

EAST NANTMEAL TOWNSHIP

**STORMWATER MANAGEMENT,
GRADING &
EROSION CONTROL
ORDINANCE**

**Ordinance No. 2023-01
Enacted April 12, 2023**

**EAST NANTMEAL TOWNSHIP
CHESTER COUNTY, PENNSYLVANIA**

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ARTICLE I – GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known as the “East Nantmeal Township Stormwater Ordinance.”

Section 102. Statement of Findings

The Board of Supervisors of East Nantmeal Township finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from land disturbance and development throughout a watershed increases flooding, flows and velocities, contributes to erosion and sedimentation, overtaxes the capacity of streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces infiltration and groundwater recharge, increases nonpoint source pollution to waterways, and threatens public health and safety.
- B. Inadequate planning and management of stormwater runoff resulting from land disturbance and development throughout a watershed can harm surface water resources by changing the natural hydrologic patterns, accelerating stream flows (which increase scour and erosion of stream beds and stream banks, thereby elevating sedimentation), destroying aquatic habitat, and elevating aquatic pollutant concentrations and loadings such as sediments, nutrients, heavy metals, and pathogens. Groundwater resources are also impacted through loss of recharge.
- C. A comprehensive program of stormwater management, including minimization of impacts of New Development, Redevelopment, and other Earth Disturbance Activities causing accelerated runoff and erosion and loss of natural infiltration, is fundamental to the public health, safety, and general welfare of the people of the East Nantmeal Township and all of the people of the Commonwealth, their resources, and the environment.
- D. Stormwater is an important water resource that provides infiltration and groundwater recharge for water supplies and baseflow of streams, which also protects and maintains surface water quality.
- E. Impacts from stormwater runoff can be minimized by reducing the volume of stormwater generated and by using project designs that maintain the natural hydrologic regime and sustain high water quality, infiltration, stream baseflow, and aquatic ecosystems. Cost-effective and environmentally sensitive stormwater management can be achieved through the use of nonstructural Site design techniques that minimize Impervious Surfaces, reduce disturbance of land and natural resources, avoid sensitive areas (i.e., riparian buffers, floodplains, steep slopes, wetlands, etc.), and consider topography and soils to maintain the natural hydrologic regime.

- F. Public education on the control of pollution from stormwater is an essential component in successfully addressing stormwater.
- G. Non-stormwater discharges to municipal or other storm sewer systems can contribute to pollution of the Waters of the Commonwealth.
- H. The use of green infrastructure, low impact development (LID), and Conservation Design (CD) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices, LID, and CD contribute to the restoration or maintenance of pre-development hydrology.

Section 103. Purpose

The purpose of this Ordinance is to protect public health, safety and general welfare, property and water quality by implementing drainage and stormwater management practices, criteria, and provisions included herein for land development, construction and Earth Disturbance Activities, to achieve the following throughout the East Nantmeal Township:

- A. Reduce the frequency and magnitude of flooding and stormwater impacts affecting people, property, infrastructure and public services.
- B. Sustain or improve the natural hydrologic characteristics and water quality of groundwater and surface waters.
- C. Protect natural resources, including riparian and aquatic living resources and habitats.
- D. Maintain the natural hydrologic regime of Land Development Sites and their receiving watersheds.
- E. Minimize land disturbance and protect and incorporate natural hydrologic features, drainage patterns, infiltration, and flow conditions within land development Site designs.
- F. Reduce and minimize the volume of stormwater generated, and manage and release stormwater as close to the source of runoff as possible.
- G. Provide infiltration and maintain natural groundwater recharge to protect groundwater supplies and stream baseflows, prevent degradation of surface water and groundwater quality, and to otherwise protect water resources.
- H. Reduce stormwater pollutant loads to protect and improve the chemical, physical, and biological quality of ground and surface waters.
- I. Reduce scour, erosion and sedimentation of stream channels.

- J. Reduce flooding impacts and preserve and restore the natural flood-carrying capacity of streams and their floodplains.
- K. Protect adjacent and downgradient lands from adverse impacts of direct stormwater discharges.
- L. Minimize Impervious Surfaces and connected Impervious Surfaces to promote infiltration and reduce the volume and impacts of stormwater runoff.
- M. Provide proper long-term operation and maintenance of all permanent stormwater management facilities, BMPs and Conveyances that are implemented within the East Nantmeal Township.
- N. Reduce the impacts of runoff from existing developed land undergoing Redevelopment while encouraging New Development and Redevelopment in urban areas and areas designated for growth.
- O. Provide stormwater management performance standards and design criteria on a per watershed basis.
- P. Meet legal water quality requirements under State law, including regulations at 25 PA Code Chapter 93, to protect, maintain, reclaim and restore the existing and designated uses of the Waters of the Commonwealth.
- Q. Provide review procedures and performance standards for stormwater planning and management. Provide performance standards and design criteria based on watershed-based stormwater management planning.
- R. Fulfill the purpose and requirements of PA Act 167 (PA Act 167, Section 3):
 - “(1) Encourage planning and management of storm water runoff in each watershed which is consistent with sound water and land use practices.*
 - (2) Authorize a comprehensive program of stormwater management designated to preserve and restore the flood carrying capacity of Commonwealth streams; to preserve to the maximum extent practicable natural storm water runoff regimes and natural course, current and cross-section of water of the Commonwealth; and to protect and conserve ground waters and ground-water recharge areas.*
 - (3) Encourage local administration and management of storm water consistent with the Commonwealth's duty as trustee of natural resources and the people's constitutional right to the preservation of natural, economic, scenic, aesthetic, recreational and historic values of the environment.”*
- S. Provide standards to meet certain NPDES stormwater permit requirements.

Section 104. Statutory Authority

The East Nantmeal Township is empowered or required to regulate land use activities that affect runoff and surface and groundwater quality and quantity by the authority of:

- A. Act of October 4, 1978, P.L. 864 (Act 167) 32 P.S., Section 680.1, et seq., as amended, the “Storm Water Management Act” (hereinafter referred to as “the Act”);
- B. Second Class Township Code, 53 P.S. Sections 65101, et seq.; and
- C. Act of July 31, 1968, P.L. 805, No. 247, 53 P.S. Section 10101, et seq., as amended, the Pennsylvania Municipalities Planning Code, Act 247 hereinafter referred to as the “MPC”).

Section 105. Applicability

A. Scope

- 1. All Regulated Activities as defined in this Ordinance including, but not limited to, New Development, Redevelopment, and Earth Disturbance Activities that are located within the East Nantmeal Township shall be subject to regulation by this Ordinance.
- 2. The provisions of Article VIII, Prohibitions are applicable on a Township-wide basis to all existing as well as proposed drains, Conveyances and/or discharges.
- 3. This ordinance contains the stormwater management performance standards and design criteria that are necessary from a watershed-based perspective. The Municipality’s stormwater management Conveyance and system design criteria (e.g., inlet spacing, inlet type, collection system design and details, outlet structure design, etc.) shall continue to be regulated by the applicable municipal ordinance(s) and applicable State regulations.
- 4. When a building and/or grading permit is required for any Regulated Activity on an existing parcel or approved lot created by a subdivision and/or improved as a Land Development project, issuance of the permit shall be conditioned upon adherence to the terms of this Ordinance.

B. Duty of Persons Engaged in a Regulated Activity

Notwithstanding any provision(s) of this Ordinance, including exemptions, any Landowner or any person engaged in a Regulated Activity, including but not limited to the alteration or development of land, which may affect stormwater runoff characteristics, shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures also shall include actions as are required to manage the rate, volume, direction, and quality of resulting stormwater runoff in a manner which otherwise adequately protects health, property, and water quality of Waters of the Commonwealth.

C. Phased and Incremental Project Requirements

1. Any Regulated Activity that is to take place incrementally or in phases, or in sequential projects shall be subject to regulation by this Ordinance based on the Regulated Impervious Surface or Earth Disturbance that exceeds the corresponding threshold for exemption (as presented in Table 106.1, “Thresholds for Regulated Activities that are exempt from the provisions of this Ordinance as listed below”).
2. The date of adoption of this Ordinance shall be the starting point from which to consider tracts as parent tracts relative to future subdivisions, and from which Impervious Surface and Earth Disturbance computations shall be cumulatively considered.

For example:

If, after adoption of this Ordinance, an Applicant proposes construction of a six hundred (600) square foot garage, that project would be exempt from the requirements of this Ordinance as detailed in Table 106.1. If, at a later date, an Applicant proposes to construct a seven hundred (700) square foot addition on the same property, the Applicant would then be required to implement the requirements of a Minor Stormwater Plan per this Ordinance based on the cumulative total of one thousand three hundred (1300) square feet of additional Impervious Surface. If, at yet a later date, an Applicant proposes to construct a nine hundred (900) square foot pole building on the same property, the Applicant would then be required to implement the SWM Site Plan requirements of this Ordinance for the cumulative total of two thousand two hundred (2200) square feet of additional Impervious Surface. And so on.

Section 106. Exemptions and Minor Stormwater Plans/Modified Requirements

A. Requirements for Exempt Activities

1. An exemption from certain requirements of this Ordinance shall not relieve the Applicant from implementing all other applicable requirements of this Ordinance.
2. An exemption shall not relieve the Applicant from implementing such measures as are necessary to protect property, water quality and public health, safety, and welfare.
3. An exemption shall not relieve the Applicant from complying with the requirements for State-designated special protection waters designated by PADEP as high quality (HQ) or exceptional value (EV) waters, or any other current or future State or municipal water quality protection requirements.
4. An exemption under this Ordinance shall not relieve the Applicant from complying with all other applicable municipal ordinances or regulations.

B. General Exemptions

Regulated Activities that:

- i. Involve less than one thousand (1,000) square feet of Regulated Impervious Surfaces AND less than five thousand (5,000) square feet of Earth Disturbance; or
- ii. Are listed in Subsection 106.C,

are exempt from those (and only those) requirements of this Ordinance that are included in the sections and articles listed in Table 106.1. Exemptions are for the items noted in Table 106.1 only and shall not relieve the Landowner from other applicable requirements of this Ordinance. Exemption shall not relieve the Applicant from implementing such measures as are necessary to protect health, safety, and welfare, property, and water quality.

C. Exemptions for Specific Activities

The following specific regulated activities are exempt from the requirements of Sections 301, 304, 305, 306, 307, 308, 309, and Article IV, Article V, Article VI and Article VII of this Ordinance (as shown in Table 106.1), unless otherwise noted below. All other Conveyance and system design standards established by the Municipality in other codes or ordinances shall be required, and all other provisions of this Ordinance shall apply.

1. Emergency Exemption - Emergency maintenance work performed for the protection of public health, safety and welfare. This exemption is limited to repair of the existing Stormwater Management Facility; upgrades, additions or other improvements are not exempt. A written description of the scope and extent of any emergency work performed shall be submitted to the East Nantmeal Township within two (2) calendar days of the commencement of the activity. A detailed plan shall be submitted no later than thirty (30) days following commencement of the activity. If the East Nantmeal Township finds that the work is not an emergency, then the work shall cease immediately and the requirements of this Ordinance shall be addressed as applicable.
2. Maintenance - Any maintenance to an existing Stormwater Management Facility, BMP or Conveyance made in accordance with plans and specifications approved by the Municipal Engineer or East Nantmeal Township.
3. Existing Landscaping - Use of land for maintenance, replacement or enhancement of existing landscaping.
4. Gardening - Use of land for gardening for home consumption.
5. Agricultural Related Activities –
 - i. Agricultural Activities (as defined in Article II).

- ii. Conservation Practices (as defined in Article II) that do not involve construction of any new or expanded Impervious Surfaces.
- iii. High tunnel if:
 - i. The High Tunnel or its flooring does not result in an impervious surface exceeding 25% of all structures located on the Landowner's total contiguous land area; and
 - ii. The High Tunnel meets one of the following:
 - 1. The High Tunnel is located at least 100 feet from any perennial stream or watercourse, public road, or neighboring property line.
 - 2. The High Tunnel is located at least 35 feet from any perennial stream or watercourse, public road, or neighboring property line and located on land with a slope not greater than 7%.
 - 3. The High Tunnel is supported with a buffer or diversion system that does not directly drain into a stream or other watercourse by managing stormwater Runoff in a manner consistent with the requirements of Pennsylvania Act 167.
- 6. Forest Management - Forest management operations, which are consistent with a sound forest management plan as filed with the East Nantmeal Township and which comply with the Pennsylvania Department of Environmental Protection's management practices contained in its publication "Soil Erosion and Sedimentation Control Guidelines for Forestry" (as amended or replaced by subsequent guidance). Such operations are required to have an Erosion and Sedimentation Control Plan, which meets the requirements of 25 PA Code Chapter 102 and meets the erosion and sediment control standards of Section 303 and 317 of this Ordinance.
- 7. Maintenance of Existing Gravel and Paved Surfaces - Replacement of existing gravel and paved surfaces shall meet the erosion and sediment control requirements of 25 PA Code Chapter 102 and Section 303 of this Ordinance. Resurfacing of existing gravel and paved surfaces is exempt from the requirements of this Ordinance listed in Table 106.1. Paving of existing gravel surfaces is exempt from the requirements of this Ordinance listed above. Construction of new or additional Impervious Surfaces shall comply with all requirements of this Ordinance as indicated in Table 106.1.
- 8. Municipal Roadway Shoulder Improvements - Shoulder improvements conducted within the existing roadway cross-section of municipal owned roadways, unless an NPDES permit is required, in which case the proposed work must comply with all requirements of this Ordinance.
- 9. In-Place Replacement of Residential Dwelling Unit - The replacement in the exact footprint of an existing one- or two-family dwelling unit unless there is a known

stormwater management problem, as determined by the Township, that must be addressed.

10. In-Place Replacement, Repair, or Maintenance of Residential Impervious Surfaces - The replacement of existing residential patios, decks, driveways, pools, garages, and/or sidewalks that are accessory to an existing one- or two-family dwelling unit in the exact footprint of the existing Impervious Surface unless there is a known stormwater management problem, as determined by the Township, that must be addressed.

TABLE 106.1

Thresholds for Regulated Activities that are Exempt from Certain Ordinance Provisions
(see Notes below)

Ordinance Article or Section	Activities Listed in Subsection 106.B.2.	< 1000 sq. ft. of Regulated Impervious Surfaces AND < 5,000 sq. ft. of proposed Earth Disturbance (Subsection 106.B.1)	for Regulated Impervious Surface between 1000 sq. ft. and 2000 sq. ft. OR proposed Earth Disturbance between 5000 sq. ft. and 10,000 sq. ft. see also Table 106.2	> 2,000 sq. ft. of Regulated Impervious Surfaces OR > 10,000 sq. ft. of proposed Earth Disturbance
Sections 101 to 111	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Section 112	Exempt	Exempt	Not Exempt	Not Exempt
Article II	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Sections 302, 309, 311, 312, 313, and 314	Not Exempt	Not Exempt	Exempt with Minor Stormwater Plan	Not Exempt
Sections 301, 303, 304, 305, 306, 307, 308, 310 and 315	Exempt	Exempt	Exempt with Minor Stormwater Plan	Not Exempt
Article IV	Exempt	Exempt	Exempt with Minor Stormwater Plan	Not Exempt
Article V	Exempt	Exempt	Exempt with Minor Stormwater Plan	Not Exempt
Article VI	Exempt	Exempt	Exempt with Minor Stormwater Plan	Not Exempt

Article VII	Exempt	Exempt	Exempt with Minor Stormwater Plan	Not Exempt
Article VIII	Not Exempt	Not Exempt	Not Exempt	Not Exempt
Article IX	Not Exempt	Not Exempt	Not Exempt	Not Exempt

Table 106.1 Notes:

- Specific activities listed in Subsection 106.B.2 are exempt from the indicated requirements, regardless of size.
- A proposed Regulated Activity must be less than BOTH the Regulated Impervious Surfaces and proposed Earth Disturbance thresholds to be eligible for exemption from the requirements listed in this table.

Table 106.1 Notes, continued:

- “Exempt” – Regulated Activities are exempt from the requirements of listed section(s) only; all other provisions of this Ordinance apply. These exemptions have no bearing on other municipal regulations or ordinances.
- Erosion, Sediment & Pollution Control Requirements must comply with Title 25, Chapter 102 of the PA Code and other applicable State and Municipal codes, including the Clean Streams Law.

D. Modified Requirements for Minor Stormwater Plan for Small Projects

1. Regulated Activities that involve between 1,000 and 2,000 square feet of Regulated Impervious Surfaces OR between 5,000 and 10,000 square feet of proposed Earth Disturbance may submit a Minor Stormwater Plan as presented in Appendix A to comply with the certain requirements of this Ordinance as shown in Table 106.2. The Applicant must comply with all other requirements of this Ordinance as listed in Table 106.2. A Grading Permit in accordance with Section 112 is required.
2. The Applicant shall contact the Municipal Engineer to:
 - a. confirm that the proposed project is eligible for use of a Minor Stormwater Plan and is not otherwise exempt from or subject to provisions of this Ordinance;
 - b. confirm what components of the proposed project are to be considered as Impervious Surfaces;
 - c. determine if other known Site or local conditions exist that may preclude the use of any techniques included in the Minor Stormwater Plan; and
 - d. discuss any other issues or questions related to the use of the Minor Stormwater plan.

3. Appendix A includes instructions and procedures for preparation, submittal, review and approval of documents required when using the Minor Stormwater Plan and shall be adhered to by the Applicant. Infiltration testing for projects using the Minor Stormwater Plan is recommended but is not required by this Ordinance.

E. Modified Requirements (Minor Stormwater Plan) for Agricultural Structures

It is the declared policy of the Commonwealth to conserve and protect and to encourage the development and improvement of its agricultural lands for the production of food and other agricultural products. Municipalities must encourage the continuity, development and viability of agricultural operations within its jurisdiction. Except as necessary to protect the public health, safety and welfare, Regulated Activities involving proposed new or expanded Impervious Surfaces associated with Agricultural Activities are exempt from certain requirements of this Ordinance as listed in Table 106.2 only when it has been demonstrated to the satisfaction of the East Nantmeal Township that the proposed project will comply with all of the requirements listed below.

To be eligible for exemption from the Ordinance provisions stated above and in Table 106.2, the proposed Regulated Activity shall:

1. Be directly associated with an Agricultural Activity (as defined in Article II);
2. Include less than fifteen thousand (15,000) square feet of proposed new or expanded Impervious Surface adjoining vehicle parking and movement area;
3. Be installed on a farm or mushroom operation that has a current Mushroom Farm Environmental Management Plan (MFEMP) reviewed and deemed adequate by the Conservation District, or an Agricultural Erosion and Sediment Control Plan or Conservation Plan (as defined in Article II) that complies with the requirements of 25 PA Code 102;
4. Divert runoff from the proposed new or expanded Impervious Surfaces (including vehicle parking and movement area) entirely away from animal management, waste management and crop farming areas and any other source of pollutants;
5. Include BMP(s) that will permanently retain at least one (1) inch of rainfall runoff from the total area of proposed new or expanded Impervious Surfaces and vehicle parking and movement areas demonstrated by following the requirements for a Minor Stormwater Plan as presented in Appendix A;
6. Be designed so that any point of discharge of runoff from the proposed new or expanded Impervious Surface (excluding vehicle movement area):
 - a. Is not directly connected to, and is not directly connected to any constructed Conveyance that is connected to, a municipal Separate Storm Sewer System or public roadway;

- b. Is located at least one hundred fifty (150) feet from any municipal Separate Storm Sewer System or public roadway, or any constructed Conveyance connected to any municipal Separate Storm Sewer System or public roadway.
- 7. Either:
 - a. Have all proposed new or expanded Impervious Surfaces and proposed vehicle parking and movement areas and BMP(s) included within the current MFEMP or current Agricultural Erosion and Sediment Control Plan or a Conservation Plan for the farm or mushroom operation;
 - OR
 - Be constructed per design plans prepared and sealed by a Licensed Professional in conformance with the PADEP “Best Practices for Environmental Protection in the Mushroom Farm Community” (2003 or as amended), or per design plans prepared and sealed by a Licensed Professional (or Conservation District staff person designated by NRCS) that comply with USDA NRCS standards and specifications, and for which completion of construction will be certified by the Licensed (or NRCS-designated design) Professional responsible for the design;
- 8. Not be eligible for exemption if an NPDES permit is required; and
- 9. Obtain a Grading Permit in accordance with Section 112 as required.

TABLE 106.2
Thresholds for Regulated Activities that are Eligible for a Minor Stormwater Plan
 (see Notes below)

Ordinance Article/Section	Impervious Surface between 1000 and 2000 sq. ft. proposed OR Earth Disturbance between 5000 and 10,000 sq. ft. proposed per Section 106.C and Agricultural Structures per Section 106.D (see also Table 106.1)
Article I	All Provisions Apply
Article II	All Provisions Apply
Sections 302, 303, 312 and 317	All Provisions Apply
Sections 301, 304, 305, 306, 307, 308, 309, 310 and 315	Exempt if Modified Requirements of [Subsection(s) 106.D and/or 106.E] are Applied with Minor Stormwater Plan
Article IV	Exempt if Modified Requirements of [Subsection(s) 106.D and/or 106.E] are Applied with Minor Stormwater Plan
Article V	Exempt if Modified Requirements of [Subsection(s) 106.D and/or 106.E] are Applied with Minor Stormwater Plan

Article VI	Exempt if Modified Requirements of [Subsection(s) 106.D and/or 106.E] are Applied with Minor Stormwater Plan
Article VII	Exempt if Modified Requirements of [Subsection(s) 106.D and/or 106.E] are Applied with Minor Stormwater Plan
Article VIII	All Provisions Apply
Article IX	All Provisions Apply
Other Erosion, Sediment and Pollution Control Requirements	Must comply with Title 25, Chapter 102 of the PA Code and other applicable State and municipal codes, including the Clean Streams Law.

Table 106.2 Notes:

- Modified Requirements for a Minor Stormwater Plan – Regulated Activities listed within the Subsections of this Ordinance noted in Table 106.2 are eligible for exemption only from the indicated sections and subsections of this Ordinance and only if all requirements of Subsections 106.D or 106.E as applicable are met.

Section 107. Repealer

Any ordinance or ordinance provision of the East Nantmeal Township inconsistent with (including any less stringent or rigorous ordinance or provision of an ordinance) any of the provisions of this Ordinance are hereby repealed to the extent of the inconsistency only.

Section 108. Severability

If any sentence, clause, section or part of this Ordinance is for any reason found to be unconstitutional, illegal or invalid, such unconstitutionality, illegality or invalidity shall not affect or impair any of the remaining provisions, sentences, clauses, sections or parts of this Ordinance. It is hereby declared the intent of the Board of Supervisors of East Nantmeal Township that this Ordinance would have been adopted had such unconstitutional, illegal or invalid provision, sentence, clause, section or part thereof not been included herein.

Section 109. Compatibility with Other Ordinances or Legal Requirements

- A. Approvals issued and actions taken pursuant to this Ordinance do not relieve the Applicant of the responsibility to secure and comply with other required permits or approvals for activities regulated by any other applicable code, rule, act, law, regulation, or ordinance.
- B. To the extent that this Ordinance imposes more rigorous or stringent requirements for stormwater management than any other code, rule, act, law, regulation or ordinance, the specific requirements contained in this Ordinance shall take precedence.

