

STORMWATER MANAGEMENT ORDINANCE
ORDINANCE NO. 1-2014

MUNICIPALITY OF
EAST DRUMORE TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on
June 5, 2014

Prepared by:

Light-Heigel & Associates, Inc.
930 Red Rose Court, Suite 103
Lancaster, PA 17603
(717) 892-7002

www.light-heigel.com

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**ARTICLE I
GENERAL PROVISIONS**

Section 101. Short Title

This Ordinance shall be known and may be cited as the “East Drumore Township Stormwater Management (SWM) Ordinance.”

Section 102. Statement of Findings

The governing body of the Municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and safety, and increases nonpoint source pollution of water resources.
- B. A comprehensive program of SWM, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, welfare, and the protection of the people of the Municipality and all the people of the Commonwealth, their resources, and the environment.
- C. Stormwater is an important water resource, which provides groundwater recharge for water supplies and base flow of streams, which also protects and maintains surface water quality.
- D. Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their Municipal Separate Storm Sewer Systems (MS4) under the National Pollutant Discharge Elimination System (NPDES).
- E. Riparian forest buffers enhance water quality by filtering pollutants in runoff, providing light control and temperature moderation, processing pollutants, increasing infiltration and providing channel and shoreline stability thus decreasing erosion (DEP Riparian Forest Buffer Guidance, November 27, 2010).

Section 103. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare by minimizing the harms and maximizing the benefits described in Section 102 of this Ordinance through provisions designed to:

- A. 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 this Commonwealth.
- B. Preserve the natural drainage systems as much as practicable.
- C. Manage stormwater runoff close to the source.
- D. Provide procedures and performance standards for stormwater planning and management.
- E. Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to otherwise protect water resources.
- F. Prevent scour and erosion of stream banks and streambeds.
- G. Provide proper Operation and Maintenance of all Stormwater Management Best Management Practices (SWM BMPs) that are implemented within the Municipality.
- H. Provide standards to meet NPDES permit requirements.
- I. Promote stormwater runoff prevention through the use of nonstructural Best Management Practices (BMPs).
- J. Provide a regulatory environment that supports the proportion, density and intensity of development called for in the comprehensive plan; allow for creative methods of improving water quality and managing stormwater runoff; and promote a regional approach to water resource management.
- K. Help preserve and protect exceptional natural resources, and conserve and restore natural resource systems.
- L. Promote stormwater management practices that emphasize infiltration, evaporation, and transpiration.

Section 104. Statutory Authority

- A. Primary Authority:

The Municipality is empowered to regulate these activities by the authority of the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, et seq., as amended, the "Stormwater Management Act" and Act 394 of 1937, as amended, 35 P.S. Section 691.1 et seq. the Pennsylvania Clean Streams Law. The municipality also is empowered to regulate land use activities that affect stormwater impacts by the authority of the Act of May. 1, 1933, P.L. 103, No. 69 (Reenacted and amended Nov. 9, 1995, P.L.350, No.60) Section 1516 - Second Class Township Code, as amended.

B. Secondary Authority:

The municipality also is empowered to regulate land use activities that affect runoff by the authority of the Act of July 31, 1968, P.L. 805, No. 247, The Pennsylvania Municipalities Planning Code, as amended.

Section 105. Applicability

A. The following activities are regulated by this Ordinance:

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 Municipality shall be subject to regulation by this Ordinance.
2. 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.
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.

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 (including but not limited to New Development, Redevelopment, or Earth Disturbance) that is to take place incrementally or in phases, or occurs in sequential projects on the same parcel or property, shall be subject to regulation by this Ordinance if the cumulative Proposed Impervious Surface or Earth Disturbance 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 Impervious Surface and Earth Disturbance computations shall be cumulatively considered (unless such requirements have previously been adopted, then the earliest date of the applicable municipal ordinance adoption shall remain as the starting point). For example:

If, after adoption of this Ordinance, an Applicant proposed construction of a six hundred (600) square foot garage, that project would be exempted from the requirements of this Ordinance as note in Table 106.1. If, at a later date, an applicant proposed to construct a nine hundred (900) square foot room addition on the same property, the Applicant would then be required to implement the stormwater management and plan submission requirements of this Ordinance for the cumulative total of one thousand five hundred (1,500) square feet of additional Impervious Surface added to the property since adoption of this Ordinance.

Section 106. Exemptions and Modified Requirements

A. Requirements for Exempt Activities

1. An exemption from any requirement of this Ordinance shall not relieve the Applicant from implementing all other applicable requirements of this Ordinance or from implementing such measures as are necessary to protect public health, safety, and welfare, property and water quality.
2. 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.
3. An exemption under this Ordinance shall not relieve the Applicant from complying with all other applicable municipal ordinances or regulations.
4. Any applicant desiring exemption from design, plan submission, and plan processing requirements shall complete an Application for Exemption in the form available at the Township Office and pay any applicable filing fee.

B. General Exemptions

Regulated Activities that:

1. Involve less than or equal to one thousand (1,000) square feet of Proposed Impervious Surfaces AND less than or equal to five thousand (5,000) square feet of Earth Disturbance; or
2. 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.

TABLE 106.1

Thresholds for Regulated Activities that are Exempt from the Provisions of this Ordinance as Listed Below (see Notes below)

| Ordinance Article/Section | Activities Listed in Subsection 106.C. | ≤1000 sq ft of Proposed Impervious Surfaces AND ≤5,000 sq ft of Proposed Earth Disturbance | ≥1000 sq ft of Proposed Impervious Surfaces OR ≥5,000 sq ft of Proposed Earth Disturbance |
|--|---|--|---|
| Article 1 | Not Exempt | Not Exempt | Not Exempt |
| Article 2 | Not Exempt | Not Exempt | Not Exempt |
| Section 302, and 303, 310 | Not Exempt | Not Exempt | Not Exempt |
| Section 301, 304, 305,306,307,308 and 309 | Exempt | Exempt | Not Exempt |
| Article IV | Exempt | Exempt | Not Exempt |
| Article V | Exempt | Exempt | Not Exempt |
| Article VI | Exempt | Exempt | Not Exempt |
| Article VII | Exempt | Exempt | Not Exempt |
| Article VIII | Not Exempt | Not Exempt | Not Exempt |
| Article IX | Not Exempt | Not Exempt | Not Exempt |
| 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 106.1 Notes:

- Specific activities listed in Subsection 106.C are exempt from the indicated requirements, regardless of size.

- A proposed Regulated Activity must be less than BOTH the Proposed Impervious Surfaces and proposed Earth Disturbance thresholds to be eligible for exemption from the requirements listed in this table.
- “Proposed Impervious Surface” - as defined in this Ordinance.
- “Exempt” – Regulated Activities are exempt from the requirements of listed section(s) only; all other provisions of this Ordinance apply.

C. Exemptions for Specific Activities

The following specific Regulated Activities are exempt from the requirements of Sections 301, 304, 305, 306, 307, 308, and 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 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 Municipality 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 Municipality 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 system, facility, BMP or Conveyance made in accordance with plans and specifications approved by the Municipal Engineer or Municipality.
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 –
 - a. Agricultural Activities (as defined in Article II), when performed in accordance with the requirements of 25 PA Code Chapter 102.
 - b. Conservation Practices (as defined in Article II) that do not involve construction of any new or expanded Impervious Surfaces.
6. Forest Management - Forest management operations, which are consistent with a sound forest management plan as filed with the Municipality 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 of this Ordinance.

7. Maintenance of Existing Paved Surfaces - Replacement of existing paved surfaces shall meet the erosion and sediment control requirements of 25 PA Code Chapter 102 and Section 303 of this Ordinance, and is exempt from all other requirements of this Ordinance listed in Subsection 106.C above. Resurfacing of existing paved 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.
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.

D. Modified Requirements for Small Projects

Regulated Activities that involve *up to 2,500* square feet of Proposed Impervious Surfaces and *10,000* square feet of propose Earth Disturbance may apply the modified requirements presented in the “Simplified Approach to Stormwater Management for Small Projects” (Simplified Approach) (Appendix A) to comply with the requirements of Sections 304, 305, 306, 307, 308, 309, and 310, and Article IV, Article V, Article VI and Article VII of this Ordinance (as shown in Table 106.2). The Applicant shall first contact the Municipal Engineer: to confirm that the proposed project is eligible for use of the Simplified Approach and is not otherwise exempt from these Ordinance provisions; to determine what components of the proposed project are to be considered as Impervious Surfaces; and to determine if other known Site or local conditions exist that may preclude the use of any techniques included in the Simplified Approach. Appendix A includes instructions and procedures for preparation, submittal, review and approval of documents required when using the Simplified Approach and shall be adhered to by the Applicant. All other provisions of this Ordinance shall apply.

TABLE 106.2

Thresholds of Regulated Activities that are Eligible for “Modified” Requirements for the Provisions of this Ordinance that are Listed Below

| Ordinance Article/Section | Activities Listed in Subsection 106.D and 106 E up to 2,500 SF of impervious cover or up to 10,000 SF of proposed Earth Disturbance |
|--|--|
| Article I | All Provisions Apply |
| Article II | All Provisions Apply |
| Sections 302, and 303, 311 | All Provisions Apply |
| Sections 301, 304, 305, 306, 307, 308, 309, 310 | Exempt if Modified Requirements of Subsection(s) 106.D and/or E are Applied |
| Article IV | Exempt if Modified Requirements of Subsection(s) 106.D and/or E are Applied |
| Article V | Exempt if Modified Requirements of Subsection(s) 106.D and/or E are Applied |
| Article VI | Exempt if Modified Requirements of Subsection(s) 106.D and/or E are Applied |
| Article VII | Exempt if Modified Requirements of Subsection(s) 106.D and/or E are Applied |
| 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” – 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 the modified requirements of Subsections 106.D and/or E are met to the satisfaction of the Municipality; all other provisions of this Ordinance apply.

E. Modified Requirements 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 the requirements of Sections 301, 304, 305, 306, 307, 308, 309, and 310, and Article IV, Article V, Article VI and Article VII of this Ordinance (and listed in Table 106.2) only when it has been demonstrated to the satisfaction of the Municipality that the proposed project will comply with all of the requirements listed below. All other provisions of this Ordinance shall apply. To be eligible for this alternate storm water plan processing from the Ordinance provisions stated above, the proposed Regulated Activity shall:

1. Be directly associated with an Agricultural Activity (as defined in Article II);
2. For a parent tract containing not less than 10.0 acres to 20 acres, cumulative new impervious areas of 10,000 square feet or less if the minimum distance between the proposed impervious area and/or SWM Facility discharge point to the downslope property line of the parent tract is at least 100 feet. In lieu of meeting the minimum distance criteria, the applicant may provide documentation that the storm water flows from the parent tract leave the parent tract in the same manner as the pre-development condition and that there will be no adverse effects to adjacent property or that the flows reach a natural drainageway or existing SWM Facility before affecting adjacent property;
3. For a parent tract containing more than 20 acres, cumulative new impervious areas of 20,000 square feet or less if the minimum distance between the proposed impervious area and/or SWM Facility discharge point to the downslope property line of the parent tract is at least 250 feet. In lieu of meeting the minimum distance criteria, the applicant may provide documentation that the storm water flows from the parent tract leave the parent tract in the same manner as the pre-development condition and that there will be no adverse effects to adjacent property or that the flows reach a natural drainageway or existing SWM Facility before affecting adjacent property;
4. Be installed on a farm with 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, and that the plan is being implemented, with verification by the County Conservation District;
5. 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;
6. 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, or be incorporated into the approved Conservation Plan that provides the same function;
7. 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 any constructed Conveyance that is connected to, a municipal Separate Storm Sewer System or public roadway;

- b. Is located at least two hundred (200) 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;
8. Either:
 - a. Have all proposed new or expanded Impervious Surfaces and proposed vehicle parking and movement areas and BMP(s) included within current Agricultural Erosion and Sediment Control Plan or a Conservation Plan for the farm or mushroom operation;OR
 - b. 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;
9. An applicant for processing under this Section shall provide the Township with information to demonstrate there shall be no disturbance of land within floodplains, wetlands, environmentally sensitive areas, riparian forest buffers, or slopes greater than 15 percent; and
10. Not be eligible for modified plan processing if an NPDES permit is required.

Section 107. Repealer

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

Section 108. Severability

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

Section 109. Compatibility with Other Ordinance Requirements

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

Section 110. Erroneous Permit

Any permit or authorization issued or approved based on false, misleading or erroneous information provided by an applicant is void without the necessity of any proceedings for revocation. Any work undertaken or use established pursuant to such permit or other

authorization is unlawful. No action may be taken by a board, agency or employee of the Municipality purporting to validate such a violation.

Section 111. Municipal Liability.

Except as specifically provided by the Pennsylvania Storm Water Management Act, Act of October 4, 1978, P.L. 864, No. 167, as amended, 32 P.S. §680.1 et seq., the making of any administrative decision by the East Drumore Township or any of its officials or employees shall not constitute a representation, guarantee or warranty of any kind by the Township of the practicability or safety of any proposed structure or use with respect to damage from erosion, sedimentation, storm water runoff, flood, or any other matter, and shall create no liability upon or give rise to any cause of action against East Drumore Township and its officials and employees. East Drumore Township, by enacting and amending this Ordinance, does not waive or limit any immunity granted to the Township and its officials and employees by the Governmental Immunity Act, 42 Pa. C.S. §8541 et seq., and does not assume any liabilities or obligations.

Section 112. Duty of Persons Engaged in the Development of Land

Notwithstanding any provision(s) of this Ordinance, including exemptions, any landowner or any person engaged in 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.

Section 113. Financial Security

- A. A financial security (bond, restricted account or letter of credit) for stormwater related improvements shall be supplied by the Land Owner or Developer in conjunction with the subdivision/land development approval, or in conjunction with the SWM Site Plan or Small Project Application approval if no subdivision/land development plan is required.
- B. The Applicant/Landowner shall provide a financial security to the Municipality for the timely installation and proper construction of all SWM facilities, including E&S BMPS, as required by the approved SWM Site Plan and this ordinance and, as applicable, in accordance with the provisions of Sections 509, 510, and 511 of the MPC.
- C. As the work of installing the required SWM Facilities proceeds, the party posting the financial security may request the Governing Body to release or authorize the release, from time to time, such portions of the financial security necessary for payment to the contractor or contractors performing the work. Any such requests shall be in writing addressed to the Governing Body, and the Governing Body shall have 45 days from receipt of such request within which to allow the Municipal Engineer to certify, in writing, to the Governing Body that such portion of the work upon the SWM Facilities has been completed in accordance with the approved SWM Site Plan. Upon such certification the Governing Body shall authorize release by the bonding company or lending institution of an amount as estimated by the Municipal Engineer fairly representing the value of the SWM Facilities completed. The Governing Body may, prior to final release at the time of

completion and certification by its Engineer, require retention of 10% of the estimated cost of the aforesaid SWM Facilities.

