsible for operation and maintenance activities. In the event of a change, new information shall be submitted by the owner to the Township within ten (10) working days of the change.
- B. The owner is responsible for operation and maintenance (O&M) of the stormwater management BMPs. If the owner fails to adhere to the O&M Agreement, the Township may perform the services required and charge the owner appropriate fees. Nonpayment of fees may result in a lien against the property.

§ 166-30. Easements.

- A. Stormwater management easements are required for all areas used for off-site stormwater control, unless a waiver is granted by the Township.
- B. Stormwater management easements shall be provided by the property owner if necessary for access for inspections and maintenance or for preservation of stormwater runoff conveyance, infiltration, and detention areas and other BMPs by persons other than the property owner. The purpose of the easement shall be specified in any agreement under § 166-30.

§ 166-31. Recording of Approved Plans and Agreements.

- A. The owner of any land upon which permanent BMPs will be placed, constructed or implemented, as described in the 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 BMP operations plan by the Township:
 - (1) The operations and maintenance plan, or a summary thereof.
 - (2) Operations and maintenance agreements under § 166-30.
 - (3) Easements under § 166-31.
- B. The Township may suspend or revoke any approvals granted for the project site upon discovery of the failure of the owner to comply with this section.

§ 166-32. Municipal Stormwater BMP Operation and Maintenance Fund.

- A. If stormwater BMPs are accepted by the Township for dedication, the Township may require persons installing stormwater BMPs to pay a specified amount to the Municipal Stormwater BMP Operation and Maintenance Fund, to help defray costs of operations and maintenance activities. The amount may be determined as follows:
 - (1) If the BMP is to be owned and maintained by the Township, the amount shall cover the estimated costs for operations and maintenance for 10 years, as determined by the Township.
 - (2) The amount shall then be converted to present worth of the annual series values.

- B. If a BMP is proposed that also serves as a recreation facility (e.g., ball field, lake), the municipality may adjust the amount due accordingly.

ARTICLE V Prohibitions.

§ 166-33. Prohibited Discharges and Connections.

- A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-stormwater discharge including sewage, process wastewater, and wash water to enter a regulated small municipal separate storm sewer system (MS4) or to enter the waters of this Commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into a regulated small MS4, or discharges into waters of this Commonwealth, which are not composed entirely of stormwater, except (1) as provided in Subsection C below and (2) discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution in a regulated small municipal separate storm sewer system (MS4) or to the waters of this Commonwealth:
- (1) Water line flushing.
 - (2) Discharges from potable water sources.
 - (3) Landscape irrigation.
 - (4) Lawn watering.
 - (5) Irrigation water.
 - (6) Diverted stream flows.
 - (7) Flow from riparian habitats and wetlands.
 - (8) Rising ground waters.
 - (9) Uncontaminated groundwater infiltration (as defined at 40 CFR 35.205(20)).
 - (10) Uncontaminated pumped groundwater.
 - (11) Springs.
 - (12) Foundation or floating drains.
 - (13) Footing drains.
 - (14) Air conditioning condensation.

- (15) Water from crawl space pumps.
- (16) Water from individual residential car washing.
- (17) Dechlorinated swimming pool discharges.
- (18) Pavement (street) wash water, 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.
- (19) Discharges from firefighting activities.
- (20) Routine external building wash down (which does not use detergents or other compounds).

D. In the event that either the Township or DEP determines that any of the discharges identified in Subsection C significantly contribute pollutants to a regulated small MS4 or to the waters of the Commonwealth, the Township or DEP will notify the responsible person(s) to cease the discharge.

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

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

G. The following connections are prohibited, except as provided in Subsection C above:

- (1) 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.
- (2) Any drain or conveyance connected from a commercial or industrial land use to the separate storm sewer system which has not been documented in plans, maps, or equivalent records and approved by the Township.

§ 166-34. Roof Drains and Sump Pumps.

A. Roof drains and sump pumps shall not be connected to streets, sanitary or storm sewers or roadside ditches, except as provided in § 166-34.B of this chapter.

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

§ 166-35. Alterations of BMPs.

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

ARTICLE VI Enforcement and Penalties.

§ 166-36. Right-of-Entry.

- A. Upon presentation of proper credentials, the Township may enter at reasonable times upon any property within the Township to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this chapter.
- B. BMP owners and operators shall allow persons working on behalf of the Township ready access to all parts of the premises for the purposes of determining compliance with this chapter.
- C. Persons working on behalf of the Township shall have the right to temporarily locate on any BMP in the Township such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMP.
- D. Unreasonable delays in allowing the Township access to a BMP are a violation of this chapter.

§ 166-37. Inspections.

- A. The DEP or its designees (e.g., Conservation District) normally ensure compliance with any permits issued, including those for stormwater management. In addition to DEP compliance programs, the Township or its designee may inspect all phases of the construction, operations, maintenance and any other implementation of stormwater BMPs.
- B. During any stage of the regulated earth disturbance activities, if the Township or its designee determines that any BMPs are not being implemented in accordance with this article, the Township may suspend or revoke any existing permits or other approvals until the deficiencies are corrected.

§ 166-38. Enforcement.

It is unlawful for any person to modify, remove, fill, landscape, or alter any approved Stormwater Management BMPs, facilities, area, or structures without the written approval of DEP or a delegated Conservation District and the Township.

§ 166-39. Suspension and Revocation.

- A. Any approval or permit issued by the Township may be suspended or revoked for:
 - (1) Non-compliance with or failure to implement any provision of an approved stormwater management plan or O&M Agreement.
 - (2) A violation of any provision of this chapter or any other applicable law, chapter, rule or regulation relating to a Regulated Activity.
 - (3) The creation of any condition or commission of any act which constitutes or creates a hazard, nuisance, pollution, or endangers the life or property of others.
- B. A suspended approval may be reinstated by the Township when:
 - (1) The Township has inspected and approved the correction to the violations that caused the suspension.
 - (2) The Township is satisfied that the violation has been corrected.