- C. The requirements of this Ordinance shall supersede any conflicting requirements in other Municipal ordinances or regulations.

Section 110. Financial Security

- A. For all activities requiring submittal of a SWM Site Plan that also involve subdivision or land development, the Applicant shall post financial security in accordance with Sections 509-511 of the MPC and the provisions of the East Nantmeal Township's Subdivision and Land Development Ordinance (SALDO).
- B. For all activities requiring submittal of a SWM Site Plan that do not involve subdivision or land development, but does involve more than one acre of earth disturbance, the Township reserves the right to require the Applicant to post financial security in accordance with Sections 509-511 of the MPC and the provisions of the East Nantmeal Township's Subdivision and Land Development Ordinance (SALDO).

Section 111. Waivers

A. General.

- 1. The requirements of this Ordinance are essential and shall be strictly adhered to. For any Regulated Activity where, after a close evaluation of alternative Site designs, it proves to be impracticable to meet any one or more of the mandatory minimum standards of this Ordinance on the Site, the East Nantmeal Township may approve measures other than those in this Ordinance, subject to Subsections 111.B and 111.C.

B. Waiver Procedures.

- 1. A request for a waiver(s) shall be in writing and accompany the SWM Site Plan or Minor Stormwater Plan submission.
- 2. The waiver request shall state in full the grounds and facts on which the request is based, the provision or provisions of the Ordinance involved, and the minimum modification necessary.
- 3. The Board of Supervisors shall have the authority to waive or modify the requirements of one or more provisions of this Ordinance if the literal enforcement will exact undue hardship because of peculiar conditions pertaining to the land in question provided that such waiver or modification will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed.
- 4. Waiver or modification may also be considered if an alternative standard or approach can be demonstrated to provide equal or better achievement of the results intended by the Ordinance.

5. Cost or financial burden shall not be considered a hardship.

C. PADEP Approval Required.

1. No waiver or modification of any regulated stormwater activity involving Earth Disturbance greater than or equal to one (1) acre may be granted by the Municipality unless that action is approved in advance by PADEP or the Chester County Conservation District.

Section 112. Requirements for a Permit

A. Permits Required.

1. No Person shall commence or perform any grading, excavation or fill or any Earth Disturbance or any Regulated Activity without first having obtained a Stormwater Management, Erosion and Sediment Control and Grading Permit (Grading Permit) from East Nantmeal Township unless exempt under Section 106.
2. It shall be unlawful for any Person to commence any Earth Disturbance Activity, pave, fill, strip, or change the existing grade of any land within the Township without first securing a Grading Permit from the Township.
3. It shall be unlawful for any Person to disturb, modify, block, divert, or affect the natural overland or subsurface flow of stormwater within the Township without first securing a Grading Permit from the Township.
4. It shall be unlawful for any Person to construct, erect or install any dam, ditch, culvert, drain pipe, bridge or any other structure or obstruction affecting the drainage of his or her property or any other property without first securing a Grading Permit.
5. A separate grading permit shall be required for each site.
6. When a building permit is required for any Regulated Activity on an existing parcel or on an approved lot created by a subdivision and/or improved as a land development project that is not being constructed as part of a developer's agreement and financial security, issuance of the building permit shall be conditioned upon issuance of a Grading Permit as required by this Ordinance.

B. Application for Grading Permit.

1. Any Person proposing to engage in activity requiring a Grading Permit hereunder shall apply by written application to the Township designated official, which shall include the applicant's agreement to comply with the regulations in Section 112.F hereof upon issuance of the Grading Permit.
2. The applicant should consult the Township Zoning Ordinance, Comprehensive Plan, and Subdivision and Land Development Ordinance, which plan for and regulate the

development of land within the Township. The applicant is encouraged to consult with surrounding municipalities which can be affected by, or can affect, the proposed land development.

3. A separate application shall be required for each Earth Disturbance Activity operation.
4. Three (3) copies of all the documents referred to in Section 112.C.2 and 3 hereof shall be submitted with each application.
5. A copy of the erosion and sediment control plan shall be submitted, at the applicant's expense, to the Chester County Conservation District for review and comment, at the discretion of the Township Designated Official and in accordance with Chapter 102 rules and regulations.

C. Data Required for Grading Permit.

1. When a Regulated Activity is part of a subdivision and/or land development:
 - a. A separate application for and approval of a Grading Permit shall not be needed. Instead, the application for the subdivision or land development plan approval shall include the review and approval of all necessary stormwater management and erosion and sediment pollution control measures and accompanying data as required by this ordinance.
 - b. Procedures for submission, review, approval, expiration and extension shall be per the Subdivision and Land Development Ordinance.
 - c. When the construction of improvements required by an approved subdivision and/or land development plan are not completed under a developer's agreement and financial security, a Grading Permit for the Regulated Activities that are part of that approval will still be required prior to construction and prior to issuance of any building permit.
2. When a Regulated Activity is not part of a subdivision and/or land development, and it is not exempt, but it does qualify for submittal under modified requirements (Minor Stormwater Plan) per Section 106.D and 106.E, the following shall be submitted to the Township Secretary:
 - a. a completed copy of a Grading Permit Application,
 - b. completed worksheets per Appendix A.2,
 - c. application fee as established by Township resolution, and
 - d. a completed Operations and Maintenance Agreement per Appendix A.3.
3. When a Regulated Activity is not part of a subdivision and/or land development, and it is not exempt, and it not does it qualify for submittal under modified requirements (Minor

Stormwater Plan) per Section 106.D and 106.E, the following shall be submitted to the Township Secretary:

- a. a completed copy of a Grading Permit Application,
- b. application fee as established by Township resolution,
- c. an erosion and sediment control plan including all information required by Article IV,
- d. a Stormwater Management Site Plan including all information required by Article IV,
- e. a time schedule indicating anticipated starting and completion dates of the development sequence, the expected date of completion of construction of each of the proposed BMPs, and the time of exposure of each area prior to the completion of such measures.

When the scope of a Regulated Activity is less than 1 acre of Earth Disturbance and the activity does not require subdivision and/or land development approval, at the discretion of the Township Engineer, simplified provisions may be established from those in Articles III and IV to show compliance with the requirements of this Ordinance.

4. Any submission that is found to be incomplete shall not be accepted for review and shall be returned to the Applicant within ten (10) regular business days with a notification in writing of the specific manner in which the submission is incomplete.

D. Review and Approval of Grading Permit.

1. The Township Designated Official or her/his delegated agent shall issue all Grading Permits in written form. The Township Designated Official may request the assistance of any appointed Township consultant.
2. Upon receipt of a complete Grading Permit submission, the Township Designated Official or her/his delegated agent shall notify the Applicant within fifteen (15) business day whether the SWM Site Plan is consistent with the requirements of this Ordinance.
 - a. If the SWM Site Plan is consistent, the Grading Permit will be issued.
 - b. If the SWM Site Plan is inconsistent, the Township Designated Official or her/his delegated agent shall forward a letter to the Applicant with a copy to the Township citing the reason(s) and specific sections for inconsistency or noncompliance. Inconsistency or noncompliance may include inadequate information to make a reasonable judgment as to compliance.
 - c. Revised SWM Site Plan information may be submitted directly to the Township Designated Official or her/his delegated agent in accordance with their instructions.

E. Expiration of Grading Permit.

1. Every Grading Permit shall expire by limitation and become null and void if the work authorized by such Grading Permit has not been commenced within six months or is not completed within one year from the date of issue.
2. The Township Designated Official may, if the Grading Permit holder presents in writing satisfactory evidence that unusual difficulties have prevented work being started or completed within the specific time limits, grant a reasonable extension of time, provided, the application for the extension of time is made before the date of expiration of the Grading Permit.

F. Regulations for Grading Permit Holders and Others.

1. The Grading Permit holder is responsible for any on-site or off-site property damage or personal injury caused by his activity authorized by the Grading Permit.
2. No person, company, or entity shall modify, fill, excavate, pave, grade or regrade land in any manner as to endanger or damage public or private property, or to cause physical damage or personal injury. All precautions will be taken to prevent any damage to adjoining streets, sidewalks, buildings, structures, and other on-site or off-site property which could be caused by settling, cracking, erosion or sediment.
3. No person, company, or entity shall fail to adequately maintain in good operating order any drainage facility on his premises. All watercourses, drainage ditches, culverts, drain pipes and drainage structures shall be kept open and free flowing at all times.
4. No person, company, or entity shall deposit or place any debris or other material in any watercourses, drainage ditch or structure in such a manner as to obstruct free flow unless specifically intended to reduce erosion and approved by the Chester County Conservation District and proper permits from the Pennsylvania Department of Environmental Protection if required are obtained.
5. The owner of any property on which any work has been done pursuant to a Grading Permit granted under this chapter shall continually maintain and repair all graded surfaces and anti-erosion devices such as retaining walls, drainage structures or means, plantings and ground cover, installed or completed.
6. Each Grading Permit holder shall advise transferees of property covered by a Grading Permit in writing of the requirements of this section, prior to entry of a binding agreement of sale for such property.
7. Information pertaining to stormwater management facilities shall be included in the deed of any parcel being transferred.

8. All graded surfaces shall be seeded, sodded, planted or otherwise protected from erosion within three days of the initial ground breaking, weather permitting, and shall be watered, tended, and maintained until growth is well established.
9. Precautions shall be taken to prevent the unnecessary removal of trees and provide for their protection by suitable tree wells, as determined by the Township designated official.
10. When required, adequate provisions shall be made for dust control measures as determined by the Township designated official.
11. Wherever load bearing fill matter is to be used, each layer of compacted fill shall be tested to determine its dry density per ASTM D 1556. The density of such layer shall not be less than 95% of maximum dry density as determined by ASTM D 1557.
12. Inspections shall be conducted in accordance with the general procedure outlined in Section 502.
13. Compaction test reports shall be kept on file at the site and be subject to review at all times by the Township designated official.

Section 113. Erroneous Grading Permit

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

ARTICLE II – DEFINITIONS

Section 201. Interpretation

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

- A. Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.
- B. The word “includes” or “including” shall not limit the term to the specific example, but is intended to extend its meaning to all other instances of like kind and character.
- C. The word “person” includes an individual, partnership, public or private association or corporation, firm, trust, estate, municipality, governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties. Whenever used in any section prescribing or imposing a penalty, the term “person” shall

include the members of a partnership, the officers, members, servants and agents of an association, officers, agents and servants of a corporation, and the officers of a municipality.

- D. The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.
- E. The words “used” or “occupied” include the words “intended, designed, maintained, or arranged to be used, occupied, or maintained.”
- F. The definitions in this Ordinance are for the purposes of enforcing the provisions of this Ordinance and have no bearing on other municipal regulations or ordinances.

Section 202. Definitions

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

Applicant – A Landowner, developer, or other person who has filed an application to the Municipality for approval to engage in any Regulated Activity as defined in this Ordinance.

As-Built Plans (Drawings) – Engineering or Site plans or drawings that document the actual locations, dimensions and elevations of the improvements, and building components, and changes made to the original design plans. The final version of these documents, or a copy of same, are signed and sealed by a qualified Licensed Professional and submitted to the Municipality at the completion of the project, as per the requirements of Section 503 of this Ordinance as “final As-Built Plans”.

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

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

BMP (Best Management Practice) – Activities, facilities, designs, measures or procedures used to manage Stormwater impacts from regulated activities; to provide water quality treatment, Infiltration, volume reduction, and/or peak rate control; 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 include certain low impact development and Conservation Design practices used to minimize the contact of pollutants with Stormwater Runoff. These practices aim to limit the total volume of Stormwater Runoff and manage Stormwater at its source by techniques such as protecting natural systems and incorporating existing landscape features. Nonstructural BMPs include, but are not limited to, the protection of sensitive and

special value features such as Wetlands and Riparian areas, the preservation of open space while clustering and concentrating development, the reduction of Impervious cover, and the disconnection of rooftops from storm sewers. Structural BMPs are those that consist of a physical system that is designed and engineered to capture and treat Stormwater Runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices from large-scale Retention ponds and constructed Wetlands to small-scale underground treatment systems, Infiltration facilities, filter strips, bioretention, wet ponds, permeable paving, grassed Swales, Riparian buffer, sand filters, Detention Basins, and manufactured devices. Structural and nonstructural Stormwater BMPs are permanent appurtenances to the Site. See also Stormwater Management Facility and Stormwater Control Measure (SCM)

Board or Board of Supervisors – The Board of Supervisors of East Nantmeal Township.

Buffer – See Riparian Buffer.

Carbonate Geology (or carbonate rock formations) – See Karst.

CFS – Cubic Feet per Second.

Channel – A natural or artificial open drainage feature that conveys, continuously or periodically, flowing water and through which stormwater flows. Channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

CN – Curve number.

Commonwealth – Commonwealth of Pennsylvania.

Comprehensive Plan – The Comprehensive Plan of East Nantmeal Township, Chester County, PA, as may be amended from time to time.

Conservation District – The Chester County Conservation District.

Conservation Design - A series of holistic land development design goals that maximize protection of key land and environmental resources, preserve significant concentrations of open space and greenways, evaluate, and maintain site hydrology, and ensure flexibility in development design to meet community needs for complimentary and aesthetically pleasing development. Conservation design encompasses the following objectives: conservation/enhancement of natural resources, wildlife habitat, biodiversity corridors, and greenways (interconnected open space); minimization of environmental impact resulting from a change in land use (minimum disturbance, minimum maintenance); maintenance of a balanced water budget by making use of site characteristics and infiltration; incorporation of unique natural, scenic and historic site features into the configuration of the development; preservation of the integral characteristics of the site as viewed from adjoining roads; and reduction in maintenance required for stormwater management practices. Such objectives can be met on a site through an integrated development process that respects natural site conditions and attempts, to the maximum extent possible, to replicate or improve the natural hydrology of a site.

Conservation Plan – A plan written by a planner certified by NRCS that identifies Conservation Practices and includes site specific BMPs for agricultural plowing or tilling activities and animal heavy use areas.

Conservation Practices – Practices installed on agricultural lands to improve farmland, soil and/or water quality which have been identified in a current Conservation Plan.

Conveyance – A natural or manmade, existing or proposed Stormwater Management Facility, feature or channel used for the transportation or transmission of stormwater from one place to another. For the purposes of this Ordinance, Conveyance shall include pipes, drainage ditches, channels and swales (vegetated and other), gutters, stream channels, and like facilities or features.

Design Storm – The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a five (5)-year storm) and duration (e.g., twenty-four (24) hours), used in the design and evaluation of stormwater management systems. Also see Return Period.

Detention (or To Detain) – Capture and temporary storage of runoff in a Stormwater Management Facility for release at a controlled rate.

Detention Basin – An impoundment designed to collect and retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. Detention basins are designed to drain completely shortly after any given rainfall event.

Detention Volume - The volume of runoff that is captured and released into the Waters of the Commonwealth at a controlled rate.

Developer – A person, company, or organization who seeks to undertake any Regulated Activities at a Site in the Municipality.

Diameter at Breast Height (DBH) – The outside bark diameter of a tree at breast height which is measured four and one half (4.5) feet from the ground surface at the point of highest elevation in contact with the trunk of such tree.

Disturbed Area – Land area disturbed by or where an Earth Disturbance Activity is occurring or has occurred.

Drainage Area - That land area contributing runoff to a single point (including but not limited to the point/line of interest used for hydrologic and hydraulic calculations) and that is enclosed by a natural or man-made ridge line.

Earth Disturbance (or 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; land development; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials.

Easement – A right of use granted by a Landowner to allow a grantee the use of the designated portion of land for a specified purpose, such as for stormwater management or other drainage purposes.

Erosion – The process by which the surface of the land, including water/stream channels, is worn away by water, wind, gravity, chemical action or other natural forces.

Erosion and Sediment (E&S) Control Plan – A plan required by the Conservation District or the Municipality to minimize accelerated erosion and sedimentation, and that must be prepared and approved per the applicable requirements.

Evapotranspiration (ET) – The combined processes of evaporation from the water or soil surface and transpiration of water by plants.

FEMA – Federal Emergency Management Agency.

Flood – A temporary condition of partial or complete inundation of land areas from the overflow of streams, rivers, and other waters of this Commonwealth.

Floodplain - Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a Special Flood Hazard Area.

Floodway - The channel of the watercourse and those portions of the adjoining floodplains that are reasonably required to carry and discharge the one hundred (100)-year flood (also called the base flood or one percent (1%) annual chance flood). Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the floodway, it is assumed, absent evidence to the contrary, that the floodway extends from the centerline of the stream and to fifty (50) feet beyond the top of the bank of the stream on both sides.

Forest Management/Timber Operations – Planning and activities necessary for the management of forest lands. These include timber inventory, preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, Site preparation, and reforestation.

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

Geotextile – A fabric manufactured from synthetic fiber that is used to achieve specific objectives, including infiltration, separation between different types of media (i.e., between soil and stone), or filtration.

Governing Body – the Board of Supervisors of East Nantmeal Township.

Grade/Grading – 1. (noun) A slope, usually of a road, channel, or natural ground, specified in percent and shown on plans as specified herein. 2. (verb) To finish the surface of a roadbed, the top of an embankment, or the bottom of an excavation.

Grading Permit – A permit issued under the terms of this Ordinance for any Earth Disturbance and/or Regulated Activity, and/or Regulated Earth Disturbance Activity.

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

Groundwater – Water that occurs in the subsurface and fills or saturates the porous openings, fractures and fissures of under-ground soils and rock units.

Groundwater Recharge – The replenishment of existing natural groundwater supplies from infiltration of rain or overland flow.

HEC-1 – The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) hydrologic runoff model.

HEC-HMS – The U.S. Army Corps of Engineers, Hydrologic Engineering Center (HEC) - Hydrologic Modeling System (HMS).

High Tunnel – A structure which meets the following:

1. is used for the production, processing, keeping, storing, sale or shelter of an agricultural commodity as defined in section 2 of the Act of December 19, 1974 (P.L. 973, No. 319), known as the “Pennsylvania Farmland and Forrest Land Assessment Act of 1974,” or for the storage of agricultural equipment or supplies; and
2. is constructed with all the following:
 - a. has a metal, wood, or plastic frame;
 - b. when covered, has a plastic, woven textile, or other flexible covering; and
 - c. has a floor made of soil, crushed stone, matting, pavers, or a floating concrete slab.

Hotspots – Areas where prior or existing land use or activities can potentially generate highly contaminated runoff with concentrations of pollutants in excess of those typically found in stormwater.

Hydrologic Regime – The hydrologic system, cycle or balance that sustains the quality and quantity of stormwater, stream baseflow, storage, and groundwater supplies under natural conditions.

Hydrologic Soil Group (HSG) – A classification of soils by the Natural Resources Conservation Service (NRCS), into four (4) runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

Impervious Surface - A surface that has been compacted or covered with a layer of material so that it prevents or is resistant to infiltration of water, including but not limited to: structures such as roofs, buildings, storage sheds; other solid, paved, or concrete areas such as streets, driveways, sidewalks, parking lots, patios, tennis or other paved courts; or athletic playfields comprised of synthetic turf materials. The water surface area of a swimming pool is not considered an Impervious Surface. For the purposes of determining compliance with this Ordinance, compacted soils or stone surfaces used for vehicle parking and movement shall be considered impervious. Uncompacted gravel areas with no vehicular traffic, such as gardens, walkways, or patio areas, shall be considered pervious per review by the Municipal Engineer. Surfaces that were designed to allow Infiltration (i.e., pavers and areas of porous pavement) are not to be considered Impervious Surface if designed to function as a BMP per review by the Municipal Engineer. Additionally, for the purposes of determining compliance with this Ordinance, the total horizontal projection area of all ground-mounted and free-standing solar collectors, including solar photovoltaic cells, panels, and arrays, shall be considered pervious so long as the designs note that natural vegetative cover will be preserved and/or restored underneath the solar photovoltaic cells, panels, and arrays, and the area disturbed is planned as a vegetated Pervious Surface.

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

Infiltration Facility – A stormwater BMP designed to collect and discharge runoff into the subsurface in a manner that allows infiltration into underlying soils and groundwater (e.g., French drains, seepage pits, or seepage trenches, etc.).

Intermittent Stream – A defined channel in which surface water is absent during a portion of the year, in response to seasonal variations in precipitation or groundwater discharge.

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

Karst – A type of topography that is formed over limestone or other carbonate rock formations by dissolving or solution of the rock by water, and that is characterized by closed depressions, sinkholes, caves, a subsurface network of solution conduits and fissures through which groundwater moves, and no perennial surface drainage features.

Land Development – Any of the following activities:

- A. The improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving:
 1. A group of two (2) or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure, or
 2. The division or allocation of land or space, whether initially or cumulatively, between or among two (2) or more existing or prospective occupants by means of, or for the

purpose of, streets, common areas, leaseholds, condominiums, building groups, or other features;

B. A subdivision of land;

C. Activities described in Section 503(1.1) of the Pennsylvania Municipalities Planning Code (as amended), unless exempted by other provisions of this Ordinance.

Landowner – The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if they are authorized under the lease to exercise the rights of the Landowner, or other person having a proprietary interest in the land.

Licensed Professional – A Pennsylvania Registered Professional Engineer, Registered Landscape Architect, Registered Professional Land Surveyor, and Registered Professional Geologist, or any person licensed by the Pennsylvania Department of State or qualified by law to perform the work required by the Ordinance within the Commonwealth of Pennsylvania.

Limiting Zone – A soil horizon or condition in the soil profile or underlying strata that includes one of the following:

- A. A seasonal high-water table, whether perched or regional, determined by direct observation of the water table or indicated by other subsurface or soil conditions.
- B. A rock with open joints, fracture or solution channels, or masses of loose rock fragments, including gravel, with insufficient fine soil to fill the voids between the fragments.
- C. A rock formation, other stratum, or soil condition that is so slowly permeable that it effectively limits downward passage of water.

Low Impact Development (LID) - Site design approaches and small-scale stormwater management practices that promote the use of natural systems for infiltration, evapotranspiration, and reuse of rainwater. LID can be applied to new development, urban retrofits, and revitalization projects. LID utilizes design techniques that infiltrate, filter, provide evapotranspiration and store runoff close to its source. Rather than rely on costly large-scale conveyance and treatment systems, LID addresses stormwater through a variety of small, cost-effective landscape features located on-site.

MPC - Act of July 31, 1968, P.L. 805, No. 247, 53 P.S. Section 10101, et seq., as amended, the Pennsylvania Municipalities Planning Code, Act 247.

MFEMP – Mushroom Farm Environmental Management Plan.

MS4 - Municipal Separate Storm Sewer System.

Maintenance - The action taken to restore or preserve the as-built functional design of any Stormwater Management Facility or system.

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

Municipality – East Nantmeal Township, Chester County, Pennsylvania.

NOAA - National Oceanic and Atmospheric Administration.

New Development – Any Regulated Activity involving placement or construction of new Impervious Surface or grading over existing pervious land areas not classified as Redevelopment as defined in this Ordinance.

Nonpoint Source Pollution – Pollution that enters a water body from diffuse origins in the watershed and does not result from discernible, confined, or discrete Conveyances.

Nonstormwater Discharges – Water flowing in stormwater collection facilities, such as pipes or swales, which is not the result of a rainfall event or snowmelt.