- D. In the event that any SWM Facilities which may be required have not been installed as provided in the approved SWM Site Plan the Governing Body of the Municipality is hereby granted the power to enforce any corporate bond, or other security by appropriate legal and equitable remedies. If proceeds of such bond, or other security are insufficient to pay the cost of installing or making repairs or corrections to all the SWM Facilities covered by said security, the Governing Body of the Municipality may, at its option, install part of such SWM Facilities and may institute appropriate legal or equitable action to recover the monies necessary to complete the remainder of the SWM Facilities. All of the proceeds, whether resulting from the security or from any legal or equitable action brought against the Developer, or both, shall be used solely for the installation of the SWM Facilities covered by such security, and not for any other Municipal purpose.
- E. For Storm Water Management Site Plans that are required to have an NPDES permit and a financial security to the Township is required, evidence of the NPDES permit's executed "Notice of Termination" shall be provided to the Township prior to the release of the financial security.

ARTICLE II
DEFINITIONS OF TERMS

Section 201. Interpretation and Word Usage

The language set forth in the text of this Ordinance shall be interpreted in accordance with the following rules of construction:

- A. Words used or defined in one tense or form shall include other tenses or derivative forms.
- B. Words in the singular number shall include the plural number, and words in the plural number shall include the singular number.
- C. The masculine gender shall include the feminine and neuter. The feminine gender shall include the masculine and neuter. The neuter gender shall include the masculine and feminine.
- D. The word "person" includes individuals, firms, partnerships, joint ventures, trusts, trustees, estates, corporations, associations and any other similar entities.
- E. The word "Lot" includes the words "plot", "Tract", and "Parcel".
- F. The words "shall," "must" and "will" are mandatory in nature and establish an obligation or duty to comply with the particular provision. The words "may" and "should" are permissive.
- G. The time, within which any act required by this Ordinance is to be performed, shall be computed by excluding the first day and including the last day. However, if the last day is a Saturday or Sunday or a holiday declared by the United States Congress or the Pennsylvania General Assembly, it shall also be excluded. The word "day" shall mean a calendar day, unless otherwise indicated.
- H. Any words not defined in this Ordinance or in Section 107 of the MPC shall be construed as defined in standard dictionary usage.
- I. References to officially adopted regulations, standards, or publications of DEP or other governmental agencies shall include the regulation, publication, or standard in effect on the date when a SWM Site Plan is first filed. It is the intent of the (Governing Body) in enacting this Section to incorporate such changes to statutes, regulations, and publications to the extent authorized by 1 Pa. C.S. § 1937.

Section 202. Definitions of Terms

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

Access Easement – A right granted by a landowner to a grantee, allowing entry for the purpose of inspecting, maintaining and repairing SWM Facilities.

Act 167 Plan – A plan prepared under the authority of Pennsylvania’s Stormwater Management Act of October 4, 1978.

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

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

Animal Heavy Use Areas – A barnyard, feedlot, loafing area, exercise lot, or other similar area on an agricultural operation where due to the concentration of animals, it is not possible to establish and maintain vegetative cover of a density capable of minimizing accelerated erosion and sedimentation by usual planting methods. The term does not include entrances, pathways and walkways between areas where animals are housed or kept in concentration.

Applicant - A Landowner and/or Developer, as hereinafter defined, including his heirs, successors and assigns, who has filed an application to the municipality for approval to engage in any regulated activity at a Development Site located within the municipality.

BMP (Best Management Practice) - Activities, facilities, control measures, planning or procedures used to minimize accelerated erosion and sedimentation and manage stormwater to protect, maintain, reclaim, and restore the quality of waters and the existing and designated uses of waters within this Commonwealth before, during and after earth disturbance activities¹. See also Non-structural BMP and Structural BMP.

BMP Manual – The Pennsylvania Stormwater Best Management Practices Manual of December 2006, or most recent version thereof.

Building – Any enclosed or open structure, other than a boundary wall or fence, occupying more than four (4) square feet of area and/or having a roof supported by columns, piers, or walls.

Carbonate Geology - Limestone or dolomite bedrock. Carbonate geology is often associated with karst topography.

Certificate of Completion – Documentation verifying that all permanent SWM facilities have been constructed according to the plans and specifications and approved revisions

thereto.

Chapter 102 – 25 Pa. Code Chapter 102, Erosion and Sediment Control

Chapter 105 – 25 Pa. Code, Chapter 105, Dam Safety and Waterway Management

Chapter 106 – 25 Pa. Code, Chapter 106, Floodplain Management

Cistern - A reservoir or tank for storing rainwater.

Clean Water Act – the 1972 Amendments to the Federal Water Pollution Control Act, P.L. 92-500 of 1972, 33 U.S.C. §1251 et seq.

Conservation Plan – A plan written by an Natural Resources Conservation Service certified planner 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 – Any structure that carries a flow. The ability of a pipe, culvert, swale or similar facility to carry the peak flow from the design storm.

Culvert - A structure with appurtenant works which can convey a stream under or through an embankment or fill.

DEP also PA DEP or PADEP – The Pennsylvania Department of Environmental Protection or any agency successor to the Pennsylvania Department of Environmental Protection.

Design Storm - The magnitude and temporal distribution of precipitation from a storm event measured in probability of occurrence (e.g., a 5-year storm) and duration (e.g., 24-hours), used in the design and evaluation of SWM systems.

Detention Basin - An impoundment structure designed to manage stormwater runoff by temporarily storing the runoff and releasing it at a controlled rate.

Developer - A person who undertakes any Regulated Activity of this Ordinance.

Development Site (Site) - The specific area of land where regulated activities in the municipality are planned, conducted or maintained.

Disappearing Stream - A stream in an area underlain by limestone or dolomite that flows underground for a portion of its length.

Disturbed Area - A land area where an earth disturbance activity is occurring or has occurred.

Drainage Easement - Rights to occupy and use another person's real property for the installation and operation of stormwater management facilities, or for the maintenance of natural drainageways to preserve and maintain a channel for the flow of stormwater therein, or to safeguard health, safety, property, and facilities

E&S – Erosion and Sediment.

E&S Plan (also Erosion and Sediment Control Plan) – A site-specific plan consisting of both drawings and a narrative that identifies BMPs to minimize accelerated erosion and sedimentation before, during and after earth disturbance activities.

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; land development; agricultural plowing or tilling; operation of animal heavy use areas; timber harvesting activities; road maintenance activities; oil and gas activities; well drilling; mineral extraction; building construction; and the moving, depositing, stockpiling, or storing of soil, rock, or earth materials¹.

Environmentally Sensitive Area - slopes greater than 15% percent, shallow bedrock (located within 6 feet of ground surface²), wetlands, Natural Heritage Areas and other areas designated as Conservation or Preservation in **Greenscapes**, the Green Infrastructure Element of the County Comprehensive Plan, where encroachment by land development or land disturbance results in degradation of the natural resource.

Erosion - The natural process by which the surface of the land is worn away by water, wind, or chemical action. See also, "Accelerated Erosion" as defined above.

Existing Conditions - The dominant land cover during the 5-year period immediately preceding a proposed regulated activity.

Farm – Any parcel of land with a minimum of 20 acres which is used for agricultural purposes, including farming, dairying, pasturage, agriculture, horticulture, floriculture, viticulture, fish culture, animal and poultry husbandry and the necessary uses for packaging, treating or storing the produce, provided that the operation of any such accessory uses shall be secondary to that of normal agricultural activities.

FEMA - the Federal Emergency Management Agency.

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

Flood Fringe – That portion of the floodplain outside of the floodway³.

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

hazard area. Also, the area of inundation that functions as a storage or holding area for floodwater to a width required to contain a base flood of which there is a one percent (1%) chance of occurrence in any given year. The floodplain contains both the floodway and the flood fringe.

Floodplain Management Act - Act of October 4, 1978, P.L. 851, No. 166, as amended 32 P.S. Section 679.101 et seq.

Floodway – That portion of the floodplain which is effective in carrying flow, within which this carrying capacity must be preserved and where the flood hazard is generally highest, i.e., where water depths and velocities are the greatest. It is that area which provides for the discharge of the base flood so the cumulative increase in water surface elevation is no more than one foot³.

Alternative Definition from 25 Pa Code Chapter 105:

Floodway – The channel of the watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year frequency flood. Unless otherwise specified, the boundary of the floodway is as indicated on maps and flood insurance studies provided by FEMA. In an area where no FEMA maps or studies have defined the boundary of the 100-year frequency floodway, it is assumed - absent evidence to the contrary - that the floodway extends from the stream to 50 feet from the top of the bank of the stream⁴.

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

Frequency - The probability or chance that a given storm event/flood will be equaled or exceeded in a given year.

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

Groundwater Recharge - The process by which water from above the ground surface is added to the saturated zone of an aquifer, either directly or indirectly.

Hydrologic Soil Group (HSG) – Refers to soils grouped according to their runoff-producing characteristics by NRCS. There are four (4) runoff potential groups ranging from A to D.

A. (Low runoff potential) Soils having high infiltration rates even when thoroughly wetted and consisting chiefly of deep, well to excessively drained sands or

gravels. These soils have a high rate of water transmission (greater than 0.30 inches/hour).

B. Soils having moderate infiltration rates when thoroughly wetted and consisting chiefly of moderately deep to deep, moderately well-to-well drained soils with moderately fine to moderately coarse textures. These soils have a moderate rate of water transmission (from 0.15 to 0.30 inches/hour).

C. Soils having slow infiltration rates when thoroughly wetted and consisting chiefly of soils with a layer that impedes downward movement of water, or soils with moderately fine to fine texture. These soils have a slow rate of water transmission (from 0.05 to 0.15 inches/hour).

D. (High runoff potential) Soils having very slow infiltration rates when thoroughly wetted and consisting chiefly of clay soils with a high swelling potential, soils with a permanent high water table, soils with a clay pan or clay layer at or near the surface, and shallow soils over nearly impervious material. These soils have a very slow rate of water transmission (from 0 to 0.05 inches/hour).

Impervious Surface (Impervious Area) – A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include, but are not limited to: roofs, additional indoor living spaces, patios, garages, storage sheds and similar structures, and any new streets and sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration. Any surface area proposed to initially be gravel or crushed stone shall be assumed to be impervious, unless designed as an infiltration BMP.

Impoundment - A retention or detention facility designed to retain stormwater runoff and infiltrate it into the ground (in the case of a retention basin) or release it at a controlled rate (in the case of a detention basin).

Infiltration Structures - A structure designed to direct runoff into the ground (e.g. french drains, seepage pits, seepage trench, rain gardens, vegetated swales, pervious paving, infiltration basins, etc.).

Inlet - A surface connection to a closed drain. The upstream end of any structure through which water may flow.

Intermittent – A natural, transient body or conveyance of water that exists for a relatively long time, but for weeks or months of the year is below the local water table and obtains its flow from both surface runoff and groundwater discharges.

Invasive Vegetation (Invasives) – Plants which grow quickly and aggressively, spreading, and displacing other plants. Invasives typically are introduced into a region far from their native habitat. See [Invasive Plants in Pennsylvania](#) by the Department of Conservation and Natural Resources.

Karst - A type of topography or landscape characterized by features including but not limited to surface depressions, sinkholes, rock pinnacles/uneven bedrock surface, underground drainage, and caves. Karst is formed on carbonate rocks, such as limestone or dolomite.

Land Development - Any of the following activities:

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

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 he is authorized under the lease to exercise the rights of the landowner, or other person having a proprietary interest in land.

Limiting Zone - A rock formation, other stratum, or soil condition which is so slowly permeable that it effectively limits downward passage of effluent¹². Season high water tables, whether perched or regional also constitute a limiting zone.

Lineament - A linear feature in a landscape which is an expression of an underlying geological structure such as a fault.

Lot Coverage – The percentage of a total lot or parcel that is occupied by a structure, accessory structure, parking area, driveway, decking, walkway, or roadway, or covered with gravel, stone, shell, pavers, permeable pavement or any manmade material.

Manning's Equation - An equation for calculation of velocity of flow (e.g. feet per second) and flow rate (e.g. cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. Manning's Equation assumes steady, gradually varied flow.

Maximum Extent Practicable (MEP) – Applies when the applicant demonstrates to the Municipality's satisfaction that the performance standard is not achievable. The applicant shall take into account the best available technology, cost effectiveness, geographic features, and other competing interests such as protection of human safety and welfare, protection of endangered and threatened resources, and preservation of historic properties in making the assertion that the performance standard cannot be met and that a different means of control is appropriate.⁵

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

Municipal Separate Storm Sewer – A conveyance or system of conveyances (including roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, manmade channels, or storm drains), which is all of the following: (1) owned or operated by a state, city, town, borough, township, county, district, association or other public body (created under state law) having jurisdiction over disposal of sewage, industrial wastes, stormwater or other wastes; (2) designed or used for collecting or conveying stormwater; (3) not a combined sewer; and (4) not part of a Publicly Owned Treatment Works as defined at 40 CFR § 122.2.

Municipal Separate Storm Sewer System (MS4): All separate storm sewers that are defined as "large" or "medium" or "small" municipal separate storm sewer systems pursuant to 40 CFR §§ 122.26(b)(18), or designated as regulated under 40 CFR § 122.26(a)(1)(v).

Municipality - The Township of East Drumore, Lancaster County, Pennsylvania.

NRCS - Natural Resources Conservation Service (previously Soil Conservation Service, or SCS).

National Pollution Discharge Elimination System (NPDES) – A permit issued under 25 Pa. Code Chapter 92a (relating to National Pollutant Discharge Elimination System permitting, monitoring and compliance) for the discharge or potential discharge of pollutants from a point source to surface waters.

Native Vegetation – Plant species that have evolved or are indigenous to a specific geographical area. These plants are adapted to local soil and weather conditions as well as pests and diseases.

Natural Drainageway - An existing channel for water runoff that was formed by natural processes.

Natural Ground Cover – Ground cover which mimics the infiltration characteristics of predominant hydrologic soil group found at the site.

Nonpoint Source Pollution - Any source of water pollution that does not meet the legal definition of "point source" in Section 502(14) of the Clean Water Act.

Non-structural BMPs – Planning and design approaches, operational and/or behavior-related practices which minimize stormwater runoff generation resulting from an alteration of the land surface or limit contact of pollutants with stormwater runoff.

Open Channel - A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainage ways, swales, streams, ditches, canals, and pipes flowing partly full. Open channels may include closed conduits so long as the flow is not under pressure.

Outfall - Point where water flows from a conduit, stream, pipe, or drain.

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

PennDOT - The Pennsylvania Department of Transportation or any agency successor thereto.

Pervious Area - Any material / surface that allows water to pass through at a rate equal to or greater than Natural Ground Cover.

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

Plans - The SWM and erosion and sediment control plans and narratives.

Planning Commission - The planning commission of East Drumore Township, Lancaster County, Pennsylvania.

Process Wastewater - Water that comes in contact with any raw material, product, by-product, or waste during any production or industrial process.

Qualified Person - Any person licensed by the Pennsylvania Department of State or otherwise qualified by law to perform the work required by this Ordinance.

Rate Control - SWM controls used to manage the peak flows for the purposes of channel protection and flood mitigation,.

Rational Formula (Rational Method) - A rainfall-runoff relation used to estimate peak flow.

Redevelopment – Any physical improvement to a previously developed lot that involves earthmoving, removal, or addition of impervious surfaces.

Regional Stormwater Management Plan – A plan to manage stormwater runoff from an area larger than a single Development Site. A Regional Stormwater Management Plan could include two adjacent parcels, an entire watershed, or some defined area in between. Regional Stormwater Management Plans can be prepared for new development, or as a retrofit to manage runoff from already developed areas.