- C. An approval that has been revoked by the Township cannot be reinstated. The applicant may apply for a new approval under the provisions of this chapter.
- D. If a violation causes no immediate danger to life, public health, or property, at its sole discretion the Township may provide a limited time period for the owner to correct the violation. In these cases, the Township will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the Township may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this chapter.

§ 166-40. Penalties.

- A. Anyone violating the provisions of this chapter shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not more than \$1,000.00 for each violation, recoverable costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.
- B. In addition, the Township 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.

§ 166-41. Appeals.

- A. Any person aggrieved by any action of the Township or its designee, relevant to the provisions of this chapter, may appeal to the Township within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Township, relevant to the provisions of this Chapter, may appeal to the County Court of Common Pleas in Montgomery County within thirty (30) days of the Township's decision.

ARTICLE VII Fees and Expenses.

§ 166-42. General.

- A. Fees shall be established by the Township to defray plan review and construction inspection costs incurred by the Township. All fees shall be paid by the owner at the time of the stormwater management plan submission. A review and inspection fee schedule shall be established by resolution of the Board of Supervisors based on the size of the regulated activity and based on the Township's costs for reviewing stormwater management plans, BMP operations and maintenance plans, and conducting inspections. The Township shall periodically update the review and inspection fee schedule to ensure that review costs are adequately reimbursed.
- B. For projects that require subdivision and land development approval, the fees required by this chapter shall not be applicable, but the fees required by § 175-51 shall be applicable.
- C. For projects that do not require subdivision and land development approval, see § 166-43 of this chapter.
- D. Expenses covered by fees.
 - (1) Administrative/clerical processing.
 - (2) Review of the stormwater management plan and/or the BMP operations and maintenance plan.
 - (3) Review of BMP operations and maintenance agreement.
 - (4) Attendance at meetings.
 - (5) Site inspections, including, but not limited to, pre-construction meetings, inspections during the construction of stormwater management facilities, BMPs or other drainage improvements during construction, and final inspection of all such improvements upon completion of the work.
 - (6) Any additional work required to enforce any permit provisions regulated by this chapter, correct violations and assure proper completion of stipulated remedial actions.
- E. The engineering fees and other fees required to be paid by this chapter shall be promptly paid to the Township by the Owner upon the submission of bills thereof to the owner by the Township from time to time, as such fees are billed to the Township by its Engineer or other professional consultants or as

determined by the Township in the case of Township employees. Failure to promptly pay any such fee shall result in the revocation of stormwater management plan approval

- F. To the engineering and other fees required to be paid to the Township by this chapter, there shall be added the sum of 5%, which the owner shall pay to the Township as reimbursement to the Township of the costs incurred by the Township for the collection of such fees and the disbursement of the same to the Township Engineer and other professional consultants.

- G. At the time of submission of the simplified drainage plan or stormwater management plan, the applicant or developer shall deposit a cash escrow with the Township to cover costs, fees and expenses (for purposes of this section "review fees"), including but not limited to engineering and legal fees incurred during the review and approval process of stormwater management plans.

ARTICLE VIII References.

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

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

- C. Pennsylvania Department of Transportation. Publication 284 (2010), as amended and updated. PennDOT Drainage Manual. Harrisburg, PA.

SECTION III. REPEALER

Any and all terms, conditions and provisions of this Ordinance or Resolution of the Township of East Norriton in conflict with the terms, conditions and provisions of this Ordinance are hereby repealed to the extent of such conflict.

SECTION IV. SEVERABILITY

The terms, conditions, and provisions of this Ordinance are hereby declared to be severable, and, should any portion, part or provision of this Ordinance be found by a court of competent jurisdiction to be invalid, unenforceable or unconstitutional, the East Norriton Township Board of Supervisors hereby

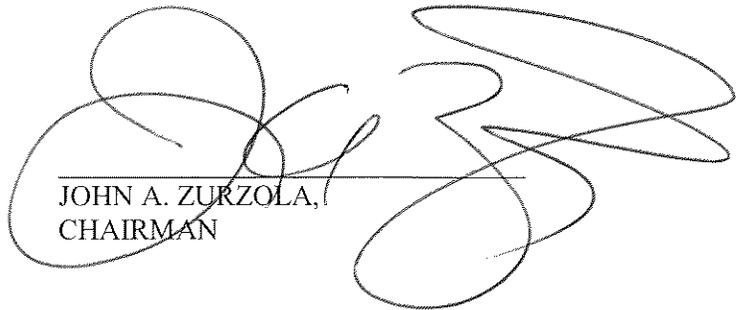
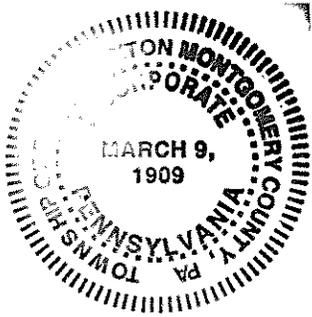
declares its intent that the Ordinance shall have been enacted without regard to the invalid, unenforceable, or unconstitutional portion, part or provision of this Ordinance.

SECTION V. EFFECTIVE DATE

This Ordinance shall be effective five (5) days after enactment by the Board of Supervisors of the Township of East Norriton.

ORDAINED AND ENACTED, by the Board of Supervisors of the Township of East Norriton, Montgomery County, Commonwealth of Pennsylvania, this 25th day of March, 2014.

EAST NORRITON BOARD OF SUPERVISORS



JOHN A. ZURZOLA,
CHAIRMAN

ATTEST:



DONALD DELAMATER,
SECRETARY