Nonstructural Best Management Practice (BMPs) – See Best Management Practice (BMP).

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

NRCS – Natural Resource Conservation Service (previously Soil Conservation Service, SCS), an agency of the U.S. Department of Agriculture.

PADEP – Pennsylvania Department of Environmental Protection.

Parent Tract – The parcel of land from which a land development or subdivision originates, determined from the date of municipal adoption of this Ordinance.

Peak Discharge – The maximum rate of stormwater runoff from a specific storm event.

PennDOT – Pennsylvania Department of Transportation.

Pennsylvania Stormwater Best Management Practices Manual (PA BMP Manual) - Document Number 363-0300-002 (December 2006, and as subsequently amended).

Person – see Section 201.C above.

Pervious Surface (or Pervious Area) – Any area not defined as Impervious Surface.

Planning Commission – The Planning Commission of East Nantmeal Township.

Point Source – Any discernible, confined, and discrete Conveyance including, but not limited to, any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in State regulations at 25 Pennsylvania Code § 92.a as may be amended.

Post-construction – Period after construction during which Disturbed Areas are stabilized, stormwater controls are in place and functioning, and all proposed improvements approved by the Municipality are completed.

Predevelopment – Ground cover conditions assumed to exist within the proposed Disturbed Area prior to commencement of the Regulated Activity for the purpose of calculating the Predevelopment water quality volume, infiltration volume, and peak flow rates as required in this Ordinance.

Pretreatment – Techniques employed in stormwater BMPs to provide storage or filtering, or other methods to trap or remove coarse materials and other pollutants before they enter the stormwater system, but may not necessarily be designed to meet the entire water quality volume requirements of this Ordinance.

Proposed Impervious Surface - All new, additional and replacement Impervious Surfaces.

Rainfall Intensity - The depth of accumulated rainfall per unit of time.

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

Redevelopment - Any Regulated Activity that involves demolition, removal, reconstruction, or replacement of existing Impervious Surface(s).

Regulated Activity - Any Earth Disturbance Activity(ies) or any activity that involves the alteration or development of land in a manner that may affect stormwater runoff.

Regulated Earth Disturbance Activity – Any activity involving Earth Disturbance subject to regulations, as may be amended, under 25 Pennsylvania Code Chapter 92.a, Chapter 102, or the Clean Streams Law.

Regulated Impervious Surface - Proposed impervious surface as part of a current proposed activity and all existing impervious surfaces installed after February 12, 2014, as part of previous activity.

Retention or To Retain – The prevention of direct discharge of stormwater runoff into surface waters or water bodies during or after a storm event by permanent containment in a pond or depression; examples include systems which discharge by percolation to groundwater, exfiltration, and/or evaporation processes and which generally have residence times of less than three (3) days.

Retention Basin – An impoundment that is designed to temporarily detain a certain amount of stormwater from a catchment area and which may be designed to permanently retain stormwater runoff from the catchment area; retention basins may always contain water.

Retention Volume/Removed Runoff – The volume of runoff that is captured and not released directly into the surface Waters of the Commonwealth during or after a storm event.

Return Period - The average interval, in years, within which a storm event of a given magnitude can be expected to occur one (1) time. For example, the twenty-five (25)-year return period rainfall would be expected to occur on average once every twenty-five (25) years; or stated in another way, the probability of a twenty-five (25)-year storm occurring in any one (1) year is four-one hundredths (0.04) (i.e., a four (4)% chance).

Riparian – Pertaining to anything connected with or immediately adjacent to the banks of a stream or other body of water.

Riparian Buffer – An area of land adjacent to a body of water and managed to maintain vegetation to protect the integrity of stream channels and shorelines, to reduce the impact of upland sources of pollution by trapping, filtering, and converting sediments, nutrients, and other chemicals, and to supply food, cover and thermal protection to fish and other aquatic species and wildlife.

Runoff – Any part of precipitation that flows over the land surface.

SALDO – See Subdivision and Land Development Ordinance.

SCS – Soil Conservation Service, now known as the Natural Resources Conservation Service.

Sediment – Soil or other materials transported by, suspended in or deposited by surface water as a product of erosion.

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.

Sheet Flow – A flow process associated with broad, shallow water movement on sloping ground surfaces that is not channelized or concentrated.

Site – Total area of land in the Municipality where any proposed Regulated Activity, as defined in this Ordinance, is planned, conducted, or maintained or that is otherwise impacted by the Regulated Activity.

Soil Cover Complex Method – A method of runoff computation developed by NRCS that is based on relating soil type and land use/cover to a runoff parameter called curve number (CN).

Special Geologic Features – Carbonate bedrock features, including but not limited to closed depressions, existing sinkholes, fracture traces, lineaments, joints, faults, caves and pinnacles

which may exist and must be identified on a site when stormwater management BMPs are being considered.

State Water Quality Requirements – The regulatory requirements to protect, maintain, reclaim, and restore water quality under Pennsylvania Code Title 25 and the Clean Streams Law.

Storm Frequency – (see Return Period).

Stormwater – Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

Stormwater Control Measure - Physical features used to effectively control, minimize, and treat stormwater runoff. [See Best Management Practice (BMP)].

Stormwater Management Facility – Any feature, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff quality, rate, or quantity, including Best Management Practices and Stormwater Control Measures. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and Infiltration Facilities.

Stormwater Management (SWM) Site Plan – The plan prepared by the Applicant or its representative, in accordance with the requirements of Article IV of this Ordinance, indicating how stormwater runoff will be managed at a particular Site in accordance with this Ordinance, and including all necessary design drawings, calculations, supporting text, and documentation to demonstrate that Ordinance requirements have been met, herein referred to as “SWM Site Plan.” All references in this Ordinance to “final” or “approved” SWM Site Plans shall incorporate the approved SWM Site Plan and all subsequent approved revisions thereto.

Stream – A natural watercourse.

Structural Best Management Practices - See BMP (Best Management Practices).

Subdivision - The division or re-division of a lot, tract, or parcel of land as defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247 (as amended).

Subdivision and Land Development Ordinance – Subdivision and Land Development ordinance of East Nantmeal Township, Chester County, PA, as may be amended from time to time.

Swale – An artificial or natural waterway or low-lying stretch of land that gathers and conveys stormwater or runoff, and is generally vegetated for soil stabilization, stormwater pollutant removal, and infiltration.

SWM Site Plan – See Stormwater Management Site Plan.

Timber Operations – See Forest Management.

Top-of-bank – Highest point of elevation of the bank of a stream or channel cross-section at which a rising water level just begins to flow out of the channel and into the floodplain.

Township Designated Official – Person or persons designated by the Township Board of Supervisors to carry out the responsibilities of this Ordinance.

Township – East Nantmeal Township, Chester County, Pennsylvania.

USDA – United States Department of Agriculture.

Watercourse – A channel or Conveyance of surface water having a defined bed and banks, whether natural or artificial, with perennial or intermittent flow.

Water Table – The upper most level of saturation of pore space or fractures by groundwater. Seasonal high-water table refers to a water table that rises and falls with the seasons due either to natural or man-made causes.

Waters of the Commonwealth – Any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of Conveyance of surface and underground water, or parts thereof, whether natural or artificial, within or on the boundaries of the Commonwealth.

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

Wetland – Those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, fens, and similar areas.

Woods – Any land area of at least one-quarter (0.25) acre with a natural or naturalized ground cover (excluding manicured turf grass) and that has an average density of two (2) or more viable trees per one thousand five hundred (1,500) square feet with a DBH of six (6) inches or greater [*“and where such trees existed at any time within three (3) years of the time of land development application submission of the proposed project.”*]. The land area to be considered Woods shall be measured from the outer drip lines of the outer trees.

Zoning Hearing Board – The duly appointed Zoning Hearing Board of East Nantmeal Township.

Zoning Ordinance – The Zoning Ordinance of East Nantmeal Township, Chester County, PA, as may be amended from time to time.

ARTICLE III – STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

- A. Applicants proposing Regulated Activities in the Municipality which are not exempt under Section 106 shall submit a Stormwater Management Site Plan (SWM Site Plan) to the Municipality for review and approval in accordance with Articles III and IV. SWM Site Plans approved by the Municipality shall be on Site throughout the duration of the Regulated Activity.
- B. The stormwater management and runoff control criteria and standards in this Ordinance shall apply to the total proposed Regulated Activity, even if it is to take place in stages. The measurement of Impervious Surfaces shall include all of the Impervious Surfaces in the total proposed Regulated Activity even if the development is to take place in stages.
- C. No Regulated Activity within the Municipality shall commence until:
 - 1. The Municipality issues approval of a SWM Site Plan which demonstrates compliance with the requirements of this Chapter; and
 - 2. The Applicant has received a letter of adequacy or approval for the Erosion and Sediment Control Plan review by the Municipality and the Conservation District (if required), and has received all other local, state and federal permit approvals required for the project involving the Regulated Activity.
- D. Neither submission of a SWM Site Plan under the provisions herein nor compliance with the provisions of this Ordinance shall relieve any person from responsibility for damage to any person or property otherwise imposed by law.
- E. The Applicant shall design the Site to minimize disturbances to land, Site hydrology, and natural resources, and to maintain the natural hydrologic regime, drainage patterns and flow conditions. The Applicant shall apply the procedures set forth in Section 303 for the overall Site design and for selection, location and design of features and BMPs to be used to comply with the requirements of this Ordinance.
- F. To the maximum extent practicable, Post-construction stormwater shall be discharged within the drainage area of the same stream or water body receiving the runoff prior to construction of the proposed Regulated Activity.
- G. Existing drainage peak rate discharges up to and including the one hundred (100)-year storm and the volume of runoff up to and including the two (2)-year storm onto or through adjacent property(ies) or downgradient property(ies), including diffuse drainage discharge, shall not be altered in any manner by Regulated Activities under this Ordinance without written permission from, and, where applicable as determined by the Municipality, an easement and agreement with, the affected Landowner(s) for conveyance of discharges onto or through their property(ies). Altered stormwater discharges shall be subject to any applicable discharge criteria specified in this Ordinance.

- H. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) that drain through a proposed Site are not subject to water quality and volume control, infiltration, stream channel protection, or peak flow rate control requirements presented in this Article. Drainage facilities located on the Site shall be designed to safely convey flows from outside of the Site through the Site.
- I. If Site conditions preclude capture of runoff from limited portions of the Disturbed Area for achieving water quality volume control standards, stream channel protection standards, and the 2-year, 5-year and 10-year storm event peak runoff rate reduction standards for New Development required by this Ordinance, the Applicant shall propose alternate methods to mitigate the bypass of the BMPs, subject to the approval of the Municipal Engineer. In no case shall resulting peak rate be greater than the Pre-development peak rate for the equivalent design storm.
- J. For all Regulated Activities, erosion and sediment control BMPs shall be designed, implemented, operated, and maintained during the Regulated Activities (i.e., during construction) as required to meet the purposes and requirements of this Ordinance, to meet the erosion and sediment control requirements of the Municipality, if applicable, and to meet all requirements under Title 25 of the PA Code and the Clean Streams Law.
- K. For all Regulated Activities, permanent BMPs and Conveyances shall be designed, implemented, operated, and maintained to meet the purposes and requirements of this Ordinance and to meet all requirements under Title 25 of the Pennsylvania Code, the Clean Streams Law, and the Storm Water Management Act.
- L. The design of all BMPs and Conveyances shall incorporate sound engineering principles and practices in a manner that does not aggravate existing stormwater problems as identified by the Municipality. The Municipality reserves the right to disapprove any design that would result in construction in an area affected by existing stormwater problem(s) or continuation of an existing stormwater problem(s).
- M. Existing wetlands, either on the Site or on an adjacent property, shall not be used to meet the minimum design requirements for stormwater management or stormwater runoff quality treatment. Stormwater discharges to existing wetlands shall not degrade the quality or hydrologic integrity of the wetland.
- N. Hotspots Runoff Controls – Specific structural or pollution prevention practices may be required, as determined to be necessary by the Municipal Engineer, to pretreat runoff from Hotspots prior to infiltration. Following is a list of examples of Hotspots:
 - 1. Vehicle salvage yards and recycling facilities;
 - 2. Vehicle fueling stations;
 - 3. Vehicle service and maintenance facilities;
 - 4. Vehicle and equipment cleaning facilities;

5. Fleet storage areas (bus, truck, etc.);
6. Industrial sites based on Standard Industrial Classification Codes;
7. Marinas (service and maintenance areas);
8. Outdoor liquid container storage;
9. Outdoor loading/unloading facilities;
10. Public works storage areas;
11. Facilities that generate or store hazardous materials;
12. Commercial container nursery;
13. Contaminated sites/brownfields;
14. Other land uses and activities as designated by the Municipality.

O. Contaminated and Brownfield Sites -

Where BMPs may contribute to the migration of contaminants in groundwater, the water quality and runoff volume, stream channel protection, and peak rate control standards shall be met; however, at the Municipal Engineer's discretion, the minimum infiltration requirement may be reduced or eliminated commensurate with the contaminated area and the required water quality and runoff control measures may be increased to mitigate the reduced infiltration requirement for the contaminated area.

P. Additional Water Quality Requirements -

The Municipality may require additional stormwater control measures for stormwater discharges to special management areas including, but not limited to:

1. Water bodies listed as "impaired" by PADEP.
2. Areas of known existing flooding problems.
3. Critical areas with sensitive resources (e.g., State designated special protection waters, cold water fisheries, carbonate geology or other groundwater recharge areas that may be highly vulnerable to contamination, drainage areas to water supply reservoirs, etc.).

Q. Applicants shall utilize the *Pennsylvania Stormwater Best Management Practices Manual* (PA BMP Manual), as amended, or other sources acceptable to the Municipal Engineer, for testing and design standards for BMPs, and where there is a conflict with the provisions of this Ordinance, the most restrictive applies.

- R. For areas underlain by karst or carbonate geology that may be susceptible to the formation of sinkholes and other karst features, the location, type, and design of infiltration BMPs shall be based on a Site evaluation conducted by a qualified Licensed Professional and based on the PA BMP Manual (as amended) or other design guidance acceptable to the Municipal Engineer.
- S. All Regulated Activities located within a Special Flood Hazard Area designated by the Federal Emergency Management Agency (FEMA) shall comply with the Township Zoning Ordinance Regulations and shall be designed to maintain the flood carrying capacity of the floodway such that the base flood elevations are not increased, either upstream or downstream. The natural conveyance characteristics of the Site and the receiving floodplain shall be incorporated into the stormwater management practices proposed for the Site.

Section 302. Permit Requirements by Other Governmental Agencies

The following permit or other regulatory requirements may apply to certain Regulated Activities and shall be met prior to (or as a condition of) final approval by the Municipality of the SWM Site Plan and prior to commencement of any regulated activities, as applicable:

- A. All regulated activities subject to permit or regulatory requirements by PADEP under regulations at Title 25 Pennsylvania Code Chapter 102, or Erosion and Sediment Control requirements of the Municipality.
- B. Work within natural drainageways subject to permit by PADEP under Title 25 Pennsylvania Code Chapter 105.
- C. Any BMP or Conveyance that would be located in or adjacent to surface Waters of the Commonwealth, including Wetlands, subject to permit by PADEP under Title 25 Pa. Code Chapter 105.
- D. Any BMP or Conveyance that would be located on or discharge to a state highway right-of-way, or require access to or from a state highway and be subject to approval by PennDOT.
- E. Culverts, bridges, storm sewers, or any other facilities which must pass or convey flows from the tributary area and any facility which may constitute a dam subject to permit by PADEP under Title 25 Pennsylvania Code Chapter 105.

Section 303. Erosion and Sediment Control

- A. No Regulated Activity within the Municipality shall commence until:
 - 1. The Municipality receives documentation that the Applicant has received:
 - a. A “letter of adequacy” from the Conservation District or other approval from PADEP in compliance with Title 25 Chapter 102 of the Pennsylvania Code of an Erosion and Sediment Control Plan for construction activities, for projects where the area of

disturbance exceeds one (1) acre, where pond dredging is involved, or when the disturbance is associated with activities described under Title 25 Chapter 105 of the Pennsylvania Code permits;

- b. A PADEP NPDES Permit for Stormwater Discharges Associated with Construction Activities as required under Title 25 Pennsylvania Code Chapter 92.a, as may be amended, if applicable;
 - c. Evidence of any other permit(s) or approvals required for the Regulated Activities; and
 - 2. An Erosion and Sediment Control Plan has been approved by the Municipality, if required.
- B. A copy of the Erosion and Sediment Control Plan and any required permit(s), as required by PADEP regulations, shall be available on the Site at all times.
- C. Additional erosion and sediment control measures shall be applied where infiltration BMPs are proposed, at a minimum including those required in Section 305.
- D. The Erosion and Sediment Control Plan shall consist of the following items:
- 1. The Erosion and Sediment Control Plan shall be prepared on a separate sheet showing all existing features on the site, including the perimeter boundaries. The sequence of construction shall show only the minimum earthmoving necessary to install the Erosion and Sediment Control measures. Wholesale topsoil stripping or complete earthmoving necessary to build the project shall not be shown. That is, this plan must show the erosion and sediment control items that are required to be in place prior to the start of any large-scale earth disturbance.
 - 2. It shall show the complete and final earth disturbance elements relating to grading, storm drainage, impervious coverage and the like which may affect the design of erosion control and stormwater management facilities.
- E. A Grading, Stormwater, Erosion and Sediment Control Plan shall be submitted with the Preliminary and Final Plan Subdivision and Land Development applications and with applications for Grading Permits for Regulated Activities that are not exempt under Section 106. Such plan shall be submitted in accordance with the Pennsylvania Department of Environmental Protection Erosion and Sediment Pollution Control Manual, as amended, and the Special Protection Waters Implementation Handbook, as amended, and in compliance with the most current review requirements of the Chester County Conservation District.
- 1. Erosion and Sediment Control Plans shall incorporate facilities for stormwater management in accordance with the policies and regulations of the Chester County Conservation District and the Stormwater Management Plan required by Article III.

2. Upon recommendation from the Municipal Engineer, the Municipality may require the submission of plans, regardless of their size or other outside review requirements, to the Chester County Conservation District for review and approval. In such a case, approval by the Chester County Conservation District shall be required before final approval of a subdivision or land development; the issuance of a Grading Permit in the case of a minor subdivision; or the issuance of a Grading Permit for a Regulated Activity that is not exempt under Section 106.
- F. The purpose of the Erosion and Sediment Control Plan is to identify plans and techniques to be incorporated into the development proposal that regulate the modification of natural terrain during the site development process to ensure that:
1. The disturbance of the site does not result in damaging erosion and sedimentation control problems in order to protect the health, safety and welfare of the Township residents. These objectives will be pursued at the Township level in conjunction with state requirements for erosion and sedimentation control, as defined in the Department of Environmental Protection Chapter 102 regulations, as amended, and defined in the Erosion and Sediment Pollution Control Program Manual;
 2. The site design and preparation incorporates necessary steps to ensure the successful installation and long-term operation of erosion and sedimentation control and stormwater management facilities; and
 3. The disturbance and removal of topsoil is reduced and avoided.
- G. The applicant or applicant's agent shall prepare a Soil Erosion and Sediment Control Plan in accordance with the provisions of this Section. All land disturbance activities shall be conducted in such a way as to minimize erosion on adjoining and down-slope properties.
1. The applicant or applicant's agent undertaking land disturbance activity including, but not limited to grading, excavating, or disturbance of topsoil or vegetative cover, or introduction of fill material that may affect the existing flow of surface water within or down-slope from the subject parcel, shall be required to:
 - A. Collect on-site run-off and manage its release to a point of discharge into a natural watercourse of the drainage area;
 - B. Protect and clean the down-slope of silt and debris washed from the subject property as a result of land disturbance activities on the subject property; and
 - C. Install all drainage and erosion control improvements as required by the approved soil erosion and sediment control plan.
 2. Measures to minimize soil erosion and sedimentation shall meet the standards and specifications contained in the Pennsylvania Department of Environmental Protection, *Soil Erosion and Sediment Pollution Control Manual*, as amended and the Pennsylvania Clean Streams Law, Chapter 102, Erosion and Sedimentation Control Rules and

Regulations, as amended and the specifications contained herein. The Municipal Engineer or other duly authorized agent shall ensure compliance with the appropriate specifications.

3. The Municipality may require measures to be incorporated into the plan for erosion and sediment pollution control in addition to and/or more stringent than those required by the PADEP Manual, or by the Chester County Conservation District.
- H. The disturbed area and the duration of exposure shall be kept to a practical minimum and the disturbed soils shall be stabilized within three (3) days after earth disturbances cease, unless DEP requires less time.
1. The erosion control and stormwater management structures and systems shall be installed in accordance with the approved sequence of construction and shall be completed as quickly as possible; and
 2. If runoff from a project area discharges to a stream that is classified as Special Protection (High Quality or Exceptional Value) as designated by Pennsylvania Code 25, Chapter 93; Water Quality Standards, as amended, more stringent criteria shall be used to design best management practices for that site in accordance with the Erosion and Sediment Pollution Control Program Manual. All graded surfaces shall be stabilized immediately upon completion of an earth disturbance activity, or any stage or phase of an activity, and, shall be watered, tended, and maintained as necessary until growth is well established.
- I. Whenever feasible, natural vegetation shall be retained, protected and supplemented.
- J. Sediment laden water shall be trapped by the use of erosion and sediment control best management practices (BMP) such as inlet protection, sediment basins, sediment traps, or similar measures until the disturbed area is permanently stabilized and BMP removal is approved by the Chester County Conservation District. Accumulated sediment shall be removed to ensure continued adequate capacity in the BMPs in accordance with the PADEP Manual.
- K. There shall be no increase in discharge of sediment or other solid material from the site as a result of stormwater runoff.
- L. Erosion and sedimentation control BMPs, whether temporary or permanent, such as vegetation and mulch, earthen berms, waterbars, diversion terraces, rock filter berms, rock construction entrances, sediment basins, silt fences, and the like, appropriate to the scale of operations, shall be constructed, stabilized and functional before site disturbance (other than the minimal site disturbance necessary to install the BMPs) begins within the tributary areas of those BMPs, and whenever any situation is created which would contribute to increased soil erosion.
- M. Earthmoving operations shall be minimized where possible and practicable to preserve desirable natural features and the topography of the site.