Regulated Activities - Activities, including Earth Disturbance Activities that involve the alteration or development of land in a manner that may affect stormwater runoff. Regulated activities shall include, but not be limited to:

- Land Development subject to the requirements of the applicable Subdivision and Land Development Ordinance;
- Removal of ground cover, grading, filling or excavation;
- Construction of new or additional impervious or semi-impervious surfaces (driveways, parking lots, etc.), and associated improvements;
- Construction of new buildings or additions to existing buildings;
- Installation or alteration of stormwater management facilities and appurtenances thereto;
- Diversion or piping of any watercourse; and,
- Any other regulated activities where the Municipality determines that said activities may affect any existing watercourse's stormwater management facilities, or stormwater drainage patterns.

Release Rate – For a specific design storm or list of design storms, the percentage of peak flow rate for existing conditions which may not be exceeded for the proposed conditions.

Release Rate Map – A graphical representation of the release rates for a specific area.

Retention Basin - A Stormwater Management Facility that includes a permanent pool for water quality treatment and additional capacity above the permanent pool for temporary runoff storage.

Riparian – Pertaining to a stream, river or other watercourse. Also, plant communities occurring in association with any spring, lake, river, stream or creek through which waters flow at least periodically⁶.

Riparian Buffer – A BMP that is an area of permanent vegetation along a watercourse.

Riparian Corridor – A narrow strip of land, centered on a stream or river that includes the floodplain as well as related riparian habitats adjacent to the floodplain⁶.

Riparian Corridor Easement – An easement created for the purpose of protecting and preserving a Riparian Corridor.

Riparian Forest Buffer – A type of Riparian Buffer that consists of permanent vegetation that is predominantly native trees, shrubs and forbs along a watercourse that is maintained in a natural state or sustainably managed to protect and enhance water quality, stabilize stream channels and banks, and separate land use activities from surface waters.

Rooftop Detention - Temporary ponding and gradual release of stormwater falling directly onto roof surfaces by incorporating controlled-flow roof drains into building designs.

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

SCS - U.S. Department of Agriculture, Soil Conservation Service (now known as NRCS).

Sediment – Soils or other materials transported by stormwater as a product of erosion¹.

Sediment Basin - A barrier, dam, retention or detention basin located and designed to retain rock, sand, gravel, silt, or other material transported by water.

Sediment Pollution - The placement, discharge or any other introduction of sediment into the waters of the Commonwealth occurring from the failure to design, construct, implement or maintain control measures and control facilities in accordance with the requirements of this Ordinance.

Sedimentation - The action or process of forming or depositing sediment in Waters of this Commonwealth¹.

Seepage Pit/Seepage Trench - An area of excavated earth filled with loose stone or similar coarse material, into which surface water is directed for infiltration into the ground.

Semi-impervious / Semi-pervious Surface - A surface which prevents some infiltration of water into the ground.

Sheet Flow - Runoff which flows over the ground surface as a thin, even layer, not concentrated in a channel.

Small Project – Regulated activities that, measured on a cumulative basis from *(the date of enactment of this Ordinance or other date as determined by the municipality)*, create additional impervious areas of up to 2,500 sq. ft. or less or involve removal of ground cover, grading, filling or excavation of an area less than 10,000 sq. ft. and do not involve the alteration of stormwater facilities or watercourses.

Small Storm Event – A storm having a frequency of recurrence of once every two (2) years or smaller.

Soil-Cover Complex Method - A method of runoff computation developed by the SCS (now NRCS) that is based on relating soil type and land use/cover to a runoff parameter called Curve Number (CN). For more information, see “Urban Hydrology for Small WATERSHEDS”, Second edition, Technical Release No. 55, SCS, June 1986 (or most current edition).

Soil Group, Hydrologic - See “Hydrologic Soil Group”.

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

Storage – A volume above or below ground that is available to hold stormwater.

Storm event - A storm of a specific duration, intensity, and frequency.⁷

Storm Sewer - A system of pipes and/or open channels designed to convey stormwater.

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

Stormwater Management Act - Act of October 4, 1978, P.L. 864, No. 167, as amended 32 P.S. Section 680.1 et seq.

Stormwater Management Best Management Practices (SWM BMP) – See **BMPs**.

Stormwater Management Facility (SWM Facility) - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, infiltrates/evaporates/transpires, cleans or otherwise affects stormwater runoff. Typical SWM facilities include, but are not limited to, detention and retention basins, open channels, watercourses, road gutters, swales, storm sewers, pipes, BMPs, and infiltration structures.

Stormwater Management Operation and Maintenance Plan (O & M Plan) – A plan, including a narrative, to ensure proper functioning of the SWM facilities in accordance with Article VI of this Ordinance.

Stormwater Management Site Plan (SWM Site Plan) - The Plan prepared by the Developer or his representative indicating how stormwater runoff will be managed at a particular development site according to this Ordinance.

Stream – A watercourse

Structural BMPs – Physical devices and practices that capture and treat stormwater runoff. Structural stormwater BMPs are permanent appurtenances to the Development Site.

Structure – Any man-made object having an ascertainable stationary location on or in land or water, whether or not affixed to the land.⁸

Subdivision - The division or re-division of a single lot, tract or parcel of land by any means into two (2) or more lots, tracts, parcels or other divisions of land, including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building, or lot development or as defined in the MPC.

Swale - A low lying stretch of land which gathers or carries surface water runoff.

SWM – Stormwater Management

SWM Site Plan – A Stormwater Management Site Plan.

Timber Operations - See Forest Management.

Time of Concentration (Tc) - The time for surface runoff to travel from the hydraulically most distant point of the watershed to a point of interest within the watershed. This time is the combined total of overland flow time and flow time in pipes or channels, if any.

Top of streambank – First substantial break in slope between the edge of the bed of the stream and the surrounding terrain. The top of streambank can either be a natural or constructed (that is, road or railroad grade) feature, lying generally parallel to the watercourse.

Treatment Train – The sequencing of structural Best Management Practices to achieve optimal flow management and pollutant removal from urban stormwater.

USDA – United States Department of Agriculture.

Volume Control - SWM controls, or BMPs, used to remove a predetermined amount of runoff or the increase in volume between the pre- and post-development design storm.

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

Watershed - The entire region or area drained by a watercourse.

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

Wetland - Those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions, including swamps, marshes, bogs, ferns, and similar areas.

Woodland - Land predominantly covered with trees and shrubs. Without limiting the foregoing, woodlands include all land areas of 10,000 square feet or greater, supporting at least 100 trees per acre, so that either (i) at least 50 trees are two inches or greater in [diameter at breast height] [(DBH)], or (ii) 50 trees are at least 12 feet in height.

ARTICLE III

STORMWATER MANAGEMENT STANDARDS

Section 301. General Requirements

- A. Preparation of a SWM Site Plan is required for all regulated activities, unless preparation and submission of the SWM Site Plan is specifically exempted according to Section 502 or the activity qualifies as a Small Project for alternate storm water plan processing.
- B. No regulated activities shall commence until the municipality issues unconditional written approval of a SWM Site Plan or Stormwater Permit.
- C. SWM Site Plans approved by the municipality, in accordance with Section 505, shall be on site throughout the duration of the regulated activity.
- D. The Municipality may, after consultation with DEP, approve measures for meeting the state water quality requirements other than those in this Ordinance, provided that they meet the minimum requirements of, and do not conflict with, state law including, but not limited to, the Clean Streams Law. The Municipality shall maintain a record of consultations with DEP pursuant to this paragraph. Where an NPDES permit for stormwater discharges associated with construction activities is required, issuance of an NPDES permit shall constitute satisfaction of consultation with DEP.
- E. For all regulated activities, erosion and sediment control and stormwater management BMPs 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 and the Clean Streams Law. Various BMPs and their design standards are listed in the *Erosion and Sediment Pollution Control Program Manual* (E&S Manual)⁹, No. 363-2134-008 (March 2012), as amended and updated, and the BMP Manual.
- F. Developers have the option to propose a Regional Stormwater Management Plan or participate in a Regional Stormwater Management Plan developed by others. A Regional Stormwater Management Plan may include offsite volume and rate control, as appropriate and supported by a detailed design approved by the Municipality in accordance with Section 301.D. A Regional Stormwater Management Plan must meet all of the volume and rate control standards required by this Ordinance for the area defined by the Regional Stormwater Management Plan, but not necessarily for each individual Development Site. Appropriate agreements must be established to ensure the requirements of this ordinance and the requirements of the Regional Stormwater Management Plan are met.
- G. Unless prohibited by the East Drumore Township Zoning Ordinance or any Ordinance which regulates construction and development within the areas of the East Drumore Township subject to flooding, and any other applicable requirements of the Floodplain Management Act, stormwater management facilities located in the floodplain are permitted when designed and constructed in accordance with the provisions of the BMP Manual, regulatory requirements and the requirements of this Ordinance.

H. Impervious areas:

1. The measurement of impervious area shall include all of the impervious areas in the total proposed development even if development is to take place in stages or phases.
2. For development taking place in stages or phases, the entire development plan must be used in determining conformance with this Ordinance.
3. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious.
4. Existing impervious areas that are not being altered by the proposed regulated activity shall not be subject to the volume control in Section 305 and peak rate controls of Section 306.

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

1. Protect health, safety, and property;
2. Meet the water quality goals of this Ordinance by implementing measures to:
 - a. Protect and/or improve the function of floodplains, wetlands, and wooded areas.
 - b. Protect and/or improve native plant communities including those within the riparian corridor.
 - c. Protect and/or improve natural drainageways from erosion.
 - d. Minimize thermal impacts to waters of this Commonwealth.
 - e. Disconnect impervious surfaces by directing runoff to pervious areas, wherever possible.

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

K. Infiltration BMPs shall be spread out, made as shallow as practicable, and located to maximize use of natural on-site infiltration features while still meeting the other requirements of this Ordinance. Infiltration BMPs shall include pretreatment BMPs unless shown to be unnecessary.

- L. Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and development site conditions and shall be constructed on soils that have the following characteristics:
1. A minimum depth of 24 inches between the bottom of the facility and the limiting zone, unless it is demonstrated to the satisfaction of the Municipality that the selected BMP has design criteria which allow for a smaller separation.
 2. A stabilized infiltration rate sufficient to accept the additional stormwater load and drain completely as determined by field tests conducted by the Applicant's professional designer.
 - a. The stabilized infiltration rate is to be determined in the same location and within the same soil horizon as the bottom of the infiltration facility.
 - b. The stabilized infiltration rate is to be determined as specified in the BMP Manual.
- M. The calculation methodology to be used in the analysis of volume and peak rates of discharge shall be as required in Section 308.
- N. A planting plan is required for all vegetated stormwater BMPs.
1. Native or Naturalized/Non-invasive Vegetation suitable to the soil and hydrologic conditions of the Development Site shall be used unless otherwise specified in the BMP Manual.
 2. Invasive Vegetation may not be included in any planting schedule. (See Invasive Plants in Pennsylvania by the Department of Conservation and Natural Resources (DCNR))
 3. The limit of existing, native vegetation to remain shall be delineated on the plan along with proposed construction protection measures.
 4. Prior to construction, a tree protection zone shall be delineated at the dripline of the tree canopy. All trees scheduled to remain during construction shall be marked; however, where groups of trees exist, only the trees on the outside edge need to be marked. A 48 inch high snow fence or 48 inch high construction fence mounted on steel posts located 8 feet on center shall be placed along the tree protection boundary. No construction, storage of material, temporary parking, pollution of soil, or regrading shall occur within the tree protection zone.
 5. All planting shall be performed in conformance with good nursery and landscape practice. Plant materials shall conform to the standards recommended by the American Association of Nurseryman, Inc. in the American Standard of Nursery Stock.
 - a. Planting designs are encouraged to share planting space for optimal root growth whenever possible.

- b. No staking or wiring of trees shall be allowed without a maintenance note for the stake and/or wire removal within one year of planting.
- O. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase to maintain maximum infiltration capacity. Staging of earthmoving activities and selection of construction equipment should consider this protection.
- P. Infiltration BMPs shall not be constructed nor receive runoff from disturbed areas until the entire contributory drainage area to the infiltration BMP has achieved final stabilization.
- Q. A minimum ten (10) foot wide access easement shall be provided for all stormwater facilities with tributary areas equal or greater than 1000 sq. ft. and not located within a public right-of-way. Easements shall provide for ingress and egress to a public right-of-way.
- R. Drainage easements shall be provided where the conveyance, treatment, or storage of stormwater, either existing or proposed, is identified on the SWM Site Plan. Drainage easements shall be provided to contain and convey the 100-year frequency flood.
- S. 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” on Pennsylvania’s Clean Water Act 303(d)/305(b) Integrated List.
 - 2. Any water body or watershed with an approved Total Maximum Daily Load (TMDL).
 - 3. Critical areas with sensitive resources (e.g., state designated special protection waters, cold water fisheries, carbonate or other groundwater recharge areas highly vulnerable to contamination, drainage areas to water supply reservoirs, source water protection zones, etc.)
- T. Roof drains and sump pumps shall be tributary to infiltration or vegetative BMPs. Use of catchment facilities for the purpose of reuse is also permitted.
- U. Non-structural BMPs shall be utilized for all regulated activities unless proven to be impractical.

Section 302. Permit Requirements by Other Governmental Entities

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 drainage ways 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 Pennsylvania 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, if applicable;
 - b. A PADEP NPDES Construction Activities Permit as required under Title 25 Pennsylvania Code Chapter 92, 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 Subsection 306.M.

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. For Regulated Activities with ten thousand (10,000) or more square feet of proposed Earth Disturbance OR two thousand (2,500) or more square feet of Proposed

Impervious Surfaces, the Applicant shall demonstrate in its SWM Site Plan (as required in Subsection 401) 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 403.I&J 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 Section 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 natural hydrology site design and sources of information for “Conservation Design”, “Low Impact Design”, and “Sustainable Design”.

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. Volume Controls

Volume control BMPs are intended to maintain existing hydrologic conditions for small storm events by promoting groundwater recharge and/or evapotranspiration as described in this section. Runoff volume controls shall be implemented using the *Design Storm Method* described in Subsection A below, or through continuous modeling approaches or other means

as described in the BMP Manual. Small Projects may use the method described in Subsection B to design volume control BMPs.

- A. The *Design Storm Method* is applicable to any size of regulated activity. This method requires detailed modeling based on site conditions.
 - 1. Do not increase the post development total runoff volume for all storms equal to or less than the 2-year 24-hour storm event.
 - 2. For modeling purposes:
 - a. Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.
 - b. When the existing project site contains impervious area, twenty percent (20%) of existing impervious area to be disturbed shall be considered meadow in good condition in the model for existing conditions.
 - c. The maximum loading ratio for volume control facilities in Karst areas shall be 3:1 impervious drainage area to infiltration area and 5:1 total drainage area to infiltration area. The maximum loading ratio for volume control facilities in non-Karst areas shall be 5:1 impervious drainage area to infiltration area and 8:1 total drainage area to infiltration area. A higher ratio may be approved by the municipality if justification is provided. Hydraulic depth may be used as an alternative to an area based loading ratio if the design hydraulic depth is shown to be less than the depth that could result from the maximum area loading ratio.
- B. Volume Control for Small Projects
 - 1. At least the first one inch (1") of runoff from new impervious surfaces or an equivalent volume shall be permanently removed from the runoff flow – i.e. it shall not be released into the surface Waters of this Commonwealth. Removal options include reuse, evaporation, transpiration and infiltration.
- C. A detailed geologic evaluation of the Development Site shall be performed in areas of carbonate geology to determine the design parameters of recharge facilities. A report shall be prepared in accordance with Section 405.A of this Ordinance.
- D. Storage facilities, including normally dry, open top facilities, shall completely drain the volume control storage over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm. Any designed infiltration at such facilities is exempt from the minimum 24 hour standard, i.e. may infiltrate in a shorter period of time, provided that none of this water will be discharged into waters of this Commonwealth.
- E. Any portion of the volume control storage that meets the following criteria may also be used as rate control storage;
 - 1. Volume control storage that depends on infiltration is designed according to the infiltration standards in Section 301.

2. The volume control storage which will be used for rate control is that storage which is available within 24 hours from the end of the design storm based on the stabilized infiltration rate and/or the evapo-transpiration rate.
- F. Volume control storage facilities designed to infiltrate shall avoid the least permeable Hydrologic Soil Group(s) at the Development Site.

Section 306. Rate Controls

Rate control for large storms, up to the 100-year event, is essential to protect against immediate downstream erosion and flooding.

A. Match Pre-development Hydrograph

Applicants shall provide infiltration facilities or utilize other techniques which will allow the post-development 100-year hydrograph to match the pre-development 100-year hydrograph, along all parts of the hydrograph, for the development site. To match the pre-development hydrograph, the post development peak rate must be less than or equal to the pre-development peak rate, and the post development runoff volume must be less than or equal to the pre-development volume for the same storm event. A shift in hydrograph peak time of up to five minutes and a rate variation of up to 5% at a given time may be allowable to account for the timing affect of BMPs used to manage the peak rate and runoff volume. "Volume Control" volumes as given in Section 302 above may be used as part of this option.

B. Where the pre-development hydrograph cannot be matched, one of the following shall apply:

1. For areas not covered by a release rate map from an approved Act 167 Plan:

Post development discharge rates shall not exceed the predevelopment discharge rates for the 2, 10, 25, 50, and 100-year 24-hour storm events*. If it is shown that the peak rates of discharge indicated by the post development analysis are less than or equal to the peak rates of discharge indicated by the predevelopment analysis for 2, 10, 25, 50, and 100-year, 24-hour storms*, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

* A 24 hour SCS type II storm or an IDF Curve Rational Method storm. See Table III-1 in Section 308.

2. For areas covered by a release rate map from an approved Act 167 Plan:

For the 2, 10, 25, 50, and 100-year storm events*, the post development peak discharge rates will follow the applicable approved release rate maps.

*A 24 hour SCS type II storm or an IDF Curve Rational Method storm. See Table III-1 in Section 308.

- C. Normally dry, open top, storage facilities shall completely drain the rate control storage over a period of time less than or equal to 24 hours from the peak 100-year water surface design elevation.
- D. A variety of BMPs should be employed and tailored to suit the development site. The following is a partial listing of BMPs which can be utilized in SWM systems for rate control where appropriate:
 - 1. Decreased impervious surface coverage
 - 2. Routed flow over grass
 - 3. Grassed channels and vegetated strips.
 - 4. Bio-retention areas (rain gardens)
 - 5. Concrete lattice block or permeable surfaces
 - 6. Seepage pits, seepage trenches or other infiltration structures
 - 7. Rooftop detention
 - 8. Parking lot detention
 - 9. Cisterns and underground reservoirs
 - 10. Amended soils
 - 11. Retention basins
 - 12. Detention basins
 - 13. Other methods as may be found in the BMP Manual.
- E. Small Projects are not required to provide for Rate Control.

Section 307. Stormwater Management Performance Standards

- A. Runoff from impervious areas shall be drained to pervious areas within the Development Site, unless the site has 85% or more impervious cover and is a Redevelopment, in which case the portion of the site that discharges to pervious areas shall be maximized.
- B. Stormwater runoff from a Development Site to an adjacent property shall flow directly into a natural drainageway, watercourse, or into an existing storm sewer system, or onto adjacent properties in a manner similar to the runoff characteristics of the pre-development flow.

- C. Stormwater flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without written notification of the adjacent property owner(s) by the developer. Such stormwater flows shall be subject to the requirements of this Ordinance, including the establishment of a drainage easement. Copies of all such notifications shall be included in SWM Site Plan submissions.
- D. Existing on-site natural and man-made SWM facilities shall be used to the maximum extent practicable.
- E. Stormwater runoff shall not be transferred from one sub-watershed to another unless they are sub-watersheds of a common watershed that join together within the perimeter of the Development Site and the effect of the transfer does not alter the peak discharge onto adjacent lands.
- F. Minimum floor elevations for all structures that would be affected by a basin, other temporary impoundments, or open conveyance systems where ponding may occur shall be two (2) feet above the 100-year water surface elevation. If basement or underground facilities are proposed, detailed calculations addressing the effects of stormwater ponding on the structure and water-proofing and/or flood-proofing design information shall be submitted for approval.
- G. All stormwater conveyance facilities (excluding detention, retention, and wetland basin outfall structures) shall be designed to convey a 25 year storm event*. All stormwater conveyance facilities (excluding detention, retention, and wetland basin outfall structures) conveying water originating from offsite shall be designed to convey a 50 year storm event*. Safe conveyance of the 100-year runoff event* to appropriate peak rate control BMPs must be demonstrated in the design.

* A 24 hour SCS Type II storm or an IDF Curve Rational Method storm.
- H. Erosion protection shall be provided along all open channels, and at all points of discharge. Flow velocities from any storm sewer may not result in erosion of the receiving channel.

Section 308. Calculation Methodology

- A. Any stormwater runoff calculations involving drainage areas greater than 200 acres and time of concentration (Tc) greater than 60 minutes, including on- and off-site areas, shall use generally accepted calculation techniques based on the NRCS soil-cover complex method.
- B. Stormwater runoff from all Development Sites shall be calculated using either the modified rational method, a soil-cover-complex methodology, or other method acceptable to the Municipality. Table III-1 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular Development Site.

| TABLE III-1 ACCEPTABLE COMPUTATION METHODOLOGIES FOR STORMWATER MANAGEMENT PLANS | | |
|---|----------------------------|--|
| METHOD | 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. |
| WinTR-55 (or commercial computer package based on TR-55) | USDA NRCS | Applicable for land development plans within limitations described in TR-55. |
| HEC-1 / HEC-HMS | US Army Corps of Engineers | Applicable where use of full hydrologic computer model is desirable or necessary. |
| Rational Method (or commercial computer package based on Rational Method) | Emil Kuichling (1889) | For development sites less than 200 acres, $T_c < 60$ min. or as approved by the Municipality. |
| EFH2 | USDA NRCS | Applicable in rural and undeveloped areas subject to the Program Limits. |
| Other Methods | Varies | Other methodologies approved by the Municipality. |

- C. If the SCS method is used, Antecedent Moisture Condition 1 is to be used in areas of carbonate geology, and Antecedent Moisture Condition 2 is to be used in all other areas. A type II distribution shall be used in all areas.
- D. If the Rational Method is used, the National Oceanic and Atmospheric Administration (NOAA) Atlas 14 data (see item "B" above) or PennDOT Publication 584 "PennDOT Drainage Manual," 2008 Edition, or latest, shall be used to determine the rainfall intensity in inches per hour based on the information for the 5 through 60 minute duration storm events.
- E. Hydrographs may be obtained from NRCS methods such as TR-55, TR20, or from use of the "modified" or "unit hydrograph" rational methods. If "modified" or "unit hydrograph" rational methods are used, the ascending leg of the hydrograph shall have a length equal to three times the time of concentration ($3 \times T_c$) and the descending leg shall have a length equal to 7 times the time of concentration ($7 \times T_c$) to approximate an SCS Type II hydrograph.¹¹
- F. Runoff calculations shall include a hydrologic and hydraulic analysis indicating volume and velocities of flow and the grades, sizes, and capacities of water carrying structures, sediment basins, retention and detention structures and sufficient design information to

construct such facilities. Runoff calculations shall also indicate both pre-development and post-development rates for peak discharge of stormwater runoff from all discharge points.

- G. For the purpose of calculating pre-development peak discharges, all runoff coefficients, both on-site and off-site, shall be based on actual land use assuming summer or good land conditions. Post-development runoff coefficients for off-site discharges used to design conveyance facilities shall be based on actual land use assuming winter or poor land conditions.
- H. Criteria and assumptions to be used in the determination of stormwater runoff and design of management facilities are as follows:
1. Runoff coefficients shall be based on the information contained in Appendix B-1 and B-2 if the actual land use is listed in those Appendices. If the actual land use is not listed in these Appendices, runoff coefficients shall be chosen from other published documentation, and a copy of said documentation shall be submitted with the SWM Site Plan.
 2. A sample worksheet for calculating T_c is provided in Appendix B-4. Times of concentration (T_c) shall be based on the following design parameters:
 - a. Sheet flow: The maximum length for each reach of sheet or overland flow before shallow concentrated or open channel flow develops is one hundred fifty (150) feet. Flow lengths greater than one hundred (100) feet shall be justified based on the actual conditions at each Development Site. Sheet flow may be determined using the nomograph in Appendix B-3, or the Manning's kinematic solution shown in the Sheet Flow section of Worksheet No. 1 in Appendix B-4.
 - b. Shallow concentrated flow: Travel time for shallow concentrated flow shall be determined using Figure 3-1 from TR-55, Urban Hydrology for small watersheds, as shown in Appendix B-5.
 - c. Open Channel flows: At points where sheet and shallow concentrated flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the travel times to downstream end of the Development Site between these design points shall be based upon Manning's Equation and/or acceptable engineering design standards as determined by the Municipal Engineer.
 3. The developer may use stormwater credits for Non-Structural BMPs in accordance with the BMP Manual. The allowable reduction will be determined by the Municipality.
 4. Peak rate control is not required for off-site runoff. Off-site runoff may be bypassed around the site provided all other discharge requirements are met. If offsite

runoff is routed through rate control facilities, runoff coefficients for off-site discharges used to design those rate control facilities shall be based on actual land use assuming winter or poor land conditions.

- I. 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. Supporting documentation and calculations must be submitted for review and approval.

Section 309. Riparian Corridors - Reserved.

Section 310. Stormwater Management Facility Design Standards

- A. Above ground storage facilities. Above ground storage facilities consist of all stormwater facilities which store, infiltrate/evaporate/transpire, clean or otherwise affect stormwater runoff and the top of which is exposed to the natural environment. Above ground storage facilities are located above the finished ground elevation. Above ground storage facilities do not include stormwater management facilities designed for conveyance or cisterns.

- (1) Design criteria. Above ground storage facilities shall comply with the design criteria in the following table:

| Above-ground storage facility design criteria | | | |
|--|-------------------------|-------------------------|----------------------------|
| | Facility Depth | | |
| | Less than 2 feet | 2 feet to 8 feet | Greater than 8 feet |
| (a) Embankment Geometry | | | |
| [1] Top width (minimum) | 2 feet | 5 feet | 8 feet |
| [2] Interior side slope (maximum) | 2 : 1 | 3 : 1 | 5 : 1 |
| [3] Exterior side slope (maximum) | 2 : 1 | 3 : 1 | 3 : 1 |
| (b) Embankment construction | | | |
| [1] Key trench | Not required | Required | Required |
| [2] Pipe collar | Not required | Required | Required |
| [3] Compaction density | Not required | Required | Required |
| (c) Internal Construction | | | |
| [1] Dewatering feature | N/A | Required | Required |

| Above-ground storage facility design criteria | | | |
|--|-------------------------|-------------------------|----------------------------|
| | Facility Depth | | |
| | Less than 2 feet | 2 feet to 8 feet | Greater than 8 feet |
| [2] Pretreatment elements | Not required* | Required | Required |
| (d) Outlet Structure | | | |
| [1] Pipe size (minimum) | 6 inches | 12 inches | 15 inches |
| [2] Pipe material | SLHDPE, PVC, RCP | SLHDPE, RCP | RCP |
| [3] Anticlogging devices | Required | Required | Required |
| [4] Antivortex design | Not required | Required | Required |
| [5] Watertight joints in piping? | No | Yes | Yes |
| (e) Spillway Requirements | | | |
| [1] Spillway freeboard (minimum) | Not required | 3 inches | 6 inches |
| [2] Width (minimum) | Not required | 10 feet | 20 feet |
| [3] Width (maximum) | Not required | 50 feet | 50 feet |
| [4] Spillway channel design | Not required | Required | Required |
| [5] Routing of 100 year storm | Permitted | Permitted | Permitted |

*Pretreatment required for infiltration BMPs unless shown to be unnecessary.

N/A = Not applicable

SLHDPE = Smooth lined high density polyethylene pipe; PVC = Polyvinyl chloride;

RCP = Reinforced concrete pipe

(2) Facility depth.

- (a) For the purposes of the design criteria, the facility depth is defined to be the depth between the bottom invert of the lowest orifice and the invert of the spillway. If there is no spillway, the top of the berm shall be used. For basins with no orifices or outlet structure, the bottom elevation of the basin shall be used.
- (b) Facilities with a facility depth greater than eight feet (8 feet) shall not be permitted in residential areas.

(c) Facilities with a facility depth greater than 15 feet require a dam permit from DEP.

(3) Embankment construction.

(a) Impervious core/key trench. An impervious core/key trench, when required, shall consist of a cutoff trench (below existing grade) and a core trench (above existing grade). A key trench may not be required wherever it can be shown that another design feature, such as the use of an impermeable liner, accomplishes the same purpose.

[1] Materials. Materials used for the core shall conform to the Unified Soil Classification GC, SC, CH, or CL and must have at least 30% passing the No. 200 sieve.

[2] Dimensions.

[a] The dimensions of the core shall provide a minimum trench depth of two (2) feet below existing grade, minimum width of four (4) feet and side slope of 1H:1V or flatter.

[b] The core should extend up both abutments to the 10-year water surface elevation or six (6) inches below the emergency spillway elevation, whichever is lower.

[c] The core shall extend four (4) feet below any pipe penetrations through the impervious core. The core shall be installed along or parallel to the centerline of the embankment.

[3] Compaction.

[a] Compaction requirements shall be the same as those for the embankment to assure maximum density and minimum permeability.

[b] The core shall be constructed concurrently with the outer shell of the embankment.

[c] The trench shall be dewatered during backfilling and compaction operations.

(b) Pipe collars. All pipe collars, when required, shall be designed in accordance with Chapter 7 of the DEP E&S Manual. The material shall consist of concrete or otherwise non-degradable material around the outfall barrel and shall be watertight.

(c) Embankment fill material. The embankment fill material shall be taken from an appropriate borrow area which shall be free of roots, stumps, wood, rubbish, stones greater than 6 inches, frozen or other objectionable materials.

(d) Embankment compaction. When required, embankments shall be compacted by sheepsfoot or pad roller. The loose lift thickness shall be nine (9) inches or less, depending on roller size, and the maximum particle size is six (6) inches or less (two-thirds of the lift thickness). Five passes of the compaction equipment over the entire surface of each lift is required. Embankment compaction to visible non-movement is also required.

(4) Internal construction.