- N. Stripping of vegetation, re-grading or other development shall be done in such a way that will minimize soil erosion.
- O. To the maximum extent practicable, mature, healthy trees with a DBH of (6) inches in caliper and other significant existing vegetation shall be retained and protected. Such trees shall not be removed, except as provided on the approved subdivision and/or land development plan. The filling of soil more than five (5) inches over the roots of trees to be preserved is prohibited (The roots are presumed to extend out from the tree as far as the tree's branches extend outward).
- P. Land disturbance shall be limited to the actual construction site and an access strip. The amount of disturbed area and the duration of exposure shall be kept to a practical minimum. Disturbed areas shall be stabilized immediately upon completion of an earth disturbance activity or any stage or phase of an activity with an appropriate BMP.
- Q. Provisions shall be made to effectively accommodate the increased runoff caused by changed soil and surface conditions during and after development. Water runoff shall be minimized and retained on-site wherever possible to facilitate groundwater recharge;
- R. Temporary vegetation and/or mulching shall be used to protect critical areas during development (Critical areas shall be construed to mean those portions of a site which are extremely vulnerable to soil erosion);
- S. The permanent final vegetation and structural soil erosion control and drainage measures shall be installed as soon as practical in the development in accordance with the approved plans;
- T. Sediment removed from best management practices shall be disposed of in landscaped areas outside of steep slopes, wetlands, floodplains or drainage swales and immediately stabilized.
- U. Until the site is stabilized, all best management practices for erosion and sediment pollution control must be maintained properly. Maintenance must include inspections of all best management practices after each run-off event, and on a weekly basis. All preventive and remedial maintenance work, including clean out, repair, replacement, regrading, reseeding, re-mulching and re-netting must be performed immediately.
- V. If erosion and sediment pollution control best management practices fail to perform as expected, replacement best management practices or modifications of those installed will be required as determined by the Municipal Engineer.
- W. Should it be necessary, any pumping of sediment laden water shall be through a sediment control BMP, such as a sediment basin or a pumped water filter bag discharging over non-disturbed areas.
- X. All earth disturbance activities shall proceed in accordance with the approved sequence of construction or staging of earth moving activities as it may be called. Each stage shall be

completed before any following stage is initiated. Clearing and grubbing shall be limited to only those areas described in each stage.

Y. Responsibility.

1. Whenever sedimentation is caused by the removal of vegetation, regrading or other development, it shall be the responsibility of the applicant or applicant's agent causing such sedimentation to remove it from all adjoining surfaces, drainage systems and watercourses and to repair any damage at his or her expense within a time period acceptable to the Township.
2. All required drainage and erosion control improvements, whether temporary or permanent, shall be installed by the applicant or applicant's agent, at their expense, and in accordance with applicable requirements.
3. Each application shall contain a commitment to submit for approval a modified Soil Erosion and Sediment Control Plan should the proposed plan prove to be inadequate prior to final release of escrow and dedication of improvements.

Section 304. Site Design Process

The Applicant shall design the Site to minimize the disturbances to land, Site hydrology, and natural resources, and to maintain the natural hydrologic regime, drainage patterns and flow conditions. The Applicant shall demonstrate in its SWM Site Plan (as required in Subsection 402.D.4) that the design sequence, objectives and techniques described below were applied to the maximum extent practicable in the Site design of the Regulated Activity while complying with all other requirements of this Ordinance. The Site design shall:

- A. First, identify and delineate all existing natural resources and natural and man-made hydrologic features listed in Subsection 402.B.9 that are located within the Site, or receive discharge from, or may be impacted by the proposed Regulated Activity.
- B. Second, provide a prioritized listing of these resources and features to identify:
 1. Those to be incorporated into the Site design in a manner that provides protection from any disturbance or impact from the proposed Regulated Activity;
 2. Those to be protected from further disturbance or impact but for which the proposed Regulated Activity will provide improvement to existing conditions;
 3. Those that can be incorporated into and utilized as components of the overall Site design in a manner that protects or improves their existing conditions while utilizing their hydrologic function within the limits of their available capacity (e.g., for infiltration, evapotranspiration, or reducing pollutant loads, runoff volume or peak discharge rates, etc.) to reduce the need for or size of constructed BMPs; and
 4. Those that may be considered for alteration, disturbance or removal.

C. Third, develop the Site design to achieve the following:

1. Recognize and incorporate the priorities identified in Subsection 304.B as the basis for the proposed Site layout, grading, construction, and permanent ground cover design;
2. Minimize Earth Disturbance (both surface and subsurface);
3. Maximize protection of or improvement to natural resources and special management areas;
4. Minimize the disturbance of natural Site hydrology, in particular natural drainage features and patterns, discharge points and flow characteristics, natural infiltration patterns and characteristics, and natural channel and floodplain conveyance capacity;
5. Incorporate natural hydrologic features and functions identified in Subsection 304.B into the Site design to protect and utilize those features and their hydrologic functions to reduce the need for or size of constructed BMPs;
6. Maximize infiltration and the use of natural Site infiltration features, patterns and conditions, and evapotranspiration features;
7. Apply selective grading design methods to provide final grading patterns or preserve existing topography in order to evenly distribute runoff and minimize concentrated flows;
8. Minimize the cumulative area to be covered by Impervious Surfaces and:
 - a. Minimize the size of individual Impervious Surfaces,
 - b. Separate large Impervious Surfaces into smaller components,
 - c. Disconnect runoff from one Impervious Surface to another, and
 - d. Utilize porous materials in place of impervious wherever practicable;
9. Minimize the volume and peak discharge rates of stormwater generated;
10. Avoid or minimize stormwater runoff pollutant loads and receiving stream channel erosion;
11. Locate infiltration and other BMPs:
 - a. At or as near to the source of generation as possible, and
 - b. At depths that are as shallow as possible;

12. Prioritize the selection and design of BMPs as follows:
 - a. Nonstructural and vegetation BMPs, then
 - b. Structural (surface and subsurface) BMPs;
 13. For flow volumes requiring conveyance from the source of generation to a BMP for management, give preference to open channel conveyance techniques that provide infiltration and water quality benefits, and landscaped-based management in common open space areas, where practicable; and
 14. Consider additional guidance for incorporating natural hydrology into the Site and BMP designs, methods and techniques that support the objectives of Subsections 304.B and 304.C. Appendix B presents additional discussion of “Conservation Design” and “Low Impact Development.”
- D. The procedures set forth above shall be utilized to the maximum extent practicable for the overall Site design and selection, location and design of features and BMPs to be used to comply with the requirements of Sections 305, 306, 307 and 308.

Section 305. Water Quality and Runoff Volume Requirements

To control Post-construction stormwater impacts from Regulated Activities and meet State water quality requirements, BMPs shall be provided in the Site design that replicate Predevelopment stormwater infiltration and runoff conditions, such that Post-construction stormwater discharges do not degrade the physical, chemical, or biological characteristics of the receiving waters. The green infrastructure and Low Impact Development (LID) practices provided in the PA BMP Manual, as well as the guidance on green infrastructure, LID and Conservation Design (CD) provided in Appendix B, shall be utilized for all regulated activities wherever possible. The Applicant shall comply with the following water quality and runoff volume requirements for all Regulated Activities, including all New Development and Redevelopment activities:

- A. The Post-construction total runoff volume shall not exceed the Predevelopment total runoff volume for all storms equal to or less than the two (2)-year, twenty-four (24)-hour duration precipitation (design storm).
- B. The water quality and runoff volume to be managed shall consist of any runoff volume generated by the proposed Regulated Activity over and above the Predevelopment total runoff volume and shall be captured and permanently retained or infiltrated on the Site. Permanent retention options may include, but are not limited to, reuse, evaporation, transpiration, and infiltration.
- C. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 309.D of this Ordinance.

- D. The design of the Stormwater Management Facility outlet shall provide for protection from clogging and unwanted sedimentation.
- E. BMPs that moderate the temperature of stormwater shall be used to protect the temperature of receiving surface waters.
- F. Water quality improvement shall be achieved in conjunction with achieving the infiltration requirements of Section 306. The infiltration volume required under Section 306 may be included as a component of the water quality volume. If the calculated water quality and runoff volume is greater than the volume infiltrated, then the difference between the two (2) volumes shall be managed for water quality and runoff volume control through other techniques or practices but shall not be discharged from the Site.
- G. Runoff from the Disturbed Area shall be treated for water quality prior to entering existing waterways or water bodies. If a stormwater management practice does not provide water quality treatment, then water quality BMPs shall be utilized to provide pre-treatment prior to the runoff entering the stormwater management practice.
- H. The Municipality may require additional water quality and runoff control measures for stormwater discharging to special management areas such as those listed in Subsection 301.P.
- I. When the Regulated Activity contains or is divided by multiple drainage areas, the water quality and runoff volume shall be separately addressed for each drainage area.
- J. Weighted averaging of runoff coefficients shall not be used for manual computations or input data for water quality and runoff volume calculations.
- K. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) may be excluded from the calculation of the water quality and runoff volume requirements.
- L. Water quality and volume control practices shall be selected and designed to meet the Section 304.C criteria that apply to water quality and volume control.
- M. Evapotranspiration may be quantified and credited towards meeting volume requirements according to the PADEP Post Construction Stormwater Management (PCSM) Spreadsheet and Instructions (December 2020) or the most recent guidance from PADEP.

Section 306. Infiltration Requirements

Providing for infiltration consistent with the natural hydrologic regime is required to compensate for the reduction in the recharge that occurs when the ground surface is disturbed or Impervious Surface is created or expanded. The Applicant shall achieve the following infiltration requirements:

- A. For Regulated Activities involving both New Development and Redevelopment, infiltration should be designed to accommodate the entire water quality volume requirement of Section 305.A. Infiltration BMPs should be consistent with the design and infiltration period guidelines included in the PA BMP Manual or other PA DEP design guidance. If the runoff volume required by Section 305 cannot be infiltrated, then alternative methods consistent with the PA BMP Manual (as amended) or other PA DEP guidance, such as the Managed Release Concept, may be used to manage this volume with approval from the Municipal Engineer.
- B. For Regulated Activities involving both New Development and Redevelopment, the volume of a minimum of one (1)-inch of runoff from all Regulated Impervious Surfaces shall be infiltrated.
- C. If the requirements of Subsection 306.A or 306.B above cannot be physically accomplished then the Applicant shall be responsible for demonstrating, with data or calculations, to the satisfaction of the Municipal Engineer, why this infiltration volume cannot be physically accomplished on the Site (e.g., shallow depth to bedrock or limiting zone, open voids, steep slopes, etc.) and what alternative volume can be infiltrated.
- D. Only if a minimum infiltration of the first one-half (0.5) inch of runoff volume cannot be physically accomplished on the Site, shall a waiver from Section 306.C be considered by the Municipality in accordance with Section 111.C.
- E. If Site conditions preclude capture of runoff from portions of the Impervious Surfaces, the infiltration volume for the remaining area shall be increased an equivalent amount to offset the loss.
- F. When a project contains or is divided by multiple drainage areas, the infiltration volume shall be addressed for each drainage area.
- G. Existing Impervious Surfaces located in areas outside of the Site (i.e., outside of the Regulated Activity) may be excluded from the calculation of the required infiltration volume.
- H. Infiltration BMPs shall be selected based on suitability of soils and Site conditions and shall be constructed on soils that have the following characteristics:
 - 1. A minimum depth of twenty-four (24) inches between the bottom of the BMP and the top of the limiting zone as determined by field tests (see subsection J) conducted by the Applicant.
 - 2. An infiltration rate sufficient to accept the additional stormwater volume and drain completely as determined by field tests (see subsection J) conducted by the Applicant.
 - 3. The infiltration facility shall completely drain the retention (infiltration) volume within three (3) days (seventy-two (72) hours) from the end of the design storm.

- I. A detailed soils evaluation of the Site shall be conducted by a qualified professional and at a minimum shall address soil permeability, depth to bedrock, and subgrade stability. The general process for design infiltration BMP shall be conducted by a qualified Licensed Professional and shall be consistent with the PA BMP Manual (as amended) (or other guidance acceptable to the Municipal Engineer) and in general shall:
 - 1. Analyze hydrologic soil groups as well as natural and man-made features within the Site to determine general areas of suitability for infiltration practices. In areas where development on fill material is under consideration, conduct geotechnical investigations of sub-grade stability; infiltration may not be ruled out without conducting these tests.
 - 2. Provide field tests such as double ring infiltrometer or other hydraulic conductivity tests (at the elevation of the proposed infiltration surface) to determine the appropriate hydraulic conductivity rate. Standard septic/sewage percolation test are not acceptable for design purposes.
 - 3. Design the Infiltration Facility for the required retention (infiltration) volume based on field-determined infiltration capacity (and apply safety factor as per applicable design guidelines) at the elevation of the proposed infiltration surface.
 - 4. On-lot infiltration features are encouraged; however, it shall be demonstrated to the Municipal Engineer that the soils are conducive to infiltration on the identified lots.
 - 5. Site evaluation and soils testing should be conducted in accordance with Appendix C of the PA DEP BMP Manual.
- J. No more than 50% of the required infiltration volume may be provided in detention basin bottoms. The remaining 50% of infiltration volumes shall be provided at or near the proposed impervious coverage as permitted by the soil conditions.
- K. All infiltration practices shall:
 - 1. Be selected and designed to meet the criteria of Subsection 304.C that are applicable to infiltration;
 - 2. Be setback a minimum of:
 - a. fifteen (15) feet down gradient or one fifty (50) feet up gradient from principal buildings and/or structures,
 - b. twenty (20) feet from property lines, a lesser distance may be allowed at the discretion of the Township Engineer but never less than ten (10) feet.
 - c. fifty (50) feet from a special geologic feature,
 - d. one hundred (100) feet from wells, and

- e. ten (10) feet from septic system drain fields, or as directed by PA DEP regulations and/or the Sewage Enforcement Officer.
 - 3. For any infiltration practice that collects runoff from shared or multiple features and that is located within fifteen (15) feet of a building or feature with sub-grade elements (e.g., basements, foundation walls, etc.), the bottom elevation shall be set below the elevation of the sub-grade element.
- L. Infiltration facilities shall, to the maximum extent practicable, be located to avoid introducing contaminants to groundwater:
- 1. When a hotspot is located in the area draining to a proposed Infiltration Facility, an evaluation of the potential of Groundwater contamination from the proposed Infiltration Facility shall be performed, including a hydrogeologic investigation (if necessary) by a qualified Licensed Professional to determine what, if any, Pretreatment or additional design considerations are needed to protect Groundwater quality.
 - 2. When located within a “well head protection area” of a public water supply well, infiltration practices shall be in conformance with the applicable approved source water protection assessment or source water protection plan.
 - 3. The Applicant shall provide appropriate safeguards against groundwater contamination for land uses that may cause groundwater contamination should there be a mishap or spill.
- M. During Site construction, all infiltration practice components shall be protected from compaction due to heavy equipment operation or storage of fill or construction material. Areas that are accidentally compacted or graded shall be remediated to restore soil composition and porosity. Adequate documentation to this effect shall be submitted to the Municipal Engineer for review.
- N. Construction fencing shall be installed around infiltration areas during construction activities to protect against compaction and sedimentation and shall be indicated on the plan.
- O. Infiltration areas shall be protected from sedimentation at all times.
- P. All BMP areas designated for infiltration shall not receive runoff until the contributory drainage area has achieved final stabilization.
- Q. Where sediment transport in the stormwater runoff is anticipated to reach the infiltration system, appropriate permanent measures to prevent or collect sediment shall be installed prior to discharge to the infiltration system.
- R. If a porous paving surface is proposed, no sand, salt or other particulate matter may be applied for winter ice conditions. This prohibition shall be noted on the plan.

- S. Where roof drains are designed to discharge to infiltration practices, they shall have appropriate measures to prevent clogging by unwanted debris (for example, silt, leaves and vegetation). Such measures shall include but are not limited to leaf traps, gutter guards and cleanouts.
- T. All infiltration practices shall have appropriate positive overflow controls to prevent storage within one (1) foot of the finished surface or grade.
- U. The following procedures and materials shall be required during the construction of all subsurface facilities:
 - 1. Excavation for the infiltration facility shall be performed with equipment that will not compact the bottom of the seepage bed/trench or like facility.
 - 2. The bottom of the bed and/or trench shall be scarified prior to the placement of aggregate.
 - 3. Only clean aggregate with documented porosity, free of fines, shall be allowed.
 - 4. The tops, bottoms and sides of all seepage beds, trenches, or like facilities shall be covered with drainage fabric. Fabric shall be non-woven fabric acceptable to the Municipal Engineer.
 - 5. Stormwater shall be distributed throughout the entire seepage bed/trench or like facility, for example, perforated distribution pipes connected to centralized catch basins and manholes.
 - 6. Provisions for the collection of debris shall be provided in all facilities.
- V. The type of infiltration BMP chosen and construction details shall be approved by the Township Engineer.
- W. Vegetation planted over the infiltration system shall be suited for such conditions and not interfere with the operation of the system.
- X. All infiltration facilities which service more than one (1) lot are considered a common facility and shall have an easement provided to the Township for future access if necessary (see Section 704).

Section 307. Stream Channel Protection Requirements

For Regulated Activities involving New Development with one (1) or more acres of Earth Disturbance, the Applicant shall comply with the following stream channel protection requirements to minimize stream channel erosion and associated water quality impacts to the receiving waters:

- A. The peak flow rate of the Post-construction two (2)-year, twenty-four (24)-hour design storm shall be reduced to the Predevelopment peak flow rate of the one (1)-year, twenty-four (24)-hour duration precipitation, using the SCS Type II distribution.
- B. To the maximum extent practicable, and unless otherwise approved by the Municipal Engineer, the Post-construction one (1)-year, twenty-four (24)-hour storm flow shall be detained for a minimum of twenty-four (24) hours and a maximum not to exceed seventy-two (72) hours from a point in time when the maximum volume of water from the one (1)-year, twenty-four (24)-hour storm is stored in a proposed BMP (i.e., when the maximum water surface elevation is achieved in the facility). Release of water can begin at the start of the storm (i.e., the invert of the orifice is at the invert of the proposed BMP).
- C. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 309.D of this Ordinance.
- D. All proposed Stormwater Management Facilities shall make use of measures to extend the flow path and increase the travel time of flows in the facility.
- E. When a Regulated Activity contains or is divided by multiple drainage areas, the peak flow rate control shall be separately addressed for each drainage area.

Section 308. Stormwater Peak Rate Control Requirements

The Applicant shall comply with the following peak flow rate control requirements for all Regulated Activities including those that involve New Development and Redevelopment.

- A. Post-construction peak flow rates from any Regulated Activity shall not exceed the Predevelopment peak flow rates as shown for each of the design storms specified in Table 308.1.

**TABLE 308.1
Peak Rate Control Standards**

**(Peak Flow Rate of the Post-construction Design Storm
Shall be Reduced to the Peak Flow Rate of the Corresponding Predevelopment Design
Storm Shown in the Table)**

POST-CONSTRUCTION DESIGN STORM FREQUENCY (24-Hour Duration)	PREDEVELOPMENT DESIGN STORM	
	New Development Regulated Activities	Redevelopment Regulated Activities
2-Year	1-Year	2-Year
5-Year	2-Year	5-Year
10-Year	2-Year	10-Year
25-Year	25-Year	25-Year
50-Year	50-Year	50-Year
100-Year	100-Year	100-Year

- B. For modeling purposes, the Predevelopment ground cover conditions shall be determined using the corresponding ground cover assumptions presented in Subsection 309.D of this Ordinance.
- C. For Regulated Activities involving only Redevelopment, no peak flow rate controls are required when and **only if** the total Regulated Impervious Surface area is at least twenty percent (20%) less than the total existing Impervious Surface area to be disturbed by the Regulated Activity. In all cases where this requirement is not met, the Redevelopment Regulated Activity shall achieve the peak flow rate controls presented in Table 308.1, using the Redevelopment Ground Cover Assumptions presented in Subsection 309.D. This design criterion for Redevelopment is only permitted with approval of the Municipal Engineer. It shall result in no impact on downstream properties.
- D. Only the area of the proposed Regulated Activity shall be subject to the peak flow rate control standards of this Ordinance. Undisturbed areas for which the discharge point has not changed are not subject to the peak flow rate control standards.
- E. Areas located outside of the Site (i.e., areas outside of the Regulated Activity) that drain through a proposed Site are not subject to peak flow rate control requirements. Drainage facilities located on the Site shall be designed to safely convey flows from outside of the Site through the Site.
- F. When a Regulated Activity contains or is divided by multiple drainage areas, the peak flow rate controls shall be separately addressed for each drainage area.
- G. The effect of structural and non-structural stormwater management practices implemented as part of the overall Site design may be taken into consideration when calculating total storage volume and peak flow rates.

Section 309. Calculation Methodology

- A. Stormwater runoff from all Regulated Activity Sites with a drainage area of greater than five (5) acres shall be calculated using a generally accepted calculation technique(s) that is based on the NRCS Soil Cover Complex Method. Table 309.1 summarizes acceptable computation methods. The method selected for use shall be based on the individual limitations and suitability of each method for a particular Site. The use of the Rational Method to estimate peak discharges for drainage areas greater than five (5) acres shall be permitted only upon approval by the Municipal Engineer.

TABLE 309.1**ACCEPTABLE COMPUTATION METHODOLOGIES FOR
SWM SITE PLAN**

METHOD	DEVELOPED BY	APPLICABILITY
TR-20 (or commercial computer package based on TR-20)	USDA NRCS	Applicable where use of full hydrology computer model is desirable or necessary.
TR-55 (or commercial computer package based on TR-55)	USDA NRCS	Applicable for land development plans where limitations described in TR-55 are met.
HEC-1/ HEC-HMS	US Army Corps of Engineers	Applicable where use of a full hydrologic computer model is desirable or necessary.
Rational Method (or commercial computer package based on Rational Method)	Emil Kuichling (1889)	For Sites up to five (5) acres, or as approved by the Municipality.
Other Methods	Varies	Other computation methodologies approved by the Municipality.

- B. All calculations using the Soil Cover Complex Method shall use the appropriate design rainfall depths for the various return period storms consistent with this Ordinance. Rainfall depths used shall be obtained from the latest version of the Precipitation-Frequency Atlas of the United States, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydrometeorological Design Studies Center, Silver Spring, Maryland (NOAA Atlas 14) values consistent with a partial duration series. When stormwater calculations are performed for routing procedures or infiltration, water quality and runoff volume functions, the duration of rainfall shall be twenty-four (24) hours.
- C. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times-of-concentration (duration) and storm events with rainfall intensities obtained from NOAA Atlas 14 partial duration series estimates, or the latest version of the PennDOT Drainage Manual (PDM Publication 584). Times-of-concentration shall be calculated based on the methodology recommended in the respective model used. Times of concentration for channel and pipe flow shall be computed using Manning's equation. Manning's roughness coefficient (n) values shall be per Appendix C.
- D. The Applicant shall utilize the following ground cover assumptions for all Predevelopment water quality and runoff volume, infiltration volume and peak flow rate calculations:

1. For Regulated Activities involving New Development, the following ground cover assumptions shall be used:
 - a. For areas that are Woods (as defined in Article II of this Ordinance), Predevelopment calculations shall assume ground cover of “Woods in good condition”.
 - b. For all other areas (including all Impervious Surfaces), Predevelopment calculations shall assume ground cover of “meadow”.
2. For Regulated Activities involving Redevelopment, the following ground cover assumptions shall be used:
 - a. For areas that are Woods (as defined in Article II of this Ordinance), Predevelopment calculations shall assume ground cover of “Woods in good condition”.
 - b. For areas that are not Woods or not Impervious Surfaces, Predevelopment calculations shall assume ground cover of “meadow”.
 - c. For areas that are Impervious Surfaces, Predevelopment calculations shall assume at least twenty percent (20%) of the existing Impervious Surface area to be disturbed as “meadow” ground cover.
3. The Applicant shall determine which stormwater standards apply to the proposed Regulated Activity as follows:
 - a. Stormwater standards for New Development shall apply to all proposed Regulated Activities that involve only New Development activities as defined in this Ordinance.
 - b. Stormwater standards for Redevelopment shall apply to all proposed Regulated Activities that involve only Redevelopment activities as defined in this Ordinance.
 - c. At the discretion of the Municipal Engineer, Regulated Activities that involve a combination of both New Development and Redevelopment activities, as defined in this Ordinance, may either:
 - i. Apply the stormwater standards (Redevelopment or New Development) that are associated with the activity that involves the greatest amount of land area; or
 - ii. Apply the Redevelopment and New Development stormwater standards to the corresponding Redevelopment and New Development portions of the proposed Regulated Activity.
- E. Runoff curve numbers (CN) for both Predevelopment and proposed (Post-Construction) conditions to be used in the Soil Cover Complex Method shall be obtained from Table C-1 in Appendix C of this Ordinance.

- F. Runoff coefficients (C) for both Predevelopment and proposed (Post-Construction) conditions for use in the Rational Method shall be obtained from Table C-2 in Appendix C of this Ordinance.
- G. Weighted averaging of runoff coefficients shall not be used for manual computations or input data for water quality and runoff volume calculations.
- H. Hydraulic computations to determine the capacity of pipes, culverts, and storm sewers shall be consistent with methods and computations contained in the Federal Highway Administration Hydraulic Design Series Number 5 (Publication No. FHWA-NHI-01-020 HDS No. 5, as amended). Hydraulic computations to determine the capacity of open channels shall be consistent with methods and computations contained in the Federal Highway Administration Hydraulic Engineering Circular Number 15 (Publication No. FHWA-NHI-05-114 HEC 15, as amended). Values for Manning's roughness coefficient (n) shall be consistent with Table C-3 in Appendix C of the Ordinance.
- I. Runoff calculations shall include the following assumptions:
 - 1. Average antecedent moisture conditions (for the Soil Cover Complex Method only for example, TR-55, TR-20).
 - 2. A type II distribution storm (for the Soil Cover Complex Method only for example, TR-55, TR-20).

Section 310. General Design Standards for BMPs (Additional Standards)

The following provisions shall be followed and incorporated into the stormwater management design, review, and construction process:

- A. Stormwater management facilities, including but not limited to recharge facilities, detention facilities, storm sewers, culverts, bridges and related drainage installations shall be designed and constructed to meet the following purposes:
 - 1. To permit unimpeded flow of natural watercourses;
 - 2. To insure adequate drainage of all low points;
 - 3. To intercept stormwater runoff along streets at intervals reasonably related to the extent and grade of the area drained to prevent flow of stormwater across intersections;
 - 4. To insure adequate and unimpeded flow of stormwater over or under driveways;
 - 5. To prevent excessive flow on or across streets, sidewalks, drives, parking areas, and any other paved surface or access way; and
 - 6. To lead stormwater away from springs.

7. To intercept stormwater runoff in new subdivision lots to prevent flow of stormwater across new lot lines. Storm inlets and storm piping shall be installed to collect stormwater.
- B. All-natural streams, channels, swales, drainage systems, and/or areas of concentration of surface water shall be maintained in their existing condition except as necessary for those uses that may be permitted by the Township Zoning Ordinance and as approved by the Township.
- C. Man-made structures shall be kept to a minimum.
- D. Bridges, culverts, or riprap to be placed in or over a stream shall be chosen and constructed to maintain the natural characteristics of the stream and shall meet the approval of the Township and must obtain necessary approvals from Pa DEP.
- E. The Township may require that a landowner or developer provide reasonable corrective measures to alleviate any existing off-site drainage problem that may be affected by the proposed land development or any other regulated activity.
- F. No Person shall deposit or place any debris or any other material whatsoever, or cause such to be thrown or placed, in any channel or stormwater facility in such a manner as to obstruct free flow.
- G. No stormwater facility shall create health or sanitation problems.
- H. No stormwater facility shall impact the ability of on-lot sewage disposal systems to treat waste or adequately infiltrate treated wastewater effluent.
- I. Consideration shall be given to safety standards when designing Stormwater Management Facilities.
- J. Various BMPs, both structural and non-structural, other than those listed in the following sections can be utilized in the stormwater design. Any BMP not addressed in this Ordinance shall be designed in accordance with the design parameters found in the Pa DEP BMP Manual, latest edition. Any design parameters found in the Pa BMP Manual for the below BMPs shall apply unless otherwise specified herein.
- K. Reference to publications and source documents shall be deemed to include any amendments and revisions thereof.
- L. All proposed Stormwater Management Facilities shall make use of measures to extend the flow path and increase the travel time of flows in the facility.
- M. Any BMP intended to hold standing water for four (4) days or longer shall be designed to incorporate biologic controls consistent with the West Nile Guidance found in Appendix D, PADEP document 363-0300-001 "Design Criteria – Wetlands Replacement/Monitoring" (as

amended), (or contact the Pennsylvania State Cooperative Wetland Center or the Penn State Cooperative Extension Office for design information.

- N. Any facility located within a Penn DOT right-of-way shall comply with Penn DOT minimum design standards and permit submission and approval requirements.
- O. At the discretion of the Township Engineer, based on the size and scope of the BMP, individual on-lot BMPs (serving only one lot) shall not be required to meet the design criteria in this Article but shall be designed in accordance with the PA BMP Manual for the BMP chosen.
- P. Any stormwater basin required or regulated by this Ordinance designed to store runoff and requiring a berm or earthen embankment shall be designed to provide an emergency spillway to safely convey flow up to and including the one hundred (100)-year proposed conditions. The height of embankment shall provide a minimum one (1.0) foot of Freeboard above the maximum pool elevation computed when the facility functions for the one hundred (100)-year proposed conditions inflow. Should any BMP require a dam safety permit under PA Chapter 105 regulations, the facility shall be designed in accordance with and meet the regulations of PA Chapter 105 concerning dam safety. PA Chapter 105 may require the safe conveyance of storms larger than one hundred (100)-year event.
- Q. Any drainage Conveyance facility and/or channel not governed by PA Chapter 105 regulations shall be designed to convey, without damage to the drainage facility or roadway, runoff from the twenty-five (25)-year storm event. Larger storm events (fifty (50)-year and one hundred (100)-year storms) shall also be safely conveyed in the direction of natural flow without creating additional damage to any drainage facilities, nearby structures, or roadways.
- R. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from the facility.
- S. Roadway crossings or structures located within designated floodplain areas shall be able to convey runoff from a 100-year design storm consistent with Federal Emergency Management Agency National Flood Insurance Program – Floodplain Management Requirements.
- T. Adequate erosion protection and energy dissipation shall be provided along all open channels and at all points of discharge. Design methods shall be consistent with the Federal Highway Administration Hydraulic Engineering Circular Number 11 (Publication No. FHWA-IP-89-016, as amended) and the PADEP Erosion and Sediment Pollution Control Program Manual (Publication No. 363-2134-008, as amended), or other design guidance acceptable to the Municipal Engineer.

Section 311. Detention Basins, Retention Basins, Wet Basins and Underground Basins (Additional Standards)

- A. General requirements for all types of basins.

1. Basins shall meet the following minimum setbacks measured from the top and/or toe of slope (whichever is closer):
 - a. fifty (50) feet from a special geologic feature as defined herein,
 - b. fifty (50) feet from any property line,
 - c. fifty (50) feet from any right-of-way,
 - d. fifty (50) feet from any structure,
 - e. fifty (50) feet from a wetland, and
 - f. fifty (50) feet from the top of bank of existing streams.
2. The use of multiple basin facilities that are smaller and less intrusive on the site is encouraged.
3. Privately owned basin facilities and BMPs shall be situated such that lot lines do not divide the facility.
4. Maintenance of a basin facility shall be the responsibility of only one lot owner unless the facility is located in a common area maintained by a homeowner's association. Legal agreements in a form acceptable to the Solicitor shall be provided addressing maintenance of any facility where maintenance will be other than by one lot owner. See also Article VII.
5. When PA DEP requires basin facilities to have a State permit, the Developer shall submit all information to PA DEP and obtain all necessary approvals and permits.
6. Easements shall be provided for all basins and shall meet the applicable requirements in Section 704.

B. Design requirements for all types of basins.

1. For basins that combine rate and volume controls, the infiltration "discharge" should not be taken into consideration when routing the peak discharge amounts, nor shall the infiltration volume be used in the routing.
2. It shall be the developer's responsibility to verify if the site is underlain by karst. Whenever basins will be located in an area underlain by karst:
 - a. A geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations.

- b. The design of all facilities over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole formation.
 - c. The installation of an impermeable liner may be required.
 - d. A detailed hydrogeologic investigation may be required.
 - e. Uses where a mishap or spill may cause groundwater contamination, will require the developer to provide safeguards against contamination.
3. Inlet and outlet structures shall be located at maximum distances from one another. For above ground basins, a rock filter berm, rock-filled gabions, or other baffle may be required between inlet and outlet areas when the distance is deemed insufficient for water quality purposes.
4. A reinforced concrete outlet structure/box shall be used to regulate water flow through all basins and shall incorporate the following components and criteria:
- a. A multiple stage outlet release design is encouraged;
 - b. The minimum circular orifice diameter for controlling discharge rates from basin facilities shall be three (3) inches unless otherwise approved by the Municipal Engineer and a trash rack shall be installed to prevent clogging. Designs where a lesser size orifice would be required to fully meet release rates, a 3-inch orifice shall be acceptable provided that as much of the site runoff as practical is directed to the basin facilities.
 - i. When the calculated orifice size is below three (3) inches, gravel filters (or other methods) are recommended to discharge low-flow rates subject to the Municipal Engineer's satisfaction.
 - ii. When filters are utilized, maintenance provisions shall be provided to ensure filters meet the design function.
 - c. The elevation of the top of the outlet structure shall be such that no flow enters the structure for the 25 year frequency storm event.
 - d. The base of the outlet structure shall extend a minimum of one (1) foot below the bottom of the basin for above-ground basins.
 - e. Outlet structure connections shall be water tight.
 - f. The outlet structure shall be cast as one-piece.
 - g. A concrete wash (flow channel) across the bottom of the structure shall be provided.

- h. Basins with a design water depth less than or equal to 1.5 feet may be exempt from outlet structure requirements as deemed appropriate by the Township Engineer.
 - 5. A trash rack shall be provided for all above-ground orifices.
 - 6. The outlet pipe shall be reinforced concrete pipe rubber with gaskets/o-ring joints.
 - 7. Basins shall be designed to accommodate the 100-year post-development storm such that the maximum water surface elevation is a minimum of six (6) inches below:
 - a. the emergency spillway elevation for above-ground basins, or
 - b. top of facility for under-ground basins.
 - 8. When the outfall point of a proposed basin facility is located at a point subject to tailwater conditions, a tailwater elevation at the outfall point will need to be assumed when performing the basin facility routing calculations. The tailwater elevation assumed shall be based on the same frequency of the storm being routed.
 - 9. Any pipe or other component that discharges into an above-ground basin shall discharge at the bottom of the basin and shall be provided with an appropriate energy dissipater.
 - 10. Any pipe or other component that discharges out of a basin shall be provided with an appropriate energy dissipater.
 - 11. Where appropriate, adequate drainage channels shall be provided and maintained for discharge(s) from the basin. If the basin will not discharge to a suitable natural drainage channel, the Developer may be required to provide facilities to safely and efficiently convey the discharge to a suitable drainage channel. Securing necessary drainage easements for this purpose shall be the sole responsibility of the Developer.
- C. Basins that are designed with berms/earthen embankments shall incorporate the following minimum standards:
- 1. The height of the berm shall not exceed 15 feet, unless all appropriate permits are issued by the PA DEP.
 - 2. The minimum top width of berms shall be 10 feet.
 - 3. Side slopes of basins shall:
 - a. whenever possible, the side slopes and basin shape shall be as shallow as possible and blend/conform to the natural topography.
 - b. not be steeper than three units horizontally to one unit vertically (3:1).

- c. depending upon the location of and any other intended use of the detention facilities during non-rain event times, a flatter side slope, for one or both slopes, may be required.
 - d. when a basin is to be maintained by a residential lot owner, the side slope shall be four units horizontally to one unit vertically (4:1).
- 4. A key trench shall be provided:
 - a. extending at least 2 feet deep in undisturbed soil, or to stable subgrade whichever is deeper,
 - b. constructed of compacted relatively impervious material (Unified Soil Classification CL or ML),
 - c. having a minimum bottom width of 4 feet, and
 - d. having maximum side slopes of one horizontal to one vertical.
- 5. A compacted impervious core shall be provided:
 - a. having at least 8 feet wide at the top,
 - b. having a maximum side slope of one horizontal to one vertical,
 - c. extending for the full length of the embankment, and
 - d. having the top elevation shall be set at the 50 year design water surface elevation.
- 6. All pipes and culverts through berms shall have anti-seep collars incorporating the following requirements. Anti-seep collars shall:
 - a. have water tight connections.
 - b. be constructed of concrete.
 - c. be designed using a method acceptable to the Township Engineer to determine the number, spacing and size. Notwithstanding the design, they shall be a minimum of one (1) foot thick.
- 7. Basin bottom grades shall be a minimum of 2% unless designed in combination with an infiltration facility or other BMP where bottom grade is not indicated or with the approval of the Township Engineer.
- 8. All basin embankments shall:
 - a. be constructed of suitable material,

- b. be placed in (8) inch lifts, maximum,
 - c. compacted to a minimum of ninety-five (95) percent of maximum dry density as established by ASTM D-1557, and
 - d. have compaction operations be observed by the site inspector.
 - e. When required by the Township Engineer or site inspector, the Developer shall obtain the services of a qualified laboratory technician to conduct compaction testing. Copies of all tests shall be provided to the site inspector.
9. An emergency spillway shall be provided incorporating the following requirements:
- a. The emergency spillway shall be placed in undisturbed earth whenever possible.
 - b. Emergency spillways shall be designed to safely convey the 100-year post-development basin inflow with a minimum of 6" of freeboard above the water surface elevation to the top of berm, assuming blocked outlet structure conditions. The total minimum depth of emergency spillways shall be one (1) foot.
 - c. Emergency spillways shall be constructed such that the basin berm is protected against erosion. When necessary, erosion protection shall extend along the upstream and downstream berm slopes.
 - d. Basins with a design water depth less than or equal to 1.5 feet are exempt from emergency spillway and freeboard requirements unless otherwise deemed necessary by the Township Engineer.
10. When deemed necessary by the Township, stormwater basin facilities shall be enclosed with a fence of a type meeting their approval. Vegetative screening a minimum of 3 ½ feet high spaced so as to discourage entrance to the basin area may be utilized as an alternative to fence when deemed appropriate by the Township.
11. Basins shall be planted to effectively naturalize areas so as to become an integral and harmonious element in the local landscape; however, no trees or shrubs shall be planted on the berm/embankment or over underground basins.
- D. Under-ground basins shall incorporate the following minimum standards:
- 1. Flow through the outlet structure shall be attenuated with a concrete weir wall with appropriately sized orifices. Other designs will be considered with approval of the Township Engineer.
 - 2. Underground facilities that propose pipe storage as a means of detention shall be constructed of reinforced concrete pipe (RCP) or smooth-lined corrugated plastic pipe (SLCPP). No metal pipe shall be allowed.

E. Wet basins shall incorporate the following minimum standards:

1. Water surface area shall not exceed 1/10 of the tributary drainage area.
2. Shoreline protection shall be provided to prevent erosion from wave action.
3. Minimum normal water depth shall be 4 feet. If fish are to be used to keep the pond clean, a minimum of 1/4 of the pond area shall be a minimum of 10 feet deep.
4. Facilities shall be provided to allow the pond level to be lowered by gravity flow for cleaning purposes, and shoreline and other maintenance.
5. Aeration facilities as may be required to prevent pond stagnation. Manufacturer's information to substantiate the effectiveness of these aeration facilities shall be submitted with the site plans. Agreements for the perpetual operation and maintenance of aeration facilities shall be prepared and provided for review. See Article VII.
6. In the event that the water surface of the pond is to be raised for the purposes of storing water for irrigation or in anticipation of the evapotranspiration demands of dry weather, the volume remaining for storage of excess stormwater runoff shall still be sufficient to contain the 50 year design storm runoff.
7. All wet basin designs shall incorporate biological minimization controls consistent with the West Nile Guidance found in Appendix D.

F. The following items shall be submitted for basin review:

1. Design computations for the sizing of the outlet structure,
2. Stage-storage curve,
3. Routed hydrographs for each storm,
4. Storage requirement calculations,
5. Plan(s) showing the berm/embankment and outlet structure in plan and cross-section views as well as details, including but not limited to:
 - a. inlet pipe and energy dissipater,
 - b. top of berm elevations,
 - c. width of the top of the berm,
 - d. outlet pipe and energy dissipater,
 - e. side slopes,
 - f. emergency spillway elevation,
 - g. elevations of all features of the outlet structure,
 - h. clay core,
 - i. key trench,

- j. dimensions and spacing of anti-seep collars,
- k. trash rack, and
- l. anti-vortex device (if included in the design).

Section 312. Collection and Conveyance Systems Standards

A. General

1. Storm sewers and associated structures shall be required to be constructed to:
 - a. intercept runoff at such intervals as necessary along streets to provide safe vehicular movement,
 - b. eliminate standing water at the bottom of grades,
 - c. eliminate the use of cross gutters at street intersections and elsewhere, and
 - d. discharge collected water (from any and all locations including but not limited to streets, parking lots and lawn area) to an infiltration facility, detention basin or other acceptable BMP, that discharges to the nearest practical natural channel.
2. Manholes, inlets, headwalls and other storm water structures must conform to the standards established by PennDOT and be per details shown in Penn DOT Standards for Roadway Construction or as approved by the Township Engineer. Such structures must be supplied by a PennDOT Bulletin 15 approved supplier. These requirements shall be noted on the plan.
3. All materials, workmanship, and installation shall conform to Penn DOT specifications contained in Chapter 408, current edition.
4. Whenever practical, storm sewers and associated structures that drain the street system shall be located within the right-of-way of the street.
5. No stormwater conveyance facility shall be constructed within fifty (50) feet of a special geologic feature, unless it is constructed of reinforced concrete pipe utilizing rubber gasket/o-ring joints – such pipe shall be a minimum of twenty-five (25) feet from a special geologic feature.
6. Easements shall be provided for all conveyance and collection systems that are not located within street rights-of-way and shall be a minimum of 20 feet in width. Easements shall meet the applicable requirements in Section 704.
7. Collection and conveyance systems shall be installed to prevent concentrated flow from crossing or following sidewalks. Pipe and inlet size and materials used for this purpose shall be acceptable to the Township Engineer.

8. Collection and conveyance systems shall be provided where runoff is concentrated in rear, side or front yards as necessary to prevent erosion.
9. Collection and conveyance systems shall be provided in order to adequately drain parking lots.

B. Sizing Criteria

1. Collection and conveyance systems in public streets shall be adequate for the anticipated runoff when the area draining to the system is fully developed as permitted by zoning.
2. Collection and conveyance systems shall be designed to carry the 25-year peak flow rate determined using the Rational formula and good engineering practice.
3. Collection and conveyance systems shall be evaluated for both gravity (Manning's equation) and pressure (inlet/outlet control, hydraulic grade line) as appropriate.
4. An overflow system shall be provided when the capacity of the storm water pipe system is exceeded. The system shall carry flow to an appropriate stormwater management facility in the direction of natural flow and in a manner that does not damage public or private property or flood streets. The system shall be sized to carry the difference between the 100 and 10 year frequency storms.
5. Conveyance facilities to or exiting from stormwater management facilities (i.e., detention basins) shall be designed to convey the design flow to or from the facility.
6. Roadway crossings or structures located within designated floodplain areas shall be able to convey runoff from a 100-year design storm consistent with Federal Emergency Management Agency National Flood Insurance Program – Floodplain Management Requirements.

C. Stormwater Pipes

1. The minimum inside diameter of all pipe to be installed shall be a minimum of 18 inches.
2. All pipes shall be reinforced concrete Class III or better meeting Penn DOT's 100-year life criteria.
3. Joints shall be provided with rubber gaskets/o-rings.
4. The minimum pipe slope shall be ½ percent.
5. The maximum pipe diameter shall be sixty (60) inches.

6. The minimum cover for storm water pipe shall be eighteen (18) inches. This minimum cover shall be provided and maintained during construction in order to protect pipe from damage.
7. The maximum cover for storm water pipe shall be ten (10) feet.
8. Where cover is restricted, equivalent elliptical concrete pipe or concrete arch pipe maybe used in lieu of circular pipe.
9. When located within a street cartway, pipe shall be bedded on 6 inches of Penn DOT 2A stone and backfilled with 2A stone placed and compacted in 6 inch lifts.
10. All pipe shall be laid in a straight line. A manhole or inlet shall be provided at all horizontal deflections.
11. Storm pipe shall not be permitted under buildings or structures.
12. Underdrains and/or pavement base drains shall be:
 - a. required at all locations where subsurface water that could negatively impact the subgrade of a street is expected, and
 - b. provided in areas deemed necessary by the Township Engineer as may be encountered during construction. A note to this effect shall be placed on the plan.
13. A water quality/pretreatment structure (or structures as necessary based on design flow) shall be:
 - a. provided at or near the terminus of all storm sewer systems,
 - b. capable of capturing floatables, sediment, gravel, leaves and liquid contaminants (oil, antifreeze, etc.) prior to leaving the right-of-way and/or entering a channel or stormwater BMP whether an infiltration BMP or detention basin etc., and
 - c. located such that they are easily accessible from the street.
14. At the completion of construction of collection and conveyance systems, prior to entering the improvements maintenance period, a mandrel test of any piping shall be performed.
15. Prior to dedication of public streets and release of the maintenance bond, a video test of any collection and conveyance systems located within the street right-of-way shall be required.

D. Inlets

1. Inlets shall be spaced to limit the gutter spread to no more than one-half of the width of the travel lane during the design storm (25-year).

2. The capacity of all C, M, or S type inlets shall be determined using the Commonwealth of Pennsylvania, Department of Transportation, *Design Manual*, Part 2, “Highway Design”.
3. The maximum allowable headwater depth shall be 1 foot below the top of the inlet grate.
4. Double inlets separated by 20 feet shall be used if adequate efficiency is not realized with a single inlet.
5. Inlet capacity calculations shall be provided in the stormwater management report including the design 25-year peak flow rate to each inlet.
6. No inlet smaller than standard Penn DOT inlet types C, M and S shall be used within streets.
7. Regardless of capacity calculations, inlets shall be located to intercept runoff prior to handicapped ramps, prior to every street or driveway intersection radius, and at sag points of vertical curves and any other low points whether in streets, parking lots or lawn areas.
8. Inlets shall be placed prior to the radius of an intersection not on the curved portion unless unavoidable in order to be located at a low point.
9. In non-sump areas, inlets shall be placed such that flow to any single inlet shall not exceed 4 cubic feet per second (cfs) for 4 foot inlets and 5 cfs for 6 foot inlets whether located in streets, parking lots or lawn areas.
10. In sump areas, other than within a street, the maximum depth of water above the inlet top elevation shall be six (6) inches and such that the spread is not greater than a total of ten (10) feet.
11. Inlets with a depth greater than 4 feet must be provided with anti-slip ladder rungs.
12. A minimum drop of 0.20 feet shall be provided across inlets between the invert elevations of the incoming and outgoing pipes of the same diameter. For pipes of different diameters, the elevation of the crowns of the pipes shall be equal.
13. Inlets shall contain the statement “No Dumping Drains to Creek” either cast or inserted into the tops to discourage the placement of anything other than stormwater into the inlet.
14. Inlets in paved areas shall be equipped with bicycle safe grates. All inlets shall be designed and located to prevent hazards to vehicles, bicycles and pedestrians.
15. Inlet grates shall be depressed 1 inch in paved areas with inlet tops flush with the curb. Inlets in landscaped areas shall be sumped a minimum of 12 inches.
16. To promote smooth flow and self-cleaning, the bottoms of inlets shall be provided with concrete washes (flow channels).