- (a) Bottom slope. The minimum bottom slope of facilities not designed for infiltration shall be one percent (1%). A flatter slope may be used if an equivalent dewatering mechanism is provided.
- (b) Dewatering features. When required, dewatering shall be provided through the use of underdrain, surface device, or alternate approved by the Municipal Engineer. If the facility is to be used for infiltration, the dewatering device should be capable of being disconnected and only be made operational if the basin is not dewatering within the required timeframe.
- (c) Pretreatment elements. When required, pretreatment elements shall consist of forebays, or alternate approved by the Municipal Engineer, to keep silt to a smaller portion of the facility for ease of maintenance.
- (d) Infiltration basins. Within basins designed for infiltration, existing native vegetation shall be preserved, if possible. For existing unvegetated areas or for infiltration basins that require excavation, a planting plan shall be prepared in accordance with § 301.N and the BMP Manual which is designed to promote infiltration.

(5) Outlet configuration.

- (a) For facilities with a depth of two (2) feet or greater, a type D-W endwall or riser box outlet structure shall be provided.
- (b) For facilities with a depth less than two (2) feet, no outlet structure is required.
- (c) All discharge control devices with appurtenances shall be made of reinforced concrete and stainless steel. Bolts/fasteners shall be stainless steel.

(6) Spillway.

- (a) Material. The spillway shall be designed to provide a non-erosive, stable condition when the project is completed.
- (b) Non-emergency use. Use of the spillway to convey flows greater than the 50-year design storm is permitted.
- (c) Emergency use. The spillway shall be designed to convey the 100-year peak inflow.
- (d) When required, freeboard shall be measured from the top of the water surface elevation for emergency use.

(7) Breach analysis. The municipality may require a breach analysis based on site-specific conditions and concern of threat for downstream property. When required, the breach analysis shall be conducted in accordance with the NRCS methodology, the US Army Corps of Engineers methodology (HEC-1) or other methodologies as approved by the municipality.

B. Subsurface storage facilities. Subsurface storage facilities consist of all stormwater facilities which store, infiltrate/evaporate/transpire, clean or otherwise affect stormwater runoff and

the top of which is not exposed to the natural environment. Subsurface facilities are located below the finished ground elevation. Subsurface facilities do not include stormwater management facilities designed for conveyance.

(1) Design criteria. Subsurface storage facilities shall comply with the design criteria in the following table:

| Subsurface storage facility design criteria | | |
|--|---------------------------------|-------------------------------------|
| | Facility Type | |
| | Infiltration and Storage | Storage without Infiltration |
| (a) Facility Geometry | | |
| [1] Depth from surface (maximum) | 2 feet less than limiting zone | N/A |
| [2] Loading ratio (maximum) | Per BMP Manual* | N/A |
| (b) Distribution System Requirements | | |
| [1] Pipe size (minimum) | 4 inches | 4 inches |
| [2] Pretreatment | Required | Required |
| [3] Loading/balancing | Required | Not required |
| [4] Observation/access ports | Required | Required |

*Unless otherwise determined by professional geologic evaluation.

(2) Distribution system requirements.

(a) Pretreatment requirements. The facility shall be designed to provide a method to eliminate solids, sediment, and other debris from entering the subsurface facility.

(b) Loading/balancing. The facility shall be designed to provide a means of evenly balancing the flow across the surface of the facility to be used for infiltration.

(c) Observation/access ports.

[1] For facilities with the bottom less than five (5) feet below the average grade of the ground surface, a clean-out shall be an acceptable observation port.

[2] For facilities with the bottom five (5) feet or more below the average grade of the ground surface, a manhole or other means acceptable to the municipality shall be provided for access to and monitoring of the facility.

[3] The number of access points shall be sufficient to flush or otherwise clean out the system.

(3) Materials.

- (a) Pipe material. Distribution system piping may be PVC, SLHDPE, or RCP.
- (b) Stone for infiltration beds. The stone used for infiltration beds shall be clean washed, uniformly graded coarse aggregate (AASHTO No. 3 or equivalent approved by the municipality). The void ratio for design shall be assumed to be 0.4.
- (c) Backfill material. Material consistency and placement depths for backfill shall be (at a minimum) per all applicable pipe manufacturer's recommendations, further providing it should be free of large (not exceeding 6 inches in any dimension) objectionable or detritus material. Select non-aggregate material should be indigenous to the surrounding soil material for non-vehicular areas. Backfill within vehicular areas shall comply with this section unless otherwise specified in governing municipal road/street or subdivision and land development ordinances. Furthermore, if the design concept includes the migration of runoff through the backfill to reach the infiltration facility, the material shall be well drained, free of excess clay or clay like materials and generally uniform in gradation.
- (d) Lining material. Non-woven geotextiles shall be placed on the sides and top of subsurface infiltration facilities. No geotextiles shall be placed on the bottom of subsurface infiltration facilities.

(4) Cover.

- (a) When located under pavement, the top of the subsurface facility shall be a minimum of three (3) inches below the bottom of pavement subbase.
- (b) Where located under vegetative cover, the top of the subsurface facility shall be a minimum of 12 inches below the surface elevation or as required to establish vegetation.

(5) Subsurface facilities shall be designed to safely convey and/or bypass flows from storms exceeding the design storm.

C. Conveyance Facilities. Conveyance facilities consist of all stormwater facilities which carry flow, which may be located either above or below the finished grade. Conveyance facilities do not include stormwater management facilities which store, infiltrate/evaporate/transpire, or clean stormwater runoff.

- (1) Design criteria. Conveyance facilities shall comply with the design criteria in the following table:

| Conveyance facility design criteria | | | |
|--|---|---|----------------------------------|
| Location | Within public* street right-of-way | Outside public street right-of-way | |
| Loading | All | Vehicular loading | Non-vehicular loading |
| (a) Pipe design | | | |
| [1] Material | SLHDPE, RCP | PVC, SLHDPE, RCP | PVC, SLHDPE, RCP |
| [2] Slope (minimum) | 0.5% | 0.5% | 0.5% |
| [3] Cover | 1 foot to stone subgrade | 1 foot to stone subgrade | 1 foot to surface |
| [4] Diameter (minimum) | 15 inches | 15 inches | 8 inches |
| [5] Street crossing angle | 75° to 90° | N/A | N/A |
| [6] Access/maintenance port frequency (maximum) | 400 feet | 400 feet | 600 feet |
| (b) Inlet design | | | |
| [1] Material | Concrete | Concrete | N/A |
| [2] Grate depression | 2 inches | 2 inches | 1 inch minimum |
| (c) Manhole design | | | |
| [1] Material | Concrete | Concrete | Concrete |
| (d) Swale design | | | |
| [1] Freeboard (minimum) | 6 inches | N/A | 6 inches |
| [2] Velocity (maximum) | Stability check | N/A | Stability check |
| [3] Slope (minimum) | 1% | N/A | 1% |
| [4] Side slopes (residential area) | 4 : 1 max | N/A | 4 : 1 max |

| Conveyance facility design criteria | | | |
|--|---------------------------------------|---------------------------------------|--|
| Location | Within public* street right-of-way | Outside public street right-of-way | |
| Loading | All | Vehicular loading | Non-vehicular loading |
| [5] Side slopes (non-residential area) | 4 : 1 max | N/A | 3 : 1 max |
| [6] Bottom width to flow depth ratio | 12 : 1 | N/A | 12 : 1 |
| (e) Outlet design | | | |
| [1] End treatment | Headwall/endwall | N/A | Headwall/ endwall or flared end section |
| [2] Energy dissipater | Required | N/A | Required |

*In PennDOT Right-of-ways, PennDOT's requirements that exceed these shall govern.

N/A = Not applicable or no criteria specified

SLHDPE = Smooth lined high density polyethylene pipe; PVC = Polyvinyl chloride;

RCP = Reinforced concrete pipe

- (2) Conveyance pipes, culverts, manholes, inlets and endwalls within the public street right-of-way or proposed for dedication shall conform to the requirements of PennDOT Standards for Roadway Construction, Publication No. 72M. Conveyance pipes, culverts, manholes, inlets and endwalls which are otherwise subject to vehicular loading shall be designed for the HS-25 loading condition.
- (3) Conveyance pipes.
 - (a) Backfill requirements. Backfill material. Material consistency and placement depths for backfill shall be (at a minimum) per all applicable pipe manufacturer's recommendations, further providing it should be free of large (not exceeding 6 inches in any dimension) objectionable or detritus material. Select non-aggregate material should be indigenous to the surrounding soil material for non-vehicular areas. Backfill within vehicular areas shall comply with this section unless otherwise specified in governing municipal road/street or subdivision and land development ordinances.
 - (b) Inlets or manholes shall be placed at all points of changes in the horizontal or vertical directions of conveyance pipes. Curved pipe sections are prohibited.

- (c) Access/maintenance ports. An access/maintenance port is required may either be an inlet or manhole.
 - (d) Watertight joints shall be provided where pipe sections are joined, except for perforated pipe installed as pavement base drain.
 - (e) The street crossing angle shall be measured between the pipe centerline and the street centerline.
 - (f) Elliptical pipe of an equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.
 - (g) The roughness coefficient (Manning “n” values) used for conveyance pipe capacity calculations should be determined in accordance with PennDOT Publication 584, *PennDOT Drainage Manual*, or per the manufacturer’s specifications.
- (4) Inlets.
- (a) All pipes must enter inlets completely through one of the sides. No corner entry of pipes is permitted.
 - (b) Within the public street right-of-way, the gutter spread based on the 25-year storm shall be no greater than one half of the travel lane and have a maximum depth of three inches (3 inches) at the curb line. A parking lane shall not be considered as part of the travel lane. In the absence of pavement markings separating a travel lane from the parking lane, the parking lane shall be assumed to be seven feet (7 feet) wide if parking is permitted on the street.
 - (c) Flow depth within intersections. Within intersections of streets, the maximum depth of flow shall be one and one-half inches (1 ½ inches) based on the 25-year storm.
 - (d) Curbed streets.
 - [1] Inlets in streets shall be located along the curb line.
 - [2] Top units shall be PennDOT Type “C”. The hood shall be aligned with the adjacent curb height.
 - (e) All inlets placed in paved areas shall have heavy duty bicycle-safe grating consistent with PennDOT Publication 72M, latest edition. A note to this effect shall be added to the SWM Site Plan or inlet details therein.
 - (f) Inlets, junction boxes, or manholes greater than five feet (5 feet) in depth shall be equipped with ladder rungs and shall be detailed on the SWM Site Plan.
- (5) Swales.
- (a) A swale shall be considered as any man-made ditch designed to convey stormwater directly to another stormwater management facility or surface waters.
 - (b) Inlets within swales shall have PennDOT Type “M” top units or equivalent approved by the municipal engineer.

- (c) Swale capacities and velocities shall be computed using the Manning equation using the following design parameters:
 - [1] Vegetated swales.
 - [a] The first condition shall consider swale stability based upon a low degree of retardance (“n” = 0.03);
 - [b] The second condition shall consider swale capacity based upon a higher degree of retardance (“n” = 0.05); and
 - [c] All vegetated swales shall have a minimum slope of 1% unless otherwise approved by the Municipal Engineer.
 - [2] The “n” factors to be used for paved or riprap swales or gutters shall be based upon accepted engineering design practices, as approved by the Municipal Engineer.
- (d) All swales shall be designed to maximize infiltration and concentrate low flows to minimize siltation and meandering, unless geotechnical conditions do not permit infiltration.
- (6) Culverts. In addition to the material requirements in this section, culverts designed to convey Waters of the Commonwealth may be constructed with either a corrugated metal arch or a precast concrete culvert.
- (7) Level spreaders.
 - (a) Shall discharge at existing grade onto undisturbed vegetation.
 - (b) Discharge at a depth not exceeding 3.0 inches for a 50-year, 24-hour design storm.
- (8) Energy dissipaters. Energy dissipaters shall be designed in accordance with the requirements in the DEP E&S Manual.
- (9) End treatments.
 - (a) Where the connecting pipe has a diameter 18 inches or greater, headwalls and endwalls shall be provided with a protective barrier device to prevent entry of the storm sewer pipe by unauthorized persons. Such protection devices shall be designed to be removable for cleaning.
 - (b) Headwalls and endwalls shall be constructed of concrete.
 - (c) Flared end sections shall be of the same material as the connecting pipe and be designed for the size of the connecting pipe.
- D. SWM Facilities which qualify as a dam per DEP regulations or facilities deemed a potential threat to the life, safety or welfare of the general public shall be subject to the following requirements:

- (1) Facilities which qualify as a dam per DEP regulation shall obtain the required permit through DEP and design the facility in accordance with DEP standards.
- (2) Additional requirements and analysis may be required by the Township to prove that the proposed facility has been designed to limit the potential risk to the life, safety or welfare of the general public.

Section 311. Capture and Reuse Facilities

- A. Capture and reuse facilities include those SWM facilities which capture stormwater within a site and store the water for reuse through rainwater harvesting, which includes, but is not limited to, irrigation reuse, and toilet flushing reuse. Water storage facilities for use with capture and reuse facilities include, but are not limited to, cisterns and rain barrels.
- B. Design requirements. Capture and reuse facilities shall meet all of the following design standards:
 - (1) Calculations shall be provided for all of the following:
 - (a) Reuse of water to insure adequate capacity is available for storage of follow-up rainfall events.
 - (b) Verification of conveyance pipe capacity for water to enter the facility, including roof leaders.
 - (c) The water storage facility shall be designed to store the runoff volume of a 100-year storm event for the area which it serves.
 - (2) The reuse of water shall require not less than five percent (5%) of the total storage volume to be drawn out of the tank on a daily basis. The applicant shall specifically demonstrate the method in which this will occur to include the estimated volume of water which will be used by the proposed method.
 - (3) The water storage container shall be protected from direct sunlight to minimize algae growth.
 - (4) Water storage containers shall be watertight with smooth interior surfaces.
 - (5) Every water storage facility shall be provided with an overflow or emergency spillway. The overflow shall be designed to discharge away from buildings and other structures and toward existing nature or manmade channels, other stormwater facilities or vegetated slopes.
 - (6) Plans proposing a water storage facility shall include the following:
 - (a) All calculations and assumptions used in the design;
 - (b) Sufficient detail showing the proposed method of dewatering (i.e. pump); and
 - (c) Structural details.

- (7) Maintenance responsibilities for water storage and reuse facilities shall include flushing the storage units to remove any accumulated sediment, and the inside surfaces shall be brushed and thoroughly disinfected.
- (8) Water shall not be allowed to freeze in the devices.

ARTICLE IV

STORMWATER MANAGEMENT SITE PLANS REQUIREMENTS

Section 401. General Plan Requirements

- A. The SWM Site Plan shall consist of a narrative and all applicable calculations, maps, plans and supplemental information necessary to demonstrate compliance with this Ordinance.
- B. All landowners of land included in the SWM Site Plan shall be required to execute all applications and final documents.
- C. All SWM Site Plans shall be prepared by a Qualified Person.
- D. Where the regulated activity constitutes subdivision or land development as hereinabove defined, the SWM Site Plan shall be submitted with and form an integral part of the plans required under the Municipal Subdivision and Land Development Ordinance.

Section 402. Drafting Standards

- A. The Plan should be clearly and legibly drawn.
- B. If the Plan is prepared in two (2) or more drawing sheets, a key map showing the location of the sheets and a match line shall be placed on each sheet.
- C. Each sheet shall be numbered to show the relationship to the total number of sheets in the Plan (e.g. Sheet 1 of 5).
- D. Drawings or maps of the project area shall be drawn at 1" = 50' or larger scale (i.e. 1" = 40', 1" = 30', etc.) and shall be submitted on 24-inch x 36-inch sheets.
- E. SWM Site Plans shall be prepared in a form that meets the requirements for recording for the Office of the Recorder of Deeds of Lancaster County.
- F. The total Development Site boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

Section 403. SWM Site Plan Information

The following items shall be included in the SWM Site Plan:

- A. The date of the SWM Site Plan and latest revision, graphic scale, written scale and North arrow.
- B. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the Plan.
- C. The file or project number assigned by the firm that prepared the Plan.

D. A statement, signed by the landowner, acknowledging the SWM Facilities to be permanent fixtures that cannot be altered or removed unless a revised Plan is approved by the Municipality.

E. The following signature blocks:

1. East Drumore Township SWM Site Plan Approval Certification:

*At a meeting on _____, 20____, the
_____(Municipal Governing Body)
approved this project, and all conditions have been met. This approval includes
the complete set of plans and information that are filed with the Municipality in
File No. _____, based upon its conformity with the
standards of the East Drumore Township Storm Water Management Ordinance.*

Governing Body Signature Governing Body Signature

2. A statement, signed by the landowner, acknowledging that the storm water BMPs are fixtures that cannot be altered or removed without prior approval by the Township.

Acknowledgement of Permanence of BMPs:

*I, the undersigned hereby represent that no person shall modify, remove,
fill, landscape, or alter any Storm Water Management BMPs, facilities,
areas, or structures without the written approval of East Drumore
Township.*

Date

Landowner

3. A statement, signed by the landowner, referencing the Operation and Maintenance (O&M) Agreement and stating that the Operation and Maintenance Agreement is part of the Storm Water Management Site Plan.

4. The following signature block for the Qualified Professional preparing the Storm Water Management Plan:

*I _____, hereby certify that the Storm Water Management
Site Plan meets all design standards and criteria of the East Drumore Township
Storm Water Management Ordinance.*

Date

Qualified Professional Signature

F. For SWM facilities located off-site,

1. A note on the Plan referencing a recorded Stormwater Operation and Maintenance (O&M) Agreement that indicates the location and responsibility for maintenance of the off-site facilities.
2. All off-site SWM Facilities shall meet the performance standards specified in this Ordinance.

G. A note informing the owner that the Municipality shall have the right of entry for the purposes of inspecting all stormwater conveyance, treatment, or storage facilities.

H. A location map, drawn to a scale of a minimum of one inch equals two thousand feet (1" = 2,000'), relating the Plan to municipal boundaries, at least two (2) intersections of road centerline or other identifiable landmarks.

I. Existing Features

1. In areas of disturbance, contours at intervals of one (1) or two (2) feet. In areas of steep slopes (greater than 15 percent) and areas undisturbed, five-foot contour intervals may be used.
2. The locations of all existing utilities (including on lot disposal systems and wells), sanitary sewers, and water lines and associated easements.
3. Physical features including flood hazard boundaries, wetlands, sinkholes, streams, lakes, ponds and other waterbodies, existing drainage courses, karst features, areas of native vegetation including trees greater than 6" diameter at breast height, woodlands, other environmentally sensitive areas and the total extent of the upstream area draining through the Development Site.
4. An overlay showing soil names and boundaries.
5. All existing man-made features within two hundred (200) feet of the Development Site boundary.

J. Proposed Features

1. Changes to the land surface and vegetative cover, including final proposed contours at intervals of one (1) or two (2) feet in areas of disturbance. In areas of steep slopes (greater than 15 percent) and areas undisturbed, five-foot contour intervals may be used.
2. Proposed structures, roads, paved areas, buildings and other impervious and semi-impervious areas, including the size width and right-of-ways.

3. The location of any proposed on-lot disposal systems, replacement drainfield easements, and water supply wells.
 4. A note indicating existing and proposed land use(s).
 5. Plan and profile drawings of all proposed SWM facilities, including BMPs, drainage structures, pipes, open channels, and swales.
 6. Where pervious pavement is to be installed, pavement material and construction specifications shall be included.
 7. The location of all existing and proposed easements, including drainage easements, access easements and riparian corridor easements.
 8. A planting plan shall be provided for all vegetated BMPs in accordance with Section 301.N.
 9. Easements and rights-of-way, including
 - (A) A minimum 20 foot wide access easement around all Storm Water Management facilities that would provide ingress from the egress to a public right-of-way. Easements shall be provided to allow for the collection and discharge of water, the inspection, maintenance, repair and reconstruction of the drainage facilities, and the passage of machinery for work.
 - (B) Provisions for permanent access or maintenance easements for all existing and proposed physical Storm Water Management facilities, such as ponds and infiltration structures, as necessary to implement the Operation and Maintenance (O&M) Plan. All such agreements shall be duly recorded in the Office of the Recorder Deeds and shall constitute a binding permanent covenant upon the property, superior to all liens of record and not subordinate to any easement or restriction that would interfere with its provisions and the implementation thereof.
 10. Building setback line and building envelope.
 11. Identification of buildings to be demolished and all other features to be removed.
- K. Storm water management data and plans designed in accordance with this Ordinance. This information may be provided on a sheet with other data or on separate sheets and need not necessarily be recorded with the final plan. In the case of any dispute in the methodology used in the design of any Storm Water Management Site Plan and/or in the presentation of such information, the Supervisors shall make the final determination on the design criteria, methodology and form of presentation. The following information shall be included:
1. All calculations, assumptions, criteria, and references used in the design of the storm water management facilities, the establishment of existing facilities capacities, and the pre and post development discharges.

2. All plans and profiles of the proposed storm water management facilities, including the horizontal and vertical location, size, and type of material.
 3. For all basins, a plotting or tabulation of the storage volumes and discharge curves with corresponding water surface elevations, inflow hydrographs, and outflow hydrographs.
 4. The guidelines for lot grading within the subdivisions. This information shall identify the direction of storm water runoff flow within each lot and the areas where storm water runoff flows will be concentrated. This information shall be shown by flow arrows or topographical data.
- L. A statement identifying the number of square feet of impervious coverage for which storm water management facilities have been designed for each lot.
- M. A statement on the plan indicating the granting of a zoning amendment, special exception or variance, if applicable, along with modifications granted by the Supervisors to sections of the applicable Subdivision and Land Development Ordinance or this Ordinance.
- N. Where the proposed regulated activity is located partially or wholly within an area prone to frequent flooding (either by impoundment or conveyance) as indicated by the flow boundary and floodway map, profiles, and supporting data, soil type or local historical record; the developer shall supply the location and elevation of all proposed roads, fills, utilities, buildings, storm water management, and erosion control facilities.
- O. Location of all percolation test holes, deep probe holes and proposed well locations.
- P. Easements for on-lot sewage replacement locations.
- Q. The location of all trees and/or woodlands on the site and location of trees and/or woodland to be removed and trees and/or woodlands to remain.
- R. A detailed grading plan. The grading plan shall include finished grades and ground floor elevations. This information may be provided on separate sheets.
- S. The location of all Erosion and Sedimentation Control facilities.
- T. Identification of any lands to be dedicated or reserved for public, semi-public or community use.
- U. In the case of a plan which requires access to a highway under the jurisdiction of the Department of Transportation, the inclusion of the following plan note:
 "A Highway Occupancy Permit is required pursuant to Section 420 of the Act of June 1, 1945 (P.O. 1242, No. 428), known as the 'State Highway Law', before access to a state highway is permitted. Access to the state highway shall be as authorized by a Highway Occupancy Permit, and the Supervisor's approval of this plan in no way implies that such a permit can be acquired."

- V. A complete landscape plan showing the location, size and type of all plan material required by provisions of this Ordinance or any other applicable Township regulations, including but not limited to all vegetated storm water BMPs. The landscape plan should be provided on separate sheets and must include the signature and seal of the registered landscape architect responsible for preparation of the plan. Native or Naturalized/Noninvasive Vegetation suitable to the soil and hydrologic conditions of the development site shall be used unless otherwise specified in the BMP Manual. The limit of existing, native vegetation to remain shall be delineated on the plan along with proposed construction protection measures.
- W. A detailed schedule of inspections during construction, as generally outlined as follows, which is tailored for the site under consideration.
1. The Township shall inspect all phases of the installation of any temporary or permanent Storm Water Management facilities during construction. The developer shall pay the cost of any such inspection. The developer shall provide at least forty-eight (48) hours' notice prior to the start of construction of any improvements that are subject to inspection. All inspections of completed items shall be requested, in writing, as least seventy-two (72) hours in advance of the inspection time and date.
 2. It is generally required that the following phases of site construction have mandatory inspection. This general list of phases may be amended by mutual agreement of the Township and developer when the site requires special construction procedures. The inspection schedule must be shown on the approved Storm Water Management Site Plan.
 3. General Site Construction
 - (a) Upon completion of preliminary site preparation including stripping of the vegetation, stockpiling of topsoil and construction of temporary erosion and sedimentation control devices.
 - (b) Upon completion of rough grading, but prior to placing topsoil, permanent drainage, or other site development improvements and ground covers.
 - (c) During the construction of permanent storm water management and BMP facilities.
 - (d) Upon the final completion of permanent storm water management and BMP facilities, including the establishment of ground covers and plantings.
 - (e) After review of the as-built drawings, required by Section 509, but prior to final release of the financial security for completion of final grading, vegetative controls required by the BMP standards, or other site restoration work.
 4. In addition to the above outlined observations, additional observations will be made at the request of the developer for reduction of financial securities. Random observations should be made at the frequency desired by the Township. At the time of any of the above listed observations, all ongoing construction (i.e. storm drainage, grading, placement of impervious surfaces, changes in ground cover, erosion

control, etc.) should also be checked for compliance with the approved plans and the finding reported. Since the above inspections are mandatory, it is recommended that requests for reduction of financial security be submitted to coincide with the above inspections.

- X. A note indicating that As-Built Plans will be provided for all storm water management facilities prior to occupancy, or the release of financial security.

Section 404. Additional Information

- A. General description of the Development Site, including a description of existing natural and hydrologic features and any environmentally sensitive areas.
- B. General description of the overall SWM concept for the project, including a description of permanent SWM techniques, non-structural BMPs to be employed and construction specifications of the materials to be used for structural SWM facilities. The narrative shall include a description of any treatment trains and how the facilities are meant to function with each other to manage stormwater runoff.
- C. The effect of the project (in terms of runoff volumes, water quality and peak flows) on adjacent properties and on any existing Municipal stormwater management facilities that may receive runoff from the Development Site.
- D. Complete hydrologic, hydraulic, and structural computations for all SWM facilities.
- E. Expected project time schedule.

Section 405. Supplemental Information

- A. In areas of carbonate geology, a detailed geologic evaluation prepared by a Qualified Person must be submitted as part of the SWM Site Plan. The report shall include, but not limited to the following:
 - 1. The location of the following karst features;
 - a. sinkholes
 - b. closed depressions
 - c. lineaments in carbonate areas
 - d. fracture traces
 - e. caverns
 - f. intermittent lakes
 - g. ephemeral disappearing streams
 - h. bedrock pinnacles (surface or subsurface)
 - 2. A plan for remediation of any identified karst features.

3. Impacts of stormwater management facilities on adjacent karst features, and impacts of karst features on adjacent stormwater management facilities.
- B. An E&S Plan, including all approvals, as required by 25 Pa. Code Chapter 102, shall be provided to the Municipality prior to unconditional final plan approval.
 - C. For any activities that require a DEP Joint Permit Application and are regulated under Chapter 105 or Chapter 106, require a Penn DOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the permit(s) shall be part of the SWM Site Plan and must be obtained prior to unconditional final plan approval.
 - D. An Operation and Maintenance (O&M) Plan that addresses the requirements of Section 603.

ARTICLE V

PLAN PROCESSING PROCEDURES

Section 501. Small Projects.

- A. Anyone proposing a Small Project shall submit 2 copies of the Small Project Application to the Municipality.
- B. A complete Small Project Application shall include:
 - 1. Small Project Application Form (Appendix A)
 - 2. Small Project Sketch Plan including the following:
 - a. Name and address of landowner (and/or) developer
 - b. Date of Small Project Application submission.
 - c. Name of individual and/or firm that prepared the sketch if different than the landowner and/or developer
 - d. Location and square footage of proposed impervious area or land disturbance
 - e. Approximate footprint and location of all structures on adjacent properties if located within 50 feet of the proposed impervious area or land disturbance
 - f. Approximate location of existing stormwater management facilities if present
 - g. Location and description of proposed stormwater management facilities
 - h. Direction of proposed stormwater discharge (e.g. with arrows)
 - i. Scale and north arrow
 - j. Show all building setback lines
 - 3. Filing fee (in accordance with the Municipality's current fee schedule).
- C. The Small Project Application shall be submitted in a format that is clear, concise, legible, neat and well organized.

Section 502. Exemption from Plan Submission Requirements

- A. The following regulated activities are specifically exempt from the SWM Site Plan preparation and submission requirements articulated in Section 301.A and Articles IV and V of this Ordinance:
 - 1. Agricultural activity (see definitions) provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.

2. Forest management and timber operations (see definitions) provided the activities are performed according to the requirements of 25 Pa. Code Chapter 102.
 3. Conservation Practices being installed as part of the implementation of a Conservation Plan written by an NRCS certified planner.
- B. The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality believes may pose a threat to public health, safety, property or the environment.

Section 503. Pre-Application Meeting

Applicants are encouraged to schedule a pre-application meeting to review the overall stormwater management concept with Municipal staff/engineer. The pre-application meeting is not mandatory and shall not constitute formal filing of a plan with the Municipality. Topics discussed may include the following;

- Available geological maps, plans and other available data.
- Findings of the site analysis including identification of any environmentally sensitive areas, wellhead protection areas, riparian corridors, hydrologic soil groups, existing natural drainageways, karst features, areas conducive to infiltration to be utilized for volume control, etc.
- Results of infiltration tests.
- Applicable Municipal Subdivision and Land Development and/or Zoning Ordinance provisions.
- The conceptual project layout, including proposed structural and non-structural BMPs.

Section 504. Stormwater Management Site Plan Submission (other than Small Projects and Modified Plan Processing)

- A. Formal Application/Submission Deadlines – All applications for approval of a Storm Water Management Site Plan shall be made by the Applicant filing an application form, to be supplied by the Township, together with the appropriate plans and the plan shall include studies, reports, supporting data (including all plans, reports, and correspondence with the Lancaster County Conservation District), and required filing fee. Applications may be filed with the Township on any business day; however, the Township Planning Commission or Supervisors will review a plan at a particular meeting only if the plan was filed at least fifteen (15) business days prior to that meeting.
- B. When a Stormwater Management Site Plan is required, the applicant shall submit the following to the Municipality:

1. Five (5) copies to the SWM Site Plan prepared in accordance with the requirements of Article IV of this Ordinance.
 2. Two (2) copies of all supplemental data.
 3. A filing and escrow fee (in accordance with the Municipality's current fee schedule).
- C. The SWM Site Plan shall be submitted in a format that is clear, concise, legible, neat and well organized.
- D. The applicant is responsible for submitting plans to any other agencies such as the Lancaster County Conservation District, PennDOT, DEP, etc. when permits from these agencies are required. Final approval shall be conditioned upon the applicant obtaining all necessary permits.
- E. Incomplete submissions as determined by the Governing Body or its designee, shall be returned to the Applicant within 7 days, along with a statement that the submission is incomplete, and stating the deficiencies found. Otherwise, the application shall be deemed accepted for filing as of the date of submission. Acceptance of the application shall not, however, constitute an approval of the plan or a waiver of any deficiencies or irregularities. The applicant may appeal the Municipality's decision not to accept a particular application in accordance with Section 804 of this Ordinance.
- F. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, East Drumore Township may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, East Drumore Township may accept submission of revisions.