17. All pipe entering an inlet shall be cut flush with the inside of the inlet box.
18. Weep holes shall be provided in inlets per Penn DOT RC Standards.
19. Only pre-cast concrete grade adjustment rings a maximum of 6 inches in height shall be allowed.
20. The annular space where pipes enter inlet boxes shall be sealed with concrete, flush on the inside and projecting no more than 6 inches on the outside. Bricks, stones, mortar blocks or any other materials shall not be used unless approved by the Site Inspector.
21. All backfill around inlets shall be compacted Penn DOT 2A stone.

E. Manholes

1. Manholes shall not be spaced more than 400 feet apart for pipes of less than or equal to 24-inch diameter and 500 feet apart for pipes of greater than 24-inch diameter.
2. A manhole shall be placed on a continuous storm sewer at all changes in alignment, grade or pipe size, and at all points of convergence of 2 or more influent storm sewer lines.
3. Inlets may be substituted for manholes where they serve a useful purpose.
4. Manhole covers shall have the word "STORM" cast on the top of the cover.
5. A minimum drop of 0.02 feet shall be provided across manholes between the invert elevations of the incoming and outgoing pipes of the same diameter. For pipes of different diameters, the elevation of the crowns of the pipes shall be equal.
6. The maximum allowable headwater depth shall be 1 foot below the top of the inlet grate or manhole cover.
7. To promote smooth flow and self-cleaning, the bottoms of manholes shall be provided with concrete washes (flow channels).
8. All pipe entering a manhole shall be cut flush with the inside of the manhole.
9. The annular space where pipes enter manholes shall be sealed with concrete, flush on the inside and projecting no more than 6 inches on the outside. Bricks, stones, mortar blocks or any other materials shall not be used unless approved by the Site Inspector.
10. Manholes with a depth greater than 4 feet must be provided with anti-slip ladder rungs.

F. End treatments (headwalls, endwalls, flared endsections, & similar structures)

1. At-grade pipe outlets shall be provided with one of these structures.

2. All end treatments shall be concrete - regardless of pipe material.
3. Safety grates may be required at the Township's discretion.
4. Acceptable energy dissipation devices shall be installed per Pa DEP's Erosion and Sedimentation Pollution Control Program Manual at every end treatment.
5. End treatments shall not be located closer than 10 feet from the edge of a sidewalk, curb or cartway edge.

G. Man-made Open Channels/Swales

1. Properly designed, graded, and lined channels may be permitted in lieu of storm sewers; however, where flow is concentrated in vegetated channels such that the velocity exceeds three (3) feet per second, a system of inlets and pipes shall be designed in order to collect and convey the flow to an appropriate discharge point.
2. Channel shall not be less than 2% in grade nor more than 10%.
3. Underdrains may be required as determined by the Township Engineer or Site Inspector.
4. Channels shall be placed on lot lines as necessary to prevent stormwater from draining across lot lines.
5. Channel lining must meet the Conservation District design standards.
6. Channels shall have a maximum side slope grade of 3 horizontal to 1 vertical (3:1).
7. Channels shall be provided with a minimum 6-inch freeboard, measured from the top of the design storm (25-year) flow to the top of bank of the channel.
8. Channels cross-section:
 - a. within residential street right-of-ways shall be parabolic not exceeding a top width of 6 feet, a depth of 1.5 feet;
 - b. within non-residential street right-of-ways, in side yards, rear yards, or open space shall be limited to a top width of 12 feet, a depth of 3 feet;
 - c. otherwise, channels may be trapezoidal and sized to carry the necessary design flows.
9. Channels shall be designed to convey the runoff from the 100-year storm when leading away from emergency spillways and when located in areas where damage to property would result from a channel that is overtopped.

Section 313. Sump Pumps (Additional Standards)

- A. Where lots in a subdivision or land development are proposed to be less than one acre, or where multi-family, or other dense housing is proposed, a system for the collection and conveyance of sump pump discharges that will emanate from the basements of the proposed housing shall be provided.
- B. The system shall be designed to take discharged sump pump water away from adjacent houses and convey it by gravity to a positive outlet at another drainage facility, such as an inlet, where it will be conveyed away from the residences without creating a drainage problem.
- C. The system may run between rows of houses to collect sump pump drainage from adjacent properties when deemed appropriate by the Township Engineer.
- D. Connection of sump pump discharge to other drainage facilities shall not interfere with the receiving facility's function.
- E. Connection of sump pumps to other drainage facilities shall be via a wye, tee, or saddle connection. Break-in connections shall not be permitted.
- F. The system shall consist of smooth bore plastic pipe (Sc. 40 or SD 35), and have a minimum diameter of 6 inches.
- G. The system piping shall be a minimum of 3 feet below grade.
- H. The sump pump drainage system may also be used to convey roof water provided that the piping is sized appropriately.
- I. Sump pump drainage systems shall be provided with cleanouts at 200 foot intervals to allow for maintenance.
- J. See Section 803 for additional requirements.

Section 314. Roof Drains (Additional Standards)

- A. A system for the collection and conveyance of roof drainage from all types of structures shall be provided.
- B. The roof drain collection and conveyance system shall consist of smooth bore plastic pipe (Sc. 40 or SD 35), and have a minimum diameter of 6 inches.
- C. Roof drainage shall be conveyed to an infiltration facility, detention basin or other BMP or to a stormwater collection and conveyance system that leads to a BMP in order to minimize the effects of increased runoff.

- D. No roof drains shall discharge directly to streets without approval of the Township Engineer. Only where topography conditions prohibit, should roof drains discharge directly to these features.
- E. Roof drains will not be permitted to discharge across or onto parking areas, driveways or drive aisles.
- F. Roof drains may be discharged to lawns and subsequently to drainage swales in low density residential areas.
- G. Roof drains shall have appropriate measures to prevent clogging by unwanted debris (for example, silt, leaves and vegetation) as necessary based on the type of BMP that is being discharged to. Such measures shall include but are not limited to leaf traps, gutter guards and cleanouts.
- H. See Section 803 for additional requirements.

Section 315. Grading Standards

All permanent and temporary cutting, filling, grading, re-grading, and/or other forms of earthmoving activities shall be known as grading and shall be conducted only in compliance with the following standards:

- A. Cul-de-sac turnarounds shall be graded to direct all stormwater to the curb in order to minimize icing from sheet flows in freezing temperatures.
- B. All grading shall be set back from property lines a sufficient distance to prevent any adverse effects on adjacent properties but in no case less than 10 feet unless otherwise specified herein.
- C. Where grading will increase the volume, discharge or velocity of stormwater flow toward a property line, the Applicant shall install and maintain drainage facilities sufficient to prevent adverse effects on the adjoining property, designed in accordance with the standards contained elsewhere in this Ordinance. The construction and operation of these facilities shall not cause any adverse effects on adjoining properties.
- D. Where a grading cut slope creates an abrupt drop-off from the abutting property line in contrast to a previously existing gradual change, a fence or other suitable barrier shall be installed.
- E. Grading shall not be done in such a way so as to divert water onto the property of another landowner.
- F. Sites shall be graded to secure proper drainage away from buildings (minimum 2%) and to allow for the proper collection and conveyance of stormwater.

- G. Grading operations shall be kept to a minimum to ensure the natural topography is maintained where possible, and to minimize erosion while adequately handling the surface runoff.
- H. Grading of slopes shall not be steeper than 3 horizontal to 1 vertical.
- I. Fills toeing out on natural slopes exceeding 3 horizontal to 1 vertical shall not be made, unless approved by the Township after receipt of a positive recommendation by the Township Engineer. A preliminary report to the Township Engineer shall be made by the Applicant's soil scientist certifying that he has investigated the property, made soil tests and that in his opinion such steeper slopes shall safely support the proposed fill. Cost for such investigation and report shall be borne by the Applicant/Developer.
- J. No Person shall modify, fill excavate, pave, grade or re-grade land in any manner so close to a property line as to endanger or damage any adjoining street, alley, or other public or private property without supporting and protecting such property from settling, cracking, erosion, sediment, flooding or any other physical damage or personal injury which might result.
- K. During grading operations, necessary measures for dust control shall be exercised.
- L. Precautions shall be taken to prevent the unnecessary removal of trees. All specimen trees (as defined in the Zoning Ordinance) in an area of extreme grade shall be protected with suitable tree wells unless the necessity for removal is established. Should the necessity for the removal of a specimen tree be established, it shall be replaced with the same or similar species, a minimum of two and on-half (2 ½) DBH (as defined in the Zoning Ordinance).

Section 316. Phasing Standards

- A. When subdivision, land developments or other earth disturbances are submitted to the Township for approval in phases, plans and calculations shall be submitted for the design of the entire tract – not for a single phase.
- B. If phasing involves the construction of less than the entire stormwater management system required for the entire tract, a proposal (and additional design as necessary) for the stormwater management facilities for the phase(s) to be constructed shall be provided.
 - 1. The proposal and design shall prevent damage to adjacent properties and future phases.
 - 2. Any temporary construction required for the phased proposal and design shall be included with the submittal.
- C. In the event that temporary measures cannot ensure protection to adjacent properties or future phases, the permanent BMPs and permanent collection and conveyance system, as necessary, shall be included as part of the construction for the currently proposed phase.

Section 317 Erosion and Sediment Control Plan Content Requirements

Erosion and Sediment Control Plan contents. A Erosion and Sediment Control Plan shall accompany Preliminary and Final Plan subdivision and land development applications and applications for Grading Permits for Regulated Activities that are not exempt under Section 106. It shall be prepared by a design professional experienced in stormwater management and soil erosion control, and in accordance with federal, state, county and Township requirements and regulations.

- A. The Erosion and Sediment Control Plan shall be prepared to include the requirements of Section 303.
- B. The Erosion and Sediment Control Plan shall contain, at a minimum, the following information:
 - 1. A description of proposed earthmoving, grading, temporary erosion and sedimentation control facilities, and the relationship to permanent stormwater management facilities;
 - 2. Proposed alterations to the project area, including changes to the surface and vegetative cover, areas of cut and fill, structures, roads, paved areas and buildings;
 - 3. A description of the staging of earthmoving activities, including the staging of cover removal and all cuts and fill, and installation of erosion and sediment control facilities and practices;
 - 4. Details and specifications for all erosion and sediment control measures to be utilized in conjunction with the installation of improvements, including streets, storm sewers, underground utilities, sewer and water lines, buildings, driveways, parking areas, recreational facilities and other structures shall be described; and
 - 5. The program of operations to convert erosion and sedimentation controls to permanent stormwater management facilities, along with a schedule of the relative time sequence of activities.
- C. A narrative description and a map illustrating temporary and permanent control measures and facilities to be used during earthmoving. The description shall include the following information:
 - 1. The type, location and dimensions of each measure and/or facility to be used, along with its purpose;
 - 2. Design considerations and calculations of control measures and facilities;
 - 3. Facilities or measures to be used to protect trees and existing vegetation;
 - 4. Facilities or measures to prevent tracking of mud by construction vehicles.

- D. A narrative description of the maintenance procedures for temporary control facilities and the ownership arrangements, including the methods and frequency of removal and ultimate disposal site for sediments and other material removed from control facilities both during and upon completion of the project.
- E. The applicant or applicant's agent shall produce proof of the acquisition of all required permits, approvals, or certificates for soil erosion and sedimentation controls, including, but not limited to, permits/approvals required by:
- Pennsylvania Department of Environmental Protection
 - Pennsylvania Department of Transportation
 - Chester County Conservation District
 - Utility Companies
 - Public Utility Commission
- F. The Soil Erosion and Sediment Control Plan shall be available at all times on the construction site. The applicant or applicant's agent shall be responsible for correcting any stormwater runoff problems that arise from the subdivision or land development, even if final approval has been granted. The Township reserves the right to order a cease and desist of all construction where runoff problems arise.
- G. The following practices shall be required for all subdivisions, land developments, and/or grading plan where applicable, as determined by the Township Engineer:
1. Silt fence or compost filter socks shall be installed on each graded lot down-slope of the disturbed area prior to any lot disturbance. Straw bale barriers shall not be used.
 2. The appropriate E & S BMPs shall be placed at all inlets, headwalls, basin outlets and similar drainage structures during the construction period in order to prevent sediment from entering any watercourse, storm drainage system, or system that does not discharge to an E & S BMP, adjoining property, or other areas downstream.
 3. Each individual lot or unit within a subdivision, or each building within a land development shall incorporate temporary on-lot berms designed to act as sediment traps and to capture and reduce runoff. These shall be located to protect environmentally sensitive areas and downstream properties, and shall be required during construction. The top width of the berms shall be a minimum of three (3) feet, with side slopes of a 3:1 maximum.
 4. Rock construction entrances shall be placed at all entrances to construction areas. Rock construction entrances shall be of sufficient width and length to prevent transportation of sediment off of the construction site or shall incorporate other features to do so.
 5. Temporary and permanent seeding and mulch specifications shall be noted on all plans. The specifications shall include lime and fertilizer rates of application, as well as other provisions regarding procedures and materials. All locations where earthmoving has ceased for more than one (1) day shall be stabilized with temporary seeding or mulch.

6. During roadway grading, water bars shall be installed on all roadway sub-grades to prevent erosion of the sub-grades. The water bars shall divert stormwater runoff to an appropriate best management practice.
7. The crushed stone base course for driveways, roadways and parking areas shall be applied immediately after grading procedures, in order to prevent erosion of the sub-grade. All construction and trade vehicles must access a site by the crushed stone driveway and not across the unstabilized earth area. Construction vehicles shall not track mud onto paved drives or roads.
8. Drainage swales and ditches, and all slopes greater than three (3) to one (1) shall be protected against erosive velocities with E & S BMPs, such as erosion control blanket or other material, as determined by the Township Engineer.

ARTICLE IV – STORMWATER MANAGEMENT (SWM) SITE PLAN REQUIREMENTS

Section 401. General Requirements

For any Regulated Activity, unless exempt per the provisions of Section 106:

- A. Preparation and implementation of an approved SWM Site Plan is required.
- B. No Regulated Activity shall commence until the Municipality issues written approval of a SWM Site Plan, which demonstrates compliance with the requirements of this Ordinance and, if required, a letter of adequacy has been issued by the Conservation District for an Erosion and Sediment Control Plan.
- C. The preliminary or final approval of subdivision and/or land development plans, and the issuance of any building or occupancy permit shall not proceed until the Applicant has received written approval of a SWM Site Plan from the Municipality.
- D. The SWM Site Plan approved by the Municipality shall be on Site throughout the duration of the Regulated Activity.

Section 402. SWM Site Plan Contents

The SWM Site Plan shall consist of a general description of the project including items described in Section 304, 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 SWM Site Plan materials shall be submitted to the Municipality in a format that is clear, concise, legible, neat and well organized; otherwise, the SWM Site Plan shall not be accepted for review and shall be returned to the Applicant. The following items shall be included in the SWM Site Plan:

A. General

1. A general description of the proposed project;
2. A listing of all regulatory approvals required for the proposed project and the status of the review and approval process for each. Final approval or adequacy letters must be submitted to the Municipality prior to (or as a condition of) the Municipality's issuing final approval of the SWM Site Plan. Proof of application or documentation of required permit(s) or approvals for the programs listed below shall be part of the SWM Site Plan, if applicable:
 - a. NPDES Permit for Stormwater Discharges associated with Construction Activities;
 - b. PADEP permits as needed:
 - i. PADEP Joint Permit Application,
 - ii. Chapter 105 (Dam Safety and Waterway Management),
 - iii. Chapter 106 (Floodplain Management);
 - c. PennDOT Highway Occupancy Permit;
 - d. Erosion and Sediment Control Plan letter of adequacy; and
 - e. Any other permit under applicable State or Federal regulations.

B. Responsibilities:

1. A statement, signed by the Applicant, acknowledging that any revision to the approved SWM Site Plan shall be submitted to and approved by the Municipality, and that a revised Erosion and Sediment Control Plan shall be submitted to, and approved by, the Conservation District or Municipality (as applicable) for a determination of adequacy prior to construction of the revised features.
2. The following signature block signed and sealed by the qualified Licensed Professional responsible for the preparation of the SWM Site Plan:

“I (name), on this date (date of signature), hereby certify to the best of my knowledge that the SWM Site Plan meets all design standards and criteria of the East Nantmeal Township; Ordinance No. _____, Stormwater Management, Grading & Erosion Control Ordinance.” *[Note: include signature, name, discipline of professional license, and license stamp or seal here]*

3. The following signature block for the Municipality:

“On behalf of East Nantmeal Township, [Municipal official or designee], on this date [____], has reviewed and hereby certifies to the best of my knowledge that the SWM Site Plan meets all design standards and criteria of the Municipal Ordinance No. ____.”

C. Drawings (aka maps, plan sheets)

1. Drawings of the Site shall be submitted on minimum twenty-four (24)-inch by thirty-six (36)-inch sheets and shall be prepared in a form that meets the requirements for recording at the Chester County Office of the Recorder of Deeds and the requirements of the Operation and Maintenance (O&M) Plan and O&M Agreement (Article VII). Alternative plan size shall be considered on a case-by-case basis with prior approval from the Township Engineer for Regulated Activities that are not part of a subdivision and/or land development plan. Unless otherwise approved by the Municipal Engineer, the contents of the drawings shall include, but not be limited to:
2. A location map, with a scale of one (1) inch equals two thousand (2,000) feet or greater, showing the Site location relative to highways, municipal boundaries, or other identifiable landmarks.
3. The name of the project, tax parcel number(s), and the names, addresses and phone numbers of the owner of the property, the Applicant, and firm preparing the plan.
4. Signature and seal of the qualified Licensed Professional(s) responsible for preparation of the drawings and plan sheets.
5. The date of SWM Site Plan submission and revision dates, as applicable.
6. A graphic and written scale to a standard engineering scale appropriate to the size of the project.
7. A north arrow.
8. Legal property boundaries, including:
 - a. The total property boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
 - b. Boundaries, size and description of purpose of all existing easements and deed-restricted areas of the project property, with distances marked to the nearest foot and bearings to the nearest degree.
9. Existing natural resources and natural or man-made hydrologic features that are located within the Site or receiving discharge from, or that may otherwise be impacted by, the proposed Regulated Activity, including but not limited to:

- a. All existing natural resources, hydrologic features and drainage patterns including natural waterways, water bodies, wetlands, streams (intermittent and perennial), ponds, lakes, vernal pools, etc., natural infiltration areas and patterns, areas of significant natural evapotranspiration, and other water features and aquatic resources.
- b. Any existing man-made drainage features, BMPs, Conveyances, facilities, open channels, swales, drainage patterns, or other flood, stormwater or drainage control features.
- c. For the Site, discharge points and locations of concentrated flows and their drainage areas.
- d. For named waters, show names and their watershed boundaries when located within the Site.
- e. Special management areas (as per Subsection 301.Q).
- f. For the water bodies, streams and wetlands, label or otherwise show the following attributes, if applicable:
 - i. The Designated Use as determined by PADEP (25 PA Code Chapter 93);
 - ii. Impairments listed on the PADEP “Integrated List” (as updated) and the listed source and cause of impairment; and
 - iii. Drainages to water supply reservoirs.
- g. Areas that are part of the Pennsylvania Natural Diversity Inventory (PNDI) and a list of potential impacts and clearances received (for Regulated Activities involving one (1) acre or more proposed Earth Disturbance).
- h. Woods and other areas of natural vegetation.
- i. Topography using contours (with elevations based on established bench marks) at intervals of two (2) feet. The datum used and the location, elevation and datum of any bench marks used shall be shown. Actual field survey or aerial photo interpretation shall be required when public improvements are proposed.
- j. Areas classified by the Municipality as steep slopes per the East Nantmeal Township Zoning Ordinance.
- k. Soil names and boundaries, general type of soils with Hydrologic Soil Group noted, and in particular note areas most conducive to infiltration BMPs, such as groups A and B, etc., estimated permeabilities in inches per hour, and location and other results of all soil tests and borings.
- l. Geologic formation underlying the project area and extending fifty (50) feet beyond the property boundaries. If present, areas with underlying carbonate geologic units,

- existing sinkholes, subsidence or other karst features, and any associated groundwater recharge areas with increased vulnerability to contamination.
- m. Any contaminated surface or subsurface areas of the Site.
 - n. Water supply wells –
 - i. Location of existing well(s) on the project property and delineation of the(ir) recharge area(s) (if known), or a fifty (50) foot diameter assumed recharge area;
 - ii. Location of existing well(s) within fifty (50) feet beyond the boundary of the project property boundary (if public water supply is proposed for the Regulated Activity); and
 - o. Flood Hazard and Flood and Water Hazard Soils District established per the East Nantmeal Township Zoning Ordinance.
 - p. Boundaries of riparian buffer(s) as established by the East Nantmeal Township Zoning Ordinance.
10. Location of the proposed Regulated Activity, limits of Earth Disturbance (Disturbed Area), and BMPs and Conveyances relative to the location of existing natural resources and hydrologic features and special management areas resulting from the Site design process of Section 304.
11. Existing and proposed man-made features including roads, paved areas, buildings, and other Impervious and Pervious Surfaces on the project property (or an appropriate portion of the property as determined in consultation with the Municipal Engineer) and within the proposed Disturbed Area, and including the type and total area of the following:
- a. Existing Impervious Surfaces must differentiate Existing Impervious Surfaces installed after February 12, 2014;
 - b. Existing Impervious Surfaces proposed to be replaced;
 - c. Existing Impervious Surfaces to be permanently removed and replaced with pervious ground cover;
 - d. New or additional Impervious Surfaces; and
 - e. Percent of the Site covered by Impervious Surfaces for both the existing and proposed Post-construction conditions.
12. All trees, woodlands or portions of woodlands proposed to be cleared as part of the proposed subdivision or land development. Areas of trees to be protected during construction shall be identified.

13. A drainage area plan including pre-development and post-development conditions with the total extent of the upstream area draining through the Site (if any). Drainage areas to individual BMPs including inlets and swales is required.
14. All BMPs, Conveyances and other stormwater management facilities shall be located on the plan sheets, including design drawings, profile drawings, construction details, materials to be used, description of function, etc.
15. Complete delineation of the flow paths used for calculating the time of concentration for the Predevelopment and Post-construction conditions shall be included.
16. The locations of all existing and proposed utilities, sanitary sewers, on-lot sewage systems (including subsurface tanks and leach fields), testing for on-lot sewage systems, and water supply lines within the Site and within fifty (50) feet beyond the proposed limits of Earth Disturbance.
17. A grading plan, including all areas of proposed Earth Disturbance and the proposed Regulated Activity and delineating the boundary or limit of Disturbed Area of the Site. The total Disturbed Area of the Site shall be noted in square feet and acres.
18. Proposed final grade elevations and contours at intervals of two (2) feet.
19. For each proposed BMP and Conveyance included in the SWM Site Plan (including any to be located on any property other than the property being developed by the Applicant), the following shall be included on the SWM Site Plan drawings:
 - a. Identification of the person responsible for ongoing inspections, operation, repair, and maintenance of the BMP or Conveyance after completion of construction.
 - b. Delineation of the land area, structures, Impervious Surfaces, and Conveyances draining to and from the BMP or Conveyance.
 - c. Easements, as per the requirements of Article VII, that shall include:
 - i. Boundaries labeled with distances shown in feet and bearings to the nearest degree;
 - ii. Notes or other documentation, as needed, to grant the Municipality the right of access to all BMPs and Conveyances for the purposes of inspection and enforcement of the requirements of this Ordinance, and any applicable O&M Plans and O&M Agreements;
 - iii. Notes or other documentation, as needed, to grant the Municipality the right of access to all roadways necessary to access all BMPs and Conveyances, where roadways are not to be dedicated to the Municipality;
 - iv. Notes or other documentation as needed to grant the owner of any BMP or Conveyance the right of access for the purpose of inspection, operation,

maintenance, and repair of the BMP or Conveyance that is to be owned, operated and maintained by a person other than the Municipality, and other than the owner of the property on which the BMP or Conveyance is located;

- v. A minimum ten (10)-foot wide perimeter (or other width as determined in consultation with the Municipal Engineer) around all BMPs and Conveyances;
 - vi. Sufficient vehicular ingress to and egress from a public right-of-way or roadway, as determined in consultation with the Municipal Engineer; and
 - vii. Accompanying notes or other documentation as needed, and in accordance with Article VII describing the type, purpose and total area of easements, who the easement is granted to, and the rights, duties and obligations of the parties with respect to every BMP or Conveyance.
- d. Boundaries of land areas (if any) for which deed restrictions are required for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance, indicating the area to which the restriction applies with distances shown in feet and bearings to the nearest degree, and a written description of the type, purpose and nature of the restriction.
- e. Other items that may be needed to comply with all other requirements of Article VII.
- D. Written Description of the following information shall be included as part of the SWM Site Plan:
- 1. A general description of the proposed project;
 - 2. Significant existing features, conditions, natural resources, hydrologic features, and special management areas.
 - 3. Description of existing and proposed ground cover and land use including the type and total area.
 - 4. How the Site design achieves the requirements of Section 304, and if applicable, where they could not be achieved and why;
 - 5. The overall stormwater management design concept for the project and how the Site design achieves the design requirements of Article III;
 - 6. Proposed features and conditions, proposed erosion and sediment control features, proposed BMPs, Conveyances, and any other Stormwater Management Facilities;
 - 7. A description of the effect of the project (in terms of flow alteration and runoff volumes, water quality and peak flows, etc.) on existing natural resources, hydrologic features and special management areas, adjacent and downgradient properties, and any existing municipal or other stormwater Conveyance system(s), that may be affected by or receive

runoff from the Regulated Activity (whether located within or outside of the area of the Regulated Activity), and specifics of how erosion, water quality and flow impacts will be avoided or otherwise mitigated;

8. Proposed nonpoint source pollution controls and justification and confirmation that the proposed project will not result in any increased pollutant loadings to any existing stream or stream impairment identified by PADEP, or to any receiving water body;
9. A listing of all regulatory approvals required for the proposed project and the status of the review and approval process for each.
10. Expected project time schedule; and
11. Description of construction phases, if so proposed.

E. Calculations. Stormwater runoff design calculations and documentation, such as hydrologic, hydraulic, and structural computations, assumptions, BMP loading ratios, etc., consistent with the guidelines and criteria presented in the PA BMP Manual (as amended) or other guidance acceptable to the Municipal Engineer, and used in the design of the BMPs, Conveyances and other features proposed to be utilized for stormwater management, or as otherwise necessary to demonstrate that the requirements of this Ordinance have been met, specifically including the requirements in Sections 301 and 303 through 307.

F. Operation and Maintenance Requirements

The following documents shall be prepared and submitted to the Municipality for review and approval as part of the SWM Site Plan, in accordance with the requirements of Article VII, for each BMP and Conveyance included in the SWM Site Plan (including any to be located on any property other than the property being developed by the Applicant):

1. An O&M Plan;
2. An O&M Agreement;
3. Any easement agreements that are needed to ensure access, inspection, maintenance, operation, repair and permanent protection of any permanent BMP(s) and Conveyances associated with the Regulated Activity;
4. Any written deed, deed amendment or equivalent document (if needed) to be recorded against a subject property, as shown on the SWM Site Plan drawings, or recorded plan sheets for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance; and
5. Written approval, easement agreements, or other documentation for discharges to adjacent or downgradient properties when required to comply with Subsection 301.G and Article VII of this Ordinance.

- G. Final approval or adequacy letters for the programs listed below, if applicable, must be submitted to the Township prior to (or as a condition of) the Township granting final approval of a subdivision and/or land development plan or the Township Designated Official issuing a Grading Permit both of which require an approved SWM Site Plan:
1. NPDES Permit for Stormwater Discharges associated with Construction Activities;
 2. PA DEP permits:
 - a. Chapter 105 (Dam Safety and Waterway Management), including but not limited to:
 - i. PA DEP Joint Permits
 - ii. General Permits
 - b. Chapter 106 (Floodplain Management);
 3. Penn DOT Highway Occupancy Permit;
 4. Erosion and Sediment Control Plan letter of adequacy; and
 5. Any other permit under applicable State or Federal regulations.

Section 403. SWM Site Plan Submission

A complete SWM Site Plan that complies with all applicable provisions of Section 402 shall be submitted to the Municipality for review and approval, as follows:

- A. The SWM Site Plan shall be coordinated with the applicable State and Federal permit process and the Municipal SALDO review process. All permit approvals or letters of adequacy not yet received by the Applicant at the time of submittal of the SWM Site Plan to the Municipality must be submitted to the Municipality prior to (or as a condition of) the Municipality's final approval of the SWM Site Plan.
- B. For projects that require SALDO approval, the SWM Site Plan shall be submitted by the Applicant as part of the preliminary plan submission where applicable for the Regulated Activity.
- C. For Regulated Activities that do not require SALDO approval, the SWM Site Plan shall be submitted by the Applicant for review in accordance with instructions from the Municipality.
- D. The number of copies of the SWM Site Plan to be submitted by the Applicant for review shall be in accordance with instructions from the Municipality.
- E. The corresponding review fee shall be submitted to the Municipality simultaneously with the SWM Site Plan, per the Municipality's fee schedule.

- F. Any submissions to the Municipality that are found to be incomplete shall not be accepted for review and shall be returned to the Applicant within ten (10) calendar days with a notification in writing of the specific manner in which the submission is incomplete.
- G. Financial security, per the requirements of Section 110, shall be submitted to the Municipality prior to approval of the SWM Site Plan.

Section 404. SWM Site Plan Review

- A. The SWM Site Plan shall be submitted to the Municipality for review by the Municipal Engineer for consistency with this Ordinance and the respective PA Act 167 Stormwater Management Plan(s). The Municipal Engineer will review the SWM Site Plan for any subdivision or land development for compliance with this Ordinance and the Municipal SALDO provisions not otherwise superseded by this Ordinance.
- B. If applicable, the Applicant shall have received a “letter of adequacy” from the Conservation District or other PADEP approval for the proposed Regulated Activity prior to (or as a condition of) final approval by the Municipality.
- C. The Municipal Engineer will notify the Applicant and the Municipality in writing, within *forty-five (45)* calendar days, whether the SWM Site Plan is consistent with the requirements of this Ordinance. If the SWM Site Plan involves a subdivision and land development Plan, the notification shall occur within the time period allowed by the MPC (as amended). If a longer notification period is provided by other statute, regulation, or ordinance, the Applicant will be so notified by the Municipality.
 - 1. If the Municipal Engineer determines that the SWM Site Plan is consistent with this Ordinance, the Municipal Engineer shall forward a letter of consistency to the Municipality, who shall then forward a copy to the Applicant.
 - 2. The Municipality may approve the SWM Site Plan with conditions reasonably defined to make the SWM Site Plan compliant with the terms of this Ordinance, and, if so, shall provide the conditions for approval in writing.
 - 3. If the Municipal Engineer determines that the SWM Site Plan is inconsistent or noncompliant with this Ordinance, the Municipal Engineer will forward a letter to the Municipality, with a copy to the Applicant citing the reason(s) and specific Ordinance sections for the inconsistency or noncompliance. Inconsistency or noncompliance may be due to inadequate information to make a reasonable judgment as to compliance with this Ordinance. Any SWM Site Plans that are inconsistent or noncompliant may be revised by the Applicant and resubmitted in accordance with Section 406 when consistent with this Ordinance. Resubmission will commence a new municipal review and notification time period.

- D. The Municipality will not grant final approval to any proposed subdivision, land development, or Regulated Activity specified in this Ordinance if the SWM Site Plan has been found to be inconsistent with this Ordinance.
- E. All required permits from PADEP shall be obtained and submitted to the Municipality prior to (or as a condition of) final approval of any proposed subdivision, land development, or other Regulated Activity by the Municipality.
- F. No building permits for any Regulated Activity will be approved by the Municipality if the SWM Site Plan has been found to be inconsistent with this Ordinance, as determined by the Municipal Engineer. All required permits from PADEP shall be obtained prior to issuance of a building permit.
- G. The Municipality's approval of a SWM Site Plan shall be valid for a period not to exceed two (2) years commencing on the date that the Municipality approved the SWM Site Plan. If stormwater management facilities included in the approved SWM Site Plan have not been constructed, or if constructed, As-Built Plans of these facilities have not been approved within this two (2) year time period, then the Applicant may seek reinstatement of approval of the expired SWM Site Plan. If the Municipality determines that the expired SWM Site Plan is consistent and compliant with current regulations and requirements, then the expired SWM Site Plan will be reinstated; otherwise, it will be rejected. The Applicant will be prohibited from conducting any Regulated Activity until a reinstated or newly approved SWM Site Plan is obtained in accordance with Section 406 of this Ordinance.
- H. All or portions of the final approved SWM Site Plan shall be recorded (as "recorded plans") per the instructions of the Municipality.
- I. Upon completion of construction, the Applicant shall be responsible for completing final As-Built Plans of all BMPs, Conveyances, or other stormwater management facilities included in the approved SWM Site Plan as per the requirements of Section 502 of this Ordinance.

Section 405. Revision of SWM Site Plans

- A. A SWM Site Plan that is approved or is under review shall be revised and resubmitted for any of the following reasons:
 - 1. A change in stormwater management BMPs, Conveyances, facilities or techniques;
 - 2. Relocation or redesign of stormwater management BMPs, Conveyances, or facilities; or
 - 3. Soil or other Site conditions are not as stated on the SWM Site Plan as determined by the Municipal Engineer, and the new conditions necessitate design changes. The revised SWM Site Plan shall be resubmitted in accordance with Section 403 and subject to review as specified in Section 404 of this Ordinance.

- B. A revision to an approved SWM Site Plan shall be submitted to the Municipality, accompanied by the applicable municipal review fee.

Section 406. Resubmission of Inconsistent or Noncompliant SWM Site Plans

Any SWM Site Plan deemed inconsistent or noncompliant may be revised and resubmitted with the revisions addressing the Municipal Engineer's concerns documented in writing. The submission shall be addressed to the Municipality and distributed accordingly, and be subject to review. The applicable municipal review fee shall accompany a resubmission of a SWM Site Plan previously determined to be inconsistent or noncompliant.

ARTICLE V – PERFORMANCE AND INSPECTION OF REGULATED ACTIVITIES, AND FINAL AS-BUILT PLANS

Section 501. Performance and Inspection of Regulated Activities

- A. All Regulated Activities shall be conducted, operated, and maintained in accordance with the requirements set forth in Articles III, VII, and VIII of this Ordinance. When a SWM Site Plan is required by this Ordinance, all Regulated Activities shall be performed in accordance with the requirements of the final approved SWM Site Plan.
- B. The Municipal Engineer or other municipal designee shall be provided access to the Site to inspect all phases of the erosion and sediment control measures and installation of the permanent BMPs and Conveyances at such times as deemed appropriate by the Municipal Engineer or other municipal designee.
- C. Periodic inspections may be made by the Municipal Engineer or other designee during construction. A set of design plans approved by the Municipality shall be on file and available for viewing at the Site throughout the duration of the construction activity.
- D. Inspections, including but not limited to a final inspection, of all constructed BMPs, Conveyances, or other Stormwater Management Facilities, and related improvements may be conducted by the Municipal Engineer or other designee to confirm compliance with this Ordinance and with the final approved SWM Site Plan prior to the issuance of any occupancy permit, use permit, or other form of final approval of the project by the Municipality.
- E. If an NPDES Permit for Stormwater Discharges Associated with Construction Activities was required for the Regulated Activity, a Notice of Termination (NOT) approval must be obtained upon completion of construction prior to final approval of the project by the Municipality.
- F. Upon completion of construction, every permanent stormwater BMP, Conveyance, or other Stormwater Management Facility constructed or used as part of the Regulated Activity shall

be operated, maintained, and inspected by the Landowner, or other designated person, in accordance with the O&M Plan and O&M Agreement approved by the Municipality.

- G. The Municipality or its designee may periodically inspect any permanent stormwater BMP, Conveyance or Stormwater Management Facility for compliance with this Ordinance, an approved O&M Plan, or an approved O&M Agreement, per the provisions of Article IX. The Municipality may inspect at any time it has reason to believe a violation exists. The Municipality may pursue enforcement for violations consistent with the provisions of Article IX.

Section 502. Final As-Built Plans

- A. For Regulated Activities involving one (1) acre or more of Earth Disturbance, the Applicant shall provide to the Municipality final As-Built Plans (signed and sealed by a qualified Licensed Professional) of all BMPs, Conveyances, other stormwater facilities, and related improvements shown in the final approved SWM Site Plan.
- B. The final As-Built Plans shall include the following for all BMPs, Conveyances, other stormwater facilities and related improvements:
 - 1. The location, elevations, dimensions, and as-built conditions of all BMPs, Conveyances, other stormwater facilities, and related improvements including topographic contours and all typical details for storm drainage and conveyance systems, stormwater management facilities and Impervious Surfaces (existing, proposed, or constructed) included in the approved SWM Site Plan. The latitude and longitude coordinates for all permanent SWM BMPs must also be submitted at the central location of the BMPs; and
 - 2. Explanation of any discrepancies or variations from the final approved SWM Site Plan, other related approved construction plans, calculations, and specifications (and approved revisions thereto).
- C. The final As-Built Plans shall include a certification of completion signed and sealed by a qualified Licensed Professional verifying that all permanent BMPs and Conveyances have been constructed according to the final approved SWM Site Plan and related approved construction plans, calculations, and specifications.
- D. All areas of the Regulated Activity draining to BMPs must be stabilized prior to submittal of the As-Built Plans.
- E. After receipt of the As-Built Plans by the Municipality, the Municipality or its designee may review the As-Built Plans for consistency with this Ordinance, the final approved SWM Site Plan, other related approved construction plans, and subsequent approved revisions thereto, as well as actual conditions at the Site, and the Municipality may conduct a final inspection, as per Subsection 501.D.

- F. The As-Built Plans must be received, reviewed, and determined to be acceptable by the Municipality prior to:
 - 1. Close out of the drainage permit or other close out of the project by the Municipality;
 - 2. Release of the financial security or other performance guarantee; and
 - 3. Dedication of the stormwater facilities to the Municipality, or conveyance to a homeowners association, or other person responsible for operation, maintenance, and repair.
- G. Final occupancy permit(s) or Use Permit or other final approval to use or operate the constructed improvement may not be issued by the Municipality until the final As-Built Plans have been accepted.
- H. Upon final acceptance of the final As-Built Plans by the Municipality, the Applicant shall review and, if required by the Municipality, revise and re-record the O&M Plan and the O&M Agreement to reflect the final as-built conditions and information for each permanent BMP or Conveyance, in accordance with the requirements of Article VII.
- I. All or portions of the final As-Built Plans shall be recorded if required by the Municipality.

ARTICLE VI – FEES AND EXPENSES

Section 601. Municipality SWM Site Plan Review and Inspection Fees

Fees have been established by the Municipality as adopted by Resolution or as otherwise allowed by law to defray administration, plan review and construction inspection costs incurred by the Municipality. Fees shall be paid by the Applicant either at the time of SWM Site Plan submission with Grading Permit, or with a subdivision and/or land development application. The Municipality shall periodically update the fee schedule to ensure that costs are adequately reimbursed.

Section 602. Expenses Covered by Fees

- A. The fees required of the Applicant by this Ordinance shall at a minimum cover:
 - 1. Administrative costs;
 - 2. The review of the SWM Site Plan by the Municipality, the Municipal Engineer, the Township Designated Official and other municipal consultants;
 - 3. Coordination and meetings with the Applicant;
 - 4. Review of project communications, reports, and additional supporting information;

5. The inspection of erosion and sediment control measures, BMPs, Conveyances and other related improvements during construction including the final inspection upon completion of the BMPs, Conveyances, and other stormwater management facilities and related improvements; and
 6. Review of final As-Built Plan submission and revised calculations, and inspections as needed.
- B. The Applicant shall also reimburse all expenses incurred by the Municipality for any additional work or municipal consultant fees required to enforce any permit provisions regulated by this Ordinance, correct violations, and ensure proper completion of remedial actions.

ARTICLE VII – OPERATION AND MAINTENANCE (O&M) RESPONSIBILITIES AND EASEMENTS

Section 701. General Requirements for Protection, Operation and Maintenance of Stormwater BMPs and Conveyances

The following shall apply to all Regulated Activities in accordance with the requirements of the subsequent sections of this Article VII.

- A. Continuing operations and maintenance responsibilities of all permanent BMPs, Conveyances, or other stormwater management facilities shall be reviewed and approved by the Municipality along with the SWM Site Plan.
- B. The Municipality may require an offer of a dedication of permanent BMPs, Conveyances, or other stormwater management facilities as part of the requirements for approval of the SWM Site Plan. Such a requirement is not an indication that the Municipality will accept the facilities. The Municipality reserves the right to accept or reject the operations and maintenance responsibility for any portion of or all of the BMPs, Conveyances or other stormwater controls and facilities.
- C. An Operation and Maintenance (O&M) Plan shall be submitted to the Municipality for review and approval for all existing and proposed permanent BMPs and man-made Conveyances or other Stormwater Management Facilities identified in the SWM Site Plan. Multiple BMPs or Conveyances may be addressed by a combined O&M Plan where all such facilities are similar in O&M requirements and ownership.
- D. The O&M Plan(s) and O&M Agreement(s) shall name the person identified in the SWM Site Plan who shall be the owner of and be responsible for ongoing inspections, operation, repair, and maintenance of each BMP or Conveyance following completion of construction.
- E. For any BMP or man-made Conveyance (including any to be located on any property other than the property being developed by the Applicant) to be owned by a person other than the Municipality:

1. An O&M Agreement shall be submitted to the Municipality for review and approval; and
 2. The O&M Plan shall be attached to, incorporated within, and recorded as a public record along with a fully executed O&M Agreement, all of which shall be recorded as a restrictive covenant that runs with the land and shall be binding upon the Landowner and any heirs, administrators, successors in interest or assigns of the Landowner.
- F. The following shall be provided for all BMPs and Conveyances (including any to be located on any property other than the property being developed by the Applicant) by an O&M or other agreement or by otherwise establishing covenants, easements, deed restrictions, or by dedication to the Municipality:
1. Permanent protection of the BMP or Conveyance from disturbance or alteration;
 2. Right of entry and access for the Municipality for inspection and enforcement of this Ordinance (including Subsection 903.G) and any applicable O&M Plan or O&M Agreement; and
 3. Right of entry and access for the person owning the BMP or Conveyance and responsible for fulfilling the O&M requirements when that person is not the Municipality and is different from the owner of the property on which the BMP or Conveyance is located (such as may be applicable for Subsection 301.G of this Ordinance).
- G. All O&M and other agreements, covenants, easements and deed restrictions shall:
1. Be submitted to the Municipality for review and approval;
 2. Be recorded as a public record, upon approval, against each parcel(s) which is part of the SWM Site Plan or otherwise contains any BMP or Conveyance comprising part of the Regulated Activity which is the subject of an O&M Agreement; and
 3. Run with the land and be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns.
- H. The materials, documents and content required by this Article VII may be prepared in conjunction with and incorporated with similar materials, documents and content required for other permit or approval applications, such as those required by PADEP for the Post Construction Stormwater Management Plan which is part of the NPDES Permit.

Section 702. Operation and Maintenance Plans

The following items shall be included in the O&M Plan, unless otherwise approved by the Municipal Engineer:

- A. A plan sheet(s) or map(s) showing each BMP and man-made Conveyance and which shall include, but not be limited to:

1. Property(ies) identification (owner name and address; and property address and/or lot and/or tax parcel number, etc.), property boundaries and tax parcel number of the land parcel on which the BMP or Conveyance is located.
2. Name, address, phone number, date prepared, signature and seal of the Licensed Professional responsible for preparation of the plan sheet or map.
3. Clear identification of the location, dimensions, and function of each BMP or Conveyance covered by the O&M Plan.
4. The location of each BMP and Conveyance relative to roadways, property boundaries, or other identifiable landmarks and existing natural drainage features such as streams, lakes, ponds, or other bodies of water within the immediate vicinity of, or receiving discharge from, the BMP or Conveyance.
5. Delineation of the land area, structures, Impervious Surfaces and Conveyances draining to and from the BMP.
6. Representative elevations and/or topographic contours at intervals of two (2) feet, or other as acceptable to the Municipal Engineer.
7. Other features including FEMA floodplain and floodway boundaries, sinkholes, etc. located within the immediate proximity of each BMP and Conveyance.
8. Locations of areas of vegetation to be managed or preserved that function as a BMP or Conveyance.
9. The locations of all surface and subsurface utilities, on-lot waste water facilities, sanitary sewers, and water lines within twenty (20) feet of each BMP or Conveyance.
10. The following as it pertains to any easements, covenants and deed restrictions established for each applicable BMP or Conveyance:
 - a. Boundaries delineated with bearings and distances shown that encompass the BMP or Conveyance and that includes ten (10)-foot perimeter area surrounding these features and sufficient vehicular ingress to and egress from a public right-of-way and roadway;
 - b. Labels specifying the type and purpose of the easement, covenant, or deed restriction and who it benefits; and
 - c. Labels with reference to any corresponding easement agreement, covenant, deed restriction or other document to be recorded.
11. The plan sheet or map shall be prepared at sufficient scale for municipal review, and ultimately for the use by the person responsible for operation and maintenance, and shall also be prepared at a legible scale that meets the requirements for recordation along with

(and as an attachment to) the O&M Agreement and O&M Plan at the Chester County Office of the Recorder of Deeds.