Section 505. Municipal Review

- A. When the regulated activity constitutes a Subdivision or Land Development as defined in East Drumore Township Subdivision and Land Development Ordinance, the SWM Site Plan and Subdivision/Land Development Plan shall be processed concurrently according to the plan processing procedure outlined in Subdivision and Land Development Ordinance and Section 504 of this Ordinance.
- B. When the regulated activity constitutes a Small Project or Modified Plan Processing Projects the Municipality shall review and take action on the Small Project Application within 15 working days of filing.
- C. When the regulated activity does not constitute a Subdivision or Land Development or Small Project the Municipal Engineer shall review the SWM Site Plan for conformance with the provisions of this ordinance.
- D. For all major projects other than Small Projects and Modified Plan Processing Projects: Following receipt of the Municipal Engineer's report and within ninety (90) days following the date of the first regular meeting of the Governing Body after the date the application is filed, the Governing Body will schedule the SWM Site Plan application for action at a regularly scheduled Public Meeting.

- E. Within fifteen (15) days of the meeting at which the SWM Site Plan application is acted upon by the Governing Body, written notice of the Governing Body's action shall be sent to the following individuals:
 - 1. Landowner or his agent.
 - 2. Applicant.
 - 3. Firm that prepared the Plan.
 - 4. Lancaster County Planning Commission (if subdivision or land development approval is applicable).
 - 5. Lancaster County Conservation District.
- F. If the Municipality disapproves the SWM Site Plan, the Municipality will state the reasons for the disapproval in writing. The Municipality also may approve the SWM Site Plan with conditions and, if so, shall provide the acceptable conditions for approval in writing. Such conditional approval shall be contingent upon the applicant's written acceptance of the conditions.

Section 506. Revision of Plans

- A. Revisions to a SWM Site Plan after submission but before Municipal action shall require a re-submission of the modified SWM Site Plan consistent with Section 504 of this Ordinance and be subject to review as specified in Section 505 of this Ordinance.
- B. For the purposes of review deadlines, each resubmission required under Section 506.A (after submission but before approval) shall constitute a new submission for the purposes of time limits as set forth in the MPC and this Ordinance.
- C. Any substantial revisions to a SWM Site Plan after approval shall be submitted as a new plan to the Municipality, accompanied by the applicable Review Fee.

Section 507. Authorization to Construct and Term of Validity

Approval of a SWM Site Plan shall be valid for a period not to exceed 5 years. This time period shall commence on the date that the Municipality approves the SWM Site Plan. If a Certificate of Completion as required by Section 508 of this Ordinance has not been submitted within the specified time period, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits issued by the municipality. SWM Site Plans that are considered disapproved by the Municipality may be resubmitted in accordance with Section 504 of this Ordinance.

Section 508. Certificate of Completion

- A. At the completion of the project, and as prerequisite for the release of the Financial Security on all major projects other than Small Projects and Modified Plan Processing

Projects, the applicant shall provide Certification of Completion from an Engineer, Landscape Architect, Surveyor or other qualified person verifying that all permanent SWM facilities have been constructed according to the Plans and specifications and approved revisions thereto.

- B. Upon receipt of the Certificate of Completion, and prior to release of the remaining Financial Security the Municipality shall conduct a final inspection to certify compliance with this Ordinance.

Section 509. As-Built and Plan Recordation

- A. Prior to final release of the financial security for all major projects other than Small Projects and Modified Plan Processing Projects, the developer shall provide the Township with one (1) mylar, one (1) paper copy, and a Portable Document Format (PDF) file of the final as-built plan showing the following:
 - 1. Actual location of floodplain by elevation and dimension from property line.
 - 2. Actual location of cross section of swales and accompanying easements.
 - 3. Actual horizontal and vertical location of storm water management facilities including type and size of storm drainage pipes.
 - 4. Above Ground Storage Facilities:
 - A. Actual contours of the storm water management facility.
 - B. Actual outlet structure details including type, size and inverts of outlet pipes.
 - C. Actual elevation of the embankment and emergency spillway.
 - D. A table showing the stage/storage/discharge curve for the constructed conditions.
 - E. A table providing a comparison of the approved design vs. the as-built discharge rates from all storm water management
 - F. The As-Built Plan must show the final design specifications for all stormwater management facilities and be sealed by a registered professional engineer. When a digital submission of an As-Built Plan is required, all coordinates as depicted on the plan shall be based on the PA South Zone State Plane Coordinate System (NAD83 for horizontal and NAVD88 for vertical).
 - G. Concurrently with the recordation of the As-Built Plan, the applicant shall submit the SWM Site Plan for recordation in the Office of the Recorder of Deeds, unless the Site Plan has already been recorded.

ARTICLE VI

OPERATION AND MAINTENANCE (O&M)

Section 601. Responsibilities of Developers and Landowners

- A. The Landowner, successor and assigns shall maintain all Stormwater Management Facilities in good working order in accordance with the approved O & M Plan.
- B. The Landowner shall convey to the Municipality easements to assure access for inspections and maintenance, if required.
- C. The Landowner shall keep on file with the Municipality the name, address and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information will be submitted to the Municipality within ten (10) days of the change.
- D. Enumerate permanent SWM facilities as permanent real estate appurtenances and record as deed restrictions or easements that run with the land.
- E. The record owner of the Development Site shall sign and record an Operation and Maintenance (O&M) Agreement covering all Stormwater Management Facilities, including riparian buffers and riparian forest buffers, which are to be privately owned. Said agreement, designated as Appendix C, is attached and made part hereto. The O&M Plan and Agreement shall be recorded as a restrictive covenant agreement that runs with the land.

Section 602. Operation and Maintenance Agreements

- A. The Operation and Maintenance Agreement shall be subject to the review and approval of the Municipal Solicitor and Governing Body.
- B. The Municipality is exempt from the requirement to sign and record an O&M agreement.

Section 603. Operation and Maintenance (O&M) Plan Contents

- A. The O&M Plan shall clearly establish the operation and maintenance necessary to ensure the proper functioning of all temporary and permanent stormwater management facilities and erosion and sedimentation control facilities.
- B. The following shall be addressed in the O&M Plan:
 - 1. Description of maintenance requirements, including, but not limited to, the following:
 - a. Regular inspection of the SWM facilities. To assure proper implementation of BMPs, maintenance and care SWM BMPs should be inspected by a qualified person, which may include the landowner, or the owner's designee (including the Municipality for dedicated and owned facilities), according to the following minimum frequencies:

- 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.
 - 4) As specified in the O&M Agreement pursuant to Section 602.
- b. All pipes, swales and detention facilities shall be kept free of any debris or other obstruction and in original design condition.
 - c. Removal of silt from all permanent structures which trap silt or sediment in order to keep the material from building up in grass waterways, pipes, detention or retention basins, infiltration structures, or BMPs, and thus reducing their capacity to convey or store water.
 - d. Re-establishment of vegetation of scoured areas or areas where vegetation has not been successfully established. Selection of seed mixtures shall be subject to approval by the Municipality.
2. Riparian forest buffer management plan prepared in accordance with 25 Pa. Code Chapter 102 §14(b)(4) if required.
 3. Identification of a responsible individual, corporation, association or other entity for ownership and maintenance of both temporary and permanent stormwater management and erosion and sedimentation control facilities.
 4. Establishment of suitable easements for access to all facilities.

Section 604. Maintenance of Facilities Accepted by the Municipality

- A. The Municipality reserves the right to accept or reject any proposal to dedicate ownership and operating responsibility of any SWM facilities to the Municipality.
- B. If SWM facilities are accepted by the Municipality for dedication, the landowner/developer shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to defray costs of periodic inspections and maintenance expenses. This fee shall be provided to the Municipality prior to unconditional plan approval. The amount of the deposit shall be determined as follows subject to the approval of the Municipal Governing Body:
 1. The deposit shall cover the estimated costs for maintenance and inspections for twenty-five (25) years. The Municipality will establish the estimated costs according to the O&M requirements outlined in the approved O&M Plan.
 2. The amount of the deposit to the fund shall be converted to present worth of the annual series values.

3. If a storage facility is proposed that also serves as a recreation facility (e.g. ballfield, lake), the Municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.
- C. If at any time a dedicated storage facility is eliminated due to the installation of storm sewers or other storage facility such as a regional detention facility, the unused portion of the maintenance fund deposit will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the costs of abandonment are paid will be returned to the depositor.
 - D. All dedicated facilities shall be inspected by the Municipality according to the following minimum frequencies:
 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.
 4. As specified in the O&M Agreement pursuant to Section 602.
 - E. Maintenance shall be conducted as necessary to provide for the continued functioning of the facility. Costs of inspections, maintenance and repairs are recoverable from the Municipal Stormwater Maintenance Fund.

Section 605. Maintenance of Existing Facilities / BMPs

- A. SWM facilities existing on the effective date of this Ordinance, which have not been accepted by the Municipality or for which maintenance responsibility has not been assumed by a private entity such as a homeowners' association shall be maintained by the individual Landowners. Such maintenance shall include at a minimum those items set forth in Section 603.B.1 above. If the Municipality determines at any time that any permanent SWM facility has been eliminated, altered, blocked through the erection of structures or the deposit of materials, or improperly maintained, the condition constitutes a nuisance and the Municipality shall notify the Landowner of corrective measures that are required, and provide for a reasonable period of time, not to exceed 30 days, within which the property owner shall take such corrective action. If the Landowner does not take the required corrective action, the Municipality may either perform the work or contract for the performance of the work and bill the Landowner for the cost of the work plus a penalty of 10% of the cost of the work. If such bill is not paid by the property owner within 30 days, the Municipality may file a municipal claim against the property upon which the work was performed in accordance with the applicable laws. The municipality shall have the right to choose among the remedies and may use one or more remedies concurrently.

ARTICLE VII
PROHIBITIONS

Section 701. Prohibited Discharges and Connections

- A. The following connections are prohibited, except as provided in Section 701.D below.
1. 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 Municipal separate storm sewer (if applicable), or waters of this Commonwealth, and any connections to the storm sewer from indoor drains and sinks; and
 2. Any drain or conveyance connected from a commercial or industrial land use to the Municipal separate storm sewer (if applicable) which has not been documented in plans, maps, or equivalent records, and approved by the Municipality.
- B. No person shall allow, or cause to allow, discharges into surface waters of this Commonwealth which are not composed entirely of stormwater, except (1) as provided in Section 701.D below and (2) discharges allowed under a state or federal permit.
- C. No person shall place any structure, fill, landscaping or vegetation into a SWM facility or within a drainage easement that will limit or diminish the functioning of the facility in any manner.
- D. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of this Commonwealth:
- Discharges from firefighting activities
 - Potable water sources including water line flushing
 - Irrigation drainage
 - Air conditioning condensate
 - Springs
 - Water from crawl space pumps
 - 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
 - Flows from riparian habitats and wetlands
 - Uncontaminated water from foundations or from footing drains
 - Lawn watering
 - De-chlorinated swimming pool discharges
 - Uncontaminated groundwater
 - Water from individual residential car washing
 - Routine external building wash down (which does not use detergents or other compounds)

- Diverted stream flows
- Rising ground waters

E. In the event that the Municipality or DEP determines that any of the discharges identified in Section 701.D above significantly contribute to pollution of the waters of this Commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

Section 702. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures without the written approval of the Municipality.

ARTICLE VIII

ENFORCEMENT AND PENALTIES

Section 801. Right-of-Entry

Upon presentation of proper credentials, duly authorized representatives of the Municipality may enter at reasonable times upon any property within the Municipality to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this Ordinance.

Section 802. Enforcement

The Municipal Governing Body is hereby authorized and directed to enforce all of the provisions of this ordinance.

- A. Any permit or approval issued by the Municipality pursuant to this ordinance may be suspended by the Municipality for:
 - 1. Noncompliance with or failure to implement any provision of the approved SWM Site Plan or O&M Agreement.
 - 2. A violation of any provisions of this ordinance or any other applicable law, ordinance, rule, or regulation relating to the regulated activity.
 - 3. The creation of any condition or the commission of any act during construction or development that constitutes or creates a hazard, nuisance, pollution or endangers the life or property of others.
- B. A suspended permit may be reinstated by the Municipality when:
 - 1. The Municipality has inspected and approved the corrections to the violation that caused the suspension;
 - 2. The Municipality is satisfied that the violation has been corrected.

Section 803. Penalties

- A. Any person who or which has violated any provisions of this Ordinance, shall, upon a judicial determination thereof, be subject to civil judgment for each such violation of not more than five hundred dollars (\$500), plus all court costs, including reasonable attorney fees incurred by the municipality as a result thereof. Each day that a violation occurs shall constitute a separate offense. All fines shall be paid to East Drumore Township.
- B. In addition, East Drumore Township may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance, and may request any court of competent jurisdiction shall have the right to

issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Section 804. Appeals

- A. Any person aggrieved by any administrative action of East Drumore Township may appeal to East Drumore Township Supervisors within 30 days of that action. Any such appeal shall be governed by the procedures of Article V of the Local Agency Law, 2 Pa. C.S.A. 401 et seq.
- B. Any person aggrieved by any decision of East Drumore Board of Supervisors may appeal to the Lancaster County Court of Common Pleas, in accordance with Article VII of Local Agency Law, 2 Pa. C.S.A. 701 et seq. the Local Agency Law, within 30 days of that decision.

Section 805. Modification of Ordinance Provisions

- A. The provisions of this Ordinance not relating to water quality are intended as minimum standards for the protection of the public health, safety, and welfare. The Municipality reserves the right to modify or to extend them conditionally in individual cases as may be necessary in the public interest; provided, however, that such variation shall not have the effect of nullifying the intent and purpose of this Ordinance, and that the applicant shows that to the satisfaction of the Municipality that the applicable regulation is unreasonable, or will cause undue hardship, or that an alternative proposal will allow for equal or better results. The list of such modifications, along with an explanation of and justification for each modification, shall be included on the plan. This section does not apply during an enforcement action.
- B. In granting waivers/modifications for provisions of this Ordinance not relating to water quality, the Municipality may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this Ordinance.

Section 806. Expenses Covered by Fees.

The Municipality may include all costs incurred in the review fee charged to an applicant. The review fee may include, but not be limited to, costs for the following:

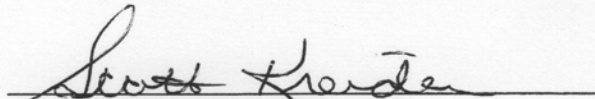
- A. Administrative and clerical costs.
- B. Review of the SWM Site Plan by the Municipal Engineer and Municipal Staff.
- C. Review of the Stormwater Operation and Maintenance Plan and Stormwater Agreement by the Municipal Solicitor and Municipal Staff.
- D. Inspections by the Municipal Engineer and Municipal Staff.
- E. Any additional work required by the Municipal Solicitor, Municipal Engineer or Municipal Staff to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

Review fees may be at rates adopted by the Municipality pursuant to a Resolution enacted from time to time.

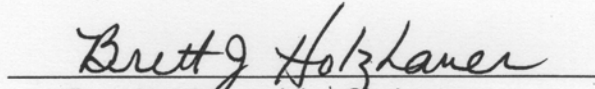
ARTICLE IX
REFERENCES

1. 25 Pennsylvania Code, Chapter 102 Erosion and Sediment Control
2. Minnesota Pollution Control Agency
3. Code of Federal Regulations – Title 44: Emergency Management and Assistance, §9.4 Definitions
4. *25 Pa.Code Chapter 105*
5. Based on definition in Wisconsin Department of Natural Resources Administrative Rule NR 151.006.
6. Pennsylvania Department of Environmental Protection. No. 363-0300-002 (December 2006), as amended and updated. *Pennsylvania Stormwater Best Management Practices Manual*. Harrisburg, PA.
7. City of Jacksonville website, <http://www3.coj.net/Departments/CityFees/Glossary.aspx>
8. Lancaster County Model Subdivision and Land Development Ordinance.
9. Pennsylvania Department of Environmental Protection. No. 363-2134-008 (March 2012), as amended and updated. *Erosion and Sediment Pollution Control Program Manual*. Harrisburg, PA.
10. CSN Technical Bulletin No. 5, Stormwater Design for High Intensity Redevelopment Projects in the Chesapeake Bay Watershed, version 2.0. Chesapeake Stormwater Network, January 5, 2011 – page 43.
11. “Penn State Urban Hydrology Model User Manual” by Thomas A. Seybert, PE, David F. Kibler, PE, and Elizabeth I. White, PE, August 1993 page 70 and VT/PSUHM help screen.
12. 25 Pa. Code, Chapter 71 Administration of Sewage Facilities Planning Program, § 71.1

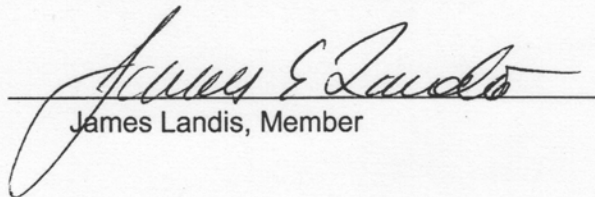
ENACTED and ORDAINED at a regular meeting of the Supervisors of the Township of East Drumore on the 5 th day of June, 2014. This Ordinance shall take effect immediately.



Scott Kreider, Chairman



Brett Holzauer, Vice Chairman



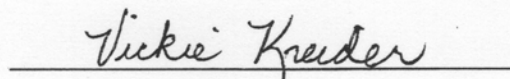
James Landis, Member

ATTEST:

Vickie Kreider

Vickie Kreider, Secretary (type or print)

I hereby certify that the foregoing Ordinance was advertised in the Lancaster Newspaper [name of newspaper] on April 19, 2014 [date], a newspaper of general circulation in the Municipality and was duly enacted and approved as set forth at a regular meeting of the East Drumore Township Board of Supervisors held on June 5, 2014 [date].



Vickie Kreider, Secretary

APPENDICES

APPENDIX - A
Small Projects Manual

SMALL PROJECT APPLICATION AND STORMWATER MANAGEMENT DESIGN ASSISTANCE MANUAL

**FOR SMALL PROJECTS IN
EAST DRUMORE TOWNSHIP
LANCASTER COUNTY, PENNSYLVANIA**

SMALL PROJECTS SIMPLIFIED APPROACH

Prepared By:



Light-Heigel & Associates, Inc.
ENGINEERS AND SURVEYORS
930 Red Rose Court, Suite 103
Lancaster, Pennsylvania 17601
Phone: (717) 892-7002
Fax: (717) 892-7020

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| III. SAMPLE PROPOSED CALCULATIONS | 5 |
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Small Projects Stormwater Control Application

Application is hereby made to East Drumore Township for the issuance of a Storm Water Management Plan approval for Land Disturbance as defined in the East Drumore Township Storm Water Management Ordinance. June 5, 2014 shall be a starting point from which the impervious or disturbed areas for small project activity shall be cumulatively considered.

General Information from the Applicant

Name of Owner: _____ Date: _____
Address of Owner: _____
Name of Applicant (if different than owners): _____
Address of Applicant: _____
Contact Phone Number: _____ Email Address: _____
Address of Project: _____
Brief Description of Project: _____

Did the Applicant meet with the Township Staff concerning this project?
Yes No When? _____

Distance from the proposed project to the nearest water feature (stream, pond, lake, wetlands). Check one: 50 feet or less More than 50 feet

The amount of impervious cover (sq. ft.) _____
Area of earth to be disturbed with this project including storm water management facilities (sq. ft.) _____

Is the applicant proposing to use a stone lined trench or dry well to control stormwater from the proposed impervious areas? Yes No.

Has the applicant dug any test pits in the areas where the stone lined trench or dry well are proposed to be used in order to see if there is shallow bedrock, an elevated water table or other limiting zone limitations that would make the use of these storm water control BMPs infeasible? Yes No

Is the applicant proposing to use a cistern/tank to control storm water from the proposed impervious areas? Yes No

If Yes, how will the cistern be emptied? _____

What will be the use of the cistern water? _____

How much water will be used per day? _____ gal. Per week? _____ gal.

Simplified SWM Site Plan

Attach a Simplified SWM Site plan (i.e. sketch plan) an example is shown on the next page.

This sketch plan should include:

1. The approximate location of the property lines.
2. Existing sidewalks, buildings, driveways, or other impervious areas with dimensions in feet and areas in square feet.
3. The location where the proposed impervious area is going to be located with dimensions in feet and areas in square feet.
4. Dimensions from the property line to the proposed impervious areas.
5. Arrows showing the general stormwater flow direction across the project area.
6. The location of the proposed stormwater control facilities with dimensions and distances from the existing/proposed structures.
7. The location of existing utilities (water, sewer, gas, etc.).
8. Pa 1 Call number.
9. The area of disturbance delineated on the plan showing the area in square feet.

I acknowledge the Township’s right to review the provided information, at my expense, and to deny this application or to revoke this permit application if any of the above statements are found to be false.

The Applicant assumes all risk and responsibilities for the design submitted. The manual is provided as a guide. However, it provides no specific design for any project.

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above and on the storm water management plan herewith submitted is true, correct and complete.

Date

Applicant

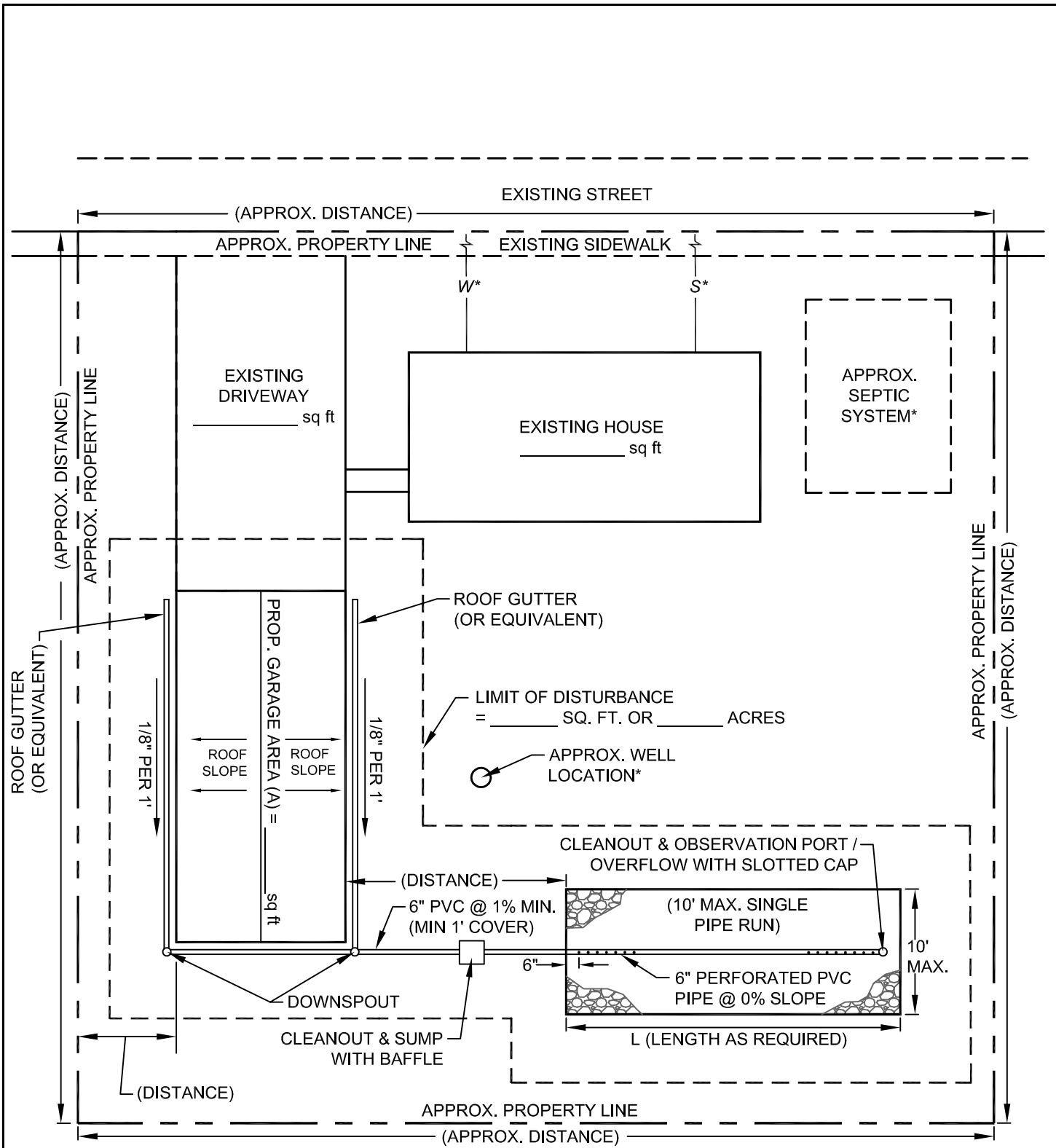
OFFICE USE

Date Received _____ Township File # _____

Property Account # _____

Submission Fee _____

Date of Application Approval _____



* LOCATE WATER AND SEWER LATERALS IF PUBLIC SERVICES EXIST. LOCATE SEWER SYSTEM AND WELL IF NO PUBLIC SEWER OR WATER IS AVAILABLE

Legend
 Flow Direction —————>
 Ex. Water ——— W ———
 Ex. Sanitary ——— S ———

**SAMPLE STORMWATER
 MANAGEMENT SITE PLAN**

SHEET 1 OF 5

LIGHT-HEIGEL AND ASSOCIATES, INC.
 ENGINEERS and SURVEYORS
 930 RED ROSE COURT, SUITE 103
 LANCASTER, PA 17601 (717) 892-7002

OTHER OFFICES
 PALMIRA, PA
 HALIFAX, PA SCHUYLKILL HAVEN, PA
 MONTANDON, PA

Proposed Impervious and disturbed areas and Stormwater Control Volume Estimates:

1. What is the total proposed impervious area (A) in square feet? _____
2. What is the total earth disturbance area in square feet? _____
3. Take the total proposed impervious area (A) and determine the required stormwater runoff volume and BMP adjustments as required in the table below.

| <u>Stormwater Volume Estimates and Volume Adjustments by BMP (1 inch of rain)</u> | | |
|--|------------------------------|--------------------------------------|
| Proposed Impervious Area (A*) = | sq ft | |
| Stormwater Runoff Volume (B) = | (A)/12 = | (B) = cu ft |
| Stormwater BMP | Stormwater Volume Adjustment | Adjusted Stormwater Volume cu ft (C) |
| Cistern | B(cu ft) x 1.25**x7.50**** | Adjusted Volume in Gallons |
| Rain Gardens/Bioretenion Areas/Non-Stone lined dry wells | No Volume Adjustment needed | cu ft |
| Stone Lined Infiltration Trench or Dry Well | B(cu ft) x 2.5*** | cu ft |

* From Question 1 above. (Also see Sample Site Plan)

** Conversion factor assuming Cistern is 25% full.

*** Conversion factor assuming volume of voids = 40% i.e. dividing the volume by 0.4 is equivalent to multiplying the volume by 2.5

****1 Cubic ft = 7.5 Gallons

Example: 30'x50' Pole Building

Proposed Impervious Area = 1,500 sq ft

| <u>Stormwater Volume Estimates and Volume Adjustments by BMP</u> | | |
|---|------------------------------|--------------------------------------|
| Proposed Impervious Area (A) = | 1,500 sq ft | |
| Stormwater Runoff Volume (B) cu ft = | (A)/12 = 1,500/12 = | (B) = 125 cu ft |
| Stormwater BMP | Stormwater Volume Adjustment | Adjusted Stormwater Volume cu ft (C) |
| Cistern | 125 x 1.25 x 7.50 | 156.25 cu ft or 1,171.88 Gal |
| Rain Gardens/Bioretenion Areas/Non-Stone lined dry wells | No Volume Adjustment Needed | 125 cu ft |
| Stone Lined Infiltration Trench or Dry Well | 125 cu ft x 2.5 = | 312.5 cu ft |

Conclusion:

1. A cistern for water re-use of at least 1,172 gallons could be used to collect the runoff from the new impervious cover.
2. A rain garden/bioretenion area for surface water absorption of at least 6' wide x 14' long x 1' deep x SSF***** (7x15x1x1.20=126 cu ft) could be used.
***** SSF = Side Slope Factor; Factor is 1.10 for 0.5' deep, 1.20 for 1.0' deep rain gardens
3. An underground infiltration stone lined trench of 10' wide x 16' long by 2' deep (10'x16'x2'=320 cu ft) could be used.

APPLICANT'S WORKSHEET

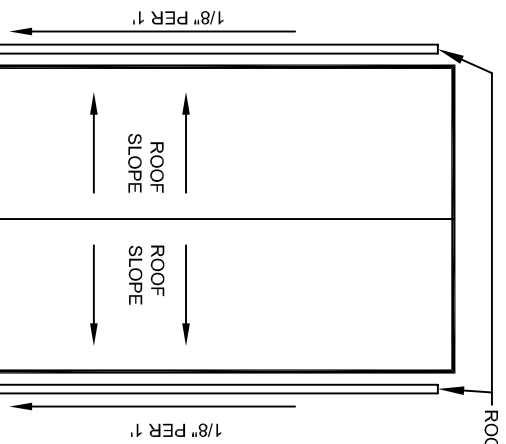
| <u>Stormwater Volume Estimates and Volume Adjustments by BMP</u> | | |
|---|---------------------------------|--------------------------------------|
| Proposed Impervious Area (A) = | _____ sq ft | |
| Stormwater Runoff Volume (B) = | (A)/12 = _____ cu ft | (B) = _____ cu ft |
| Stormwater BMP | Stormwater Volume