B. The following information shall be included in the O&M Plan and written in a manner consistent with the knowledge and understanding of the person who will be responsible for the maintenance activities:

1. The name and address of the following:
 - a. Property(ies) on which each BMP or Conveyance is located;
 - b. Owner of the property;
 - c. Owner of each stormwater BMP or Conveyance who is responsible for implementation of the O&M Plan;
 - d. Person responsible for maintaining adequate liability insurance and payment of taxes; and
 - e. Person preparing the O&M Plan.
2. A description of each BMP and Conveyance and how the BMPs and Conveyances are intended to function.
3. A description of actions necessary to operate, inspect, and maintain each BMP or Conveyance, including but not limited to:
 - a. Lawn care, vegetation maintenance, landscaping and planting;
 - b. Clean out of accumulated debris and sediment (including from grates, trash racks, inlets, etc.); and
 - c. Other anticipated periodic maintenance and repair.
4. The following statement shall be included:

“The Landowner acknowledges that, per the provisions of the Municipality’s Stormwater Management Ordinance, it is unlawful to modify, remove, fill, landscape, alter or impair the effectiveness of, or place any structure, other vegetation, yard waste, brush cuttings, or other waste or debris into any permanent stormwater management BMP or Conveyance described in this O&M Plan or to allow the BMP or Conveyance to exist in a condition which does not conform to this O&M Plan, without written approval from the Municipality.”
5. Inspection and maintenance schedules.

6. Explanation of the purpose and limitations of any easements, covenants, or deed restrictions associated with any BMP or Conveyance that are to be recorded against the property.
- C. A statement that no BMP or man-made Conveyance may be used by the owner or others for any purpose other than its intended stormwater control function, or, if approved by the Municipal Engineer, a statement of specific allowable uses of the BMP (i.e., recreational benefits that maybe associated with certain BMPs owned by a homeowners association, or allowable uses by an individual residential Landowner).
- D. A statement that establishes a reasonable time frame for remedy of deficiencies found by the owner during their inspections.
- E. Language needed to fulfill the requirements of Subsections 705.B, 705.C, and 705.D of this Ordinance.

Section 703. Operation and Maintenance Agreements

- A. An O&M Agreement shall be required for any BMP or man-made Conveyance to be owned by a person other than the Municipality, and the Agreement shall:
 1. Be between the owner of the BMP or Conveyance and the Municipality, and shall be substantially the same as the O&M Agreement in Appendix E.
 2. Incorporate the approved O&M Plan(s) for all BMPs or Conveyances to be covered by the O&M Agreement;
 3. Set forth the rights, duties and obligations of the owner of the BMP or Conveyance and the Municipality, and be consistent with the approved O&M Plan(s);
 4. Be recorded as a deed restriction or restrictive covenant that runs with the land and shall be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns;
 5. Be submitted to the Municipality for review prior to approval of the SWM Site Plan;
 6. Upon approval by the Municipality, be signed by the designated owner of the BMP or Conveyance and submitted for signature by the Municipality; and
 7. When fully executed, be recorded by the Landowner at the Chester County Office of the Recorder of Deeds following municipal approval of the O&M Plan and prior to the start of construction.
- B. Other items or conditions may be required by the Municipality to be included in the O&M Agreement where determined necessary by the Municipality to guarantee the satisfactory operation and maintenance of all permanent BMPs and Conveyances.

- C. After approval of the final As-Built Plans per the requirements of Article V, the Applicant shall review and, if necessary and if required by the Municipality, revise and re-record the O&M Plan and O&M Agreement to reflect the final as-built conditions of each BMP and Conveyance if different from the information included in the original recorded documents.

Section 704. Easements and Deed Restrictions

- A. Easements shall be established in connection with any Regulated Activity for all permanent BMPs and Conveyances that will not be dedicated to or otherwise owned by the Municipality, (including any to be located on any property other than the property being developed by the Applicant), and shall:
1. Include all land area occupied by each BMP or Conveyance;
 2. Include a ten (10)-foot wide perimeter (or other width as determined in consultation with the Municipal Engineer) surrounding the feature(s);
 3. Provide sufficient vehicular ingress and egress from a public right-of-way and roadway;
 4. Permanently protect every BMP and Conveyance from disturbance or alteration where not otherwise protected by a recorded O&M Agreement, covenant, deed restriction or other means;
 5. Grant the Municipality the right, but not the duty, to access every BMP and Conveyance from a public right-of-way or public roadway to conduct periodic inspections and to undertake other actions that may be necessary to enforce the requirements of this Ordinance, or of any applicable O&M Plan or O&M Agreement; where roadways will not be dedicated to the Municipality, the Municipality shall be granted access to the private roadways as necessary to access every BMP and Conveyance;
 6. Grant the owner of each BMP and Conveyance the right to access, inspect, operate, maintain, and repair the BMP or Conveyance when the feature is to be owned, operated and maintained by a person other than the Municipality and other than the owner of the parcel on which it is located;
 7. Be shown, with bearings and distances noted, on the SWM Site Plan map/plan sheets, O&M Plan map/plan sheets, final As-Built Plans, and be signed and sealed by a qualified Licensed Professional;
 8. Include language legally sufficient to ensure that the easement shall run with the land and bind the Landowner granting the easement, its heirs, administrators, successors in interest and assigns, into perpetuity; and
 9. Be recorded at the Chester County Office of the Recorder of Deeds following municipal approval and prior to the start of construction.

- B. For any BMP or Conveyance to be owned by a person other than the Municipality or the Landowner owning the parcel upon which a BMP or Conveyance is located, an easement agreement shall be prepared and executed between the Landowner and the owner of the BMP or Conveyance which shall:
1. Describe the ownership interests of all parties to the easement agreement, including the ownership of the BMP or Conveyance;
 2. Include a written legal (metes and bounds) description of the easement area, with reference to a recorded plan sheet showing the legal boundaries of the easement area (or an accompanying plan sheet/map), signed and sealed by a qualified Licensed Professional;
 3. Grant an easement from the Landowner to the owner of each BMP and Conveyance, establishing the right and obligation to occupy, access, inspect, operate, maintain, and repair the BMP or Conveyance;
 4. Include a description of the purpose of the easement and the responsibilities of the parties involved;
 5. Incorporate by reference or be recorded with, the corresponding O&M Plan and O&M Agreement;
 6. Restrict the Landowner's use of the easement area of the parcel on which the BMP or Conveyance is located, consistent with the rights granted to the owner of the BMP or Conveyance;
 7. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;
 8. Upon approval by the Municipality, be signed by the owner of the BMP(s) or Conveyance(s) and the Landowner and submitted for signature by the Municipality;
 9. Include language legally sufficient to ensure that the easement will run with the land affected by the easement and that the easement agreement is binding upon the parties to the easement agreement, their heirs, administrators, successors in interest and assigns, into perpetuity;
 10. Contain additional provisions or information as required by the Municipality; and
 11. When fully executed, be recorded by the Landowner at the Chester County Office of the Recorder of Deeds against all parcels affected by the terms of the easement agreement, within ten (10) business days of the Municipality's approval of the corresponding O&M Plan.
- C. For any BMP or Conveyance which is designed to receive runoff from another parcel or parcels and which is owned by the Landowner of the parcel upon which the BMP or

Conveyance is located, in addition to any easement or easement agreement required pursuant to Subsection 704 A. or B., an easement agreement shall be prepared and executed between the Landowner of the parcel or parcels draining to the BMP or Conveyance and the owner of the BMP or Conveyance. This easement agreement shall:

1. Describe the ownership interests of all parties to the easement agreement, including the ownership of all affected parcels and of the BMP or Conveyance;
2. Provide for the grant of a drainage easement from the owner of the BMP or Conveyance to the Landowner of the parcel(s) draining to the BMP, which shall extend from the shared parcel boundary(ies) to the receiving BMP and shall include the connecting flow path(s) or Conveyance;
3. Include a written legal (metes and bounds) description of the easement area, with reference to a recorded plan sheet showing the legal boundaries of the easement area (or an accompanying plan sheet/map), signed and sealed by a Licensed Professional.
4. Incorporate by reference or be recorded with the corresponding O&M Plan and O&M Agreement;
5. State that the purpose of the easement agreement is to ensure the continuous right of the discharging parcel to discharge onto the parcel containing the BMP and into the BMP or Conveyance;
6. Restrict the BMP or Conveyance owner's use of the easement area of the parcel upon which the BMP or Conveyance is located, consistent with the purpose of the easement granted;
7. Establish the duty and responsibility of the Landowner of the parcel or parcels draining to the BMP or Conveyance to maintain the existing drainages on the discharging parcel or parcels as designed and constructed to discharge to the receiving BMP;
8. Include language legally sufficient to ensure that the easement will run with the land and will bind all parties to the easement agreement, their heirs, administrators, successors in interest and assigns, into perpetuity;
9. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;
10. Contain all additional provisions or information as the Municipality may require upon review; and
11. Be executed by the parties to the easement agreement and recorded at the Chester County Recorder of Deeds Office against the draining parcel(s) and the parcel upon which the BMP or Conveyance is located within ten (10) business days of the Municipality's approval of the corresponding O&M Plan.

- D. For any area(s) shown on the SWM Site Plan drawings or As-Built Plan sheets as requiring, or area(s) that is otherwise determined to require, deed restriction(s) for the purpose of protecting and prohibiting disturbance to a BMP or Conveyance, such deed restrictions will be incorporated into a written deed, restrictive covenant, or equivalent document. The deed or other document shall:
1. Include a clear and understandable description of the purpose, terms and conditions of the restricted use;
 2. Include the written legal description (metes and bounds description) of the area to which the restrictions apply that is consistent with the boundary shown on the O&M plan sheets and SWM Site Plan drawings;
 3. Make reference to any corresponding O&M Plan(s) and O&M Agreement(s);
 4. Include language legally sufficient to ensure that the terms of the restriction run with the land and shall be binding upon the Landowner, its heirs, administrators, successors in interest, and assigns;
 5. Be submitted to the Municipality for review and approval prior to approval of the SWM Site Plan;
 6. Upon approval by the Municipality, be signed by the Landowner and owner of the BMP or Conveyance and submitted to the Municipality; and
 7. Be fully executed and recorded at the Chester County Office of the Recorder of Deeds within ten (10) business days of the Municipality's approval of the O&M Plan.

Section 705. Other Post-construction Responsibilities

- A. The provisions of Section 805 of this Ordinance shall apply to any permanent BMP or Conveyance that is constructed as part of an approved SWM Site Plan or covered by an approved O&M Plan.
- B. The person responsible for the operation and maintenance of a BMP or Conveyance shall make records of the installation and of all maintenance and repairs, and shall retain the records for at least ten (10) years. These records shall be submitted to the Municipality.
- C. No later than the time of the final construction inspection, the Municipality shall inform the person responsible for the operation and maintenance whether the submission of periodic (annual or other frequency) inspection and maintenance reports will be required.
- D. The owner of each BMP and Conveyance shall keep on file with the Municipality the name, address, and telephone number of the person responsible for maintenance activities and implementation of the O&M Plan. In the event of a change, new information shall be

submitted by the BMP or Conveyance owner to the Municipality within ten (10) business days of the change.

Section 706. Inspection and BMP Operation and Maintenance Requirements (Landowner or Owners Designee) and BMP O&M Fund

The landowner or the owner's designee shall inspect SWM BMPs, facilities and/or structures installed under this Ordinance according to the following frequencies, at a minimum, to ensure the BMPs, facilities and /or structures continue to function as intended:

1. Annually for the first 5 years.
2. Once every 3 years thereafter.
3. During or immediately after the cessation of a 10-year or greater storm, as determined by the Municipal Engineer. Inspection reports for inspections during or after the cessation of a 10-year or greater storm event are only required to be submitted to the Municipality if requested by the Municipality or Municipal Engineer.

Inspections should be conducted during or immediately following precipitation events or in dry weather conditions if the BMP design parameters include dewatering within a specified period of time. A written inspection report shall be created to document each inspection. The inspection report shall contain the date and time of the inspection, the individual(s) who completed the inspection, the location of the BMP, Stormwater Management Facility, or structure inspection, observations on performance, and recommendations for improving performance, if applicable. Inspection reports for annual and triennial inspections shall be submitted to the Municipality within 30 days following completion of the inspection.

ARTICLE VIII – PROHIBITIONS

Section 801. Prohibited Discharges

- 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 the Municipality's separate storm sewer system, Riparian Buffers, wetlands, or other Waters of the Commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into the Municipality's separate storm sewer system or the Waters of the Commonwealth that are not composed entirely of stormwater, except:
 1. As provided in Subsection 801.C below; and
 2. Discharges allowed under a State or Federal permit.

- C. The following discharges are authorized unless they are determined by the Municipality to be significant contributors to pollution to the Municipality's separate storm sewer system or to the Waters of the Commonwealth:
1. Discharges from fire-fighting activities;
 2. Potable water sources including water line and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC);
 3. Non-contaminated irrigation drainage water;
 4. Non-contaminated HVAC condensation and water from geothermal systems;
 5. Springs;
 6. Water from crawl space pumps;
 7. Pavement wash waters where spills or leaks of toxic or hazardous materials have not occurred (unless all spill material has been removed) and where detergents are not used;
 8. Diverted stream flows;
 9. Flows from riparian habitats and wetlands;
 10. Uncontaminated water from foundations or from footing drains;
 11. Lawn watering;
 12. Uncontaminated groundwater;
 13. Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized;
 14. Routine external building washdown (which does not use detergents or other compounds); and
 15. Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.
- D. In the event that the Municipality determines that any of the discharges identified in Section 801.C significantly contribute pollutants to the Municipality's separate storm sewer system or to the Waters of the Commonwealth, or is notified of such significant contribution of pollution by PADEP, the Municipality will notify the responsible person to cease the discharge.

- E. Upon notice provided by the Municipality under Section 801.D, the discharger shall, within a reasonable time period, as determined by the Municipality consistent with the degree of pollution caused by the discharge, cease the discharge.
- F. Nothing in this section shall affect a discharger's responsibilities under State law.

Section 802. Prohibited Connections

The following connections are prohibited, except as provided in Section 801.C above:

- 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 separate storm sewer system, and any connections to the separate storm sewer system from indoor drains and sinks. Any drain or Conveyance that delivers non-stormwater discharges directly into wetlands, Riparian Buffers, or other Waters of the Commonwealth is prohibited.
- B. Any drain or Conveyance connected from a commercial or industrial land use to a separate storm sewer system, which has not been documented in drawings, plans, maps, or equivalent records and approved by the Municipality.

Section 803. Roof Drains and Sump Pumps

- A. Roof drains and sump pump discharges shall not be connected to sanitary sewers.
- B. Roof drain, sump pump, foundation and footing drain discharges:
 - 1. To the maximum extent practicable, shall discharge to infiltration or vegetative BMPs, or to vegetated or other areas with adequate capacity;
 - 2. May be connected to streets, storm sewers, or roadside ditches only if determined necessary or acceptable by the Municipal Engineer; and
 - 3. Shall be considered in stormwater management calculations to demonstrate that Conveyance and receiving facilities have adequate capacity.

Section 804. Alteration of BMPs

- A. No person shall modify, remove, fill, landscape, alter, or impair the effectiveness of any stormwater BMPs, Conveyances, Stormwater Management Facilities, areas or structures unless the activity is part of an approved maintenance program, without the written approval of the Municipality.
- B. No person shall place any structure, fill, landscaping, additional vegetation, yard waste, brush cuttings, or other waste or debris into a BMP or Conveyance, or within a stormwater

easement, that would limit or alter the functioning of the stormwater BMP or Conveyance, without the written approval of the Municipality.

ARTICLE IX – ENFORCEMENT AND PENALTIES

Section 901. Public Nuisance

- A. Any Regulated Activity conducted in the violation of any provision of this Ordinance is hereby deemed a public nuisance.
- B. Each day that a violation continues shall constitute a separate violation.
- C. A separate violation will be found to exist for each section of this Ordinance found to have been violated.
- D. To the extent that the Municipality does not enforce any provision of this Ordinance, such action or inaction shall not constitute a waiver by the Municipality of its rights of future enforcement hereunder.

Section 902. Right of Entry

- A. Upon presentation of proper credentials, duly authorized officers or agents of the Municipality may enter at reasonable times upon any property within the Municipality to inspect the implementation, condition, and/or operation and maintenance of all erosion and sediment controls and stormwater BMPs, Conveyances, or other Stormwater Management Facilities for compliance with any requirement of this Ordinance.
 - 1. Such inspections may be both during construction and after completion of a Regulated Activity.
 - 2. Upon determination of a violation of this Ordinance, the duly authorized officers or agents of the Municipality may enter the property to correct the violation, with all expenses associated with correcting the violation to be charged to the property owner responsible for the violation.
- B. Persons working on behalf of the Municipality shall have the right to temporarily locate on or in any BMP, Conveyance or other stormwater facility in the Municipality such devices as are necessary to conduct monitoring and/or sampling of the discharges from such BMP or Conveyance, or other Stormwater Management Facilities.
- C. Failure of the Landowner or representative to grant access to the Municipality within one (1) hour of notification, verbal or written, is a violation of this Ordinance.

Section 903. Enforcement

- A. The Municipal Engineer or other Township Designated Official is hereby authorized and directed to enforce all of the provisions of this Ordinance. The Municipal Governing Body may delegate enforcement duties, including the initial determination of Ordinance violation and service of notice, if notice is given, to such other officers or agents as the Municipality shall deem qualified for that purpose.
- B. It shall be the responsibility of the Landowner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred to comply with the applicable terms and conditions of this Ordinance.
- C. All municipal inspections for compliance with the approved SWM Site Plan shall be the responsibility of the Municipality or its designee.
- D. During any stage of the work of any Regulated Activity, if the Municipal Engineer or other designee determines that the erosion and sediment control measures, permanent BMPs, Conveyances or other Stormwater Management Facilities are not being installed or maintained in accordance with the approved SWM Site Plan, the Municipality may suspend or revoke any existing permits or other approvals until the deficiencies are corrected or until a revised SWM Site Plan is submitted and approved and new permits are issued, if and as determined to be necessary by the Municipal Engineer or other designee.
- E. In the event that the Municipal Engineer or other Municipal designee finds that a person has violated a provision of this Ordinance, or fails to conform to the requirements of any permit or approval issued by the Municipality, or any O&M Plan or O&M Agreement approved by the Municipality, the Municipality may order compliance by written notice of the violation to the Landowner. Such notice may, without limitation, require the following remedies:
 - 1. Performance of monitoring, analyses, and reporting;
 - 2. Elimination of prohibited connections or discharges;
 - 3. Cessation of any violating discharges, practices, or operations;
 - 4. Abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
 - 5. Payment of a fine to cover administrative and remediation costs and/or forfeiture of financial security;
 - 6. Implementation of stormwater controls, BMPs, and Conveyances; and
 - 7. Operation, maintenance or repair of BMPs, Conveyances or other Stormwater Management Facilities.

- F. Such notice shall set forth the nature of the violation(s), citing to specific sections of this Ordinance which have not been met, and establish a time limit for commencement of correction and completion of correction of the violations(s). The notice shall provide for a right of the Landowner's appeal to the Municipal Governing Body or Zoning Hearing Board in accordance with Section 906 of this Ordinance. Said notice shall further advise that, if applicable, should the violator fail to take the required action within the established deadline, possible sanctions, clearly described, may be imposed, or the work may be done by the Municipality or designee, and the expense thereof shall be charged to the violator.
- G. Failure to comply within the time specified in such notice shall also subject such person to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the Municipality from pursuing any and all other remedies available in law or equity.

Section 904. Suspension and Revocation of Permits and Approvals

- A. Any Grading, building, land development, or other permit or approval issued by the Municipality may be suspended or revoked by the Municipality for:
 - 1. Noncompliance with or failure to implement any provision of the Grading Permit or approved SWM Site Plan or O&M Agreement;
 - 2. A violation of any provision of this Ordinance or any other law or regulation applicable to the Regulated Activity;
 - 3. The creation of any condition or the commission of any act during the Regulated Activity that constitutes or creates a hazard or nuisance, or endangers the life, health, safety, or property of others; or
 - 4. Failure to correct a violation within the allowed time period allowed per notice given by the Municipality.
- B. Prior to revocation or suspension of a permit, unless there is immediate danger or threat of such danger to life, public health or property, at the request of the Applicant, the Municipality's Governing Body or Zoning Hearing Board, as determined in accordance with Section 906, shall schedule a hearing on the violation and proposed revocation or suspension, pursuant to public notice. The expense of a hearing shall be the Applicant's responsibility.
- C. A suspended permit or approval may be reinstated by the Municipality when:
 - 1. The Municipal Engineer or other designee has inspected and approved the corrections to the BMPs, Conveyances or other Stormwater Management Facilities, or the elimination of the hazard or nuisance; and
 - 2. The Municipality is satisfied that the violation has been corrected.

- D. A permit or approval that has been revoked by the Municipality cannot be reinstated. The Applicant may apply for a new permit or approval in accordance with this Ordinance.

Section 905. Penalties

- A. Any person violating or permitting the violation of the provisions of this Ordinance shall be subject to a fine of not more than \$1000.00 for each violation, recoverable with costs. The establishment of a violation for purposes of setting fines or penalties for such violation shall be in accordance with a citation to a magisterial district judge with jurisdiction and venue over the location of the violation and such an action will be subject to the procedures provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure. A separate offense shall arise for each day or portion thereof a violation is found to exist and may be determined for each section of this Ordinance which is found to have been violated.
- B. In addition, the Municipality may, through its solicitor, institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other legal or equitable forms of remedy or relief. Such relief may include costs, fees, and charges, including the Municipality's attorney's fees (charged at the hourly rate approved by the Governing Body of the Municipality) and costs, as may be permitted by law.
- C. Notwithstanding any other provision of this Ordinance, East Nantmeal Township shall have the right at any or all times deemed necessary by the Municipal Engineer or designee to enter upon any property within East Nantmeal Township to inspect and, upon determination of a violation of this Ordinance, to correct the violation, with all expenses associated with correcting the violation to be charged to the property owner responsible for the violation. By engaging in a Regulated Activity, the Applicant and his/her/its successors in ownership to the land where the facility is located give implied consent without legal process for entry to the property by the Municipal Engineer and his designees under this Section 905.C and any other Section of this Ordinance which authorizes or requires entry onto a property.
- D. In cases where a monetary amount is due and owing East Nantmeal Township, said amount plus costs and attorney fees, shall be a municipal claim and the Township may file a lien against the Property where a facility is located, and collect said amount in accordance with the Municipal Lien Law.

Section 906. Appeals

- A. Any person aggrieved by any action of the Municipal Engineer or other designee relative to the provisions of this Ordinance may appeal to the Municipality's Governing Body or Zoning Hearing Board (as determined in accordance with Section 906.B herein below) within thirty (30) days of that action. The Municipal Engineer or other designee shall specify in writing the date of the action for purposes of the 30-day appeal period.

- B. If the action taken by the Municipal Engineer or other designee is related to a subdivision or land development as approved by the Governing Body which is under construction, the appeal shall be taken to the Governing Body. In all other circumstances, the appeal shall be taken to the Zoning Hearing Board. Hearings and decisions on appeals shall be in accordance with Section 908 of the MPC, except that the deemed approval provisions of Section 908(9) shall not apply.
- C. Any person aggrieved by any decision of the Municipality's Governing Body or Zoning Hearing Board relative to the provisions of this Ordinance may appeal to the Court of Common Pleas of Chester County within thirty (30) days of the date of the Municipality's decision. Any appeal shall be in accordance with Article X-A of the MPC.

Section 907. Repealer; Effective Date

This Ordinance shall take effect five days from the date of enactment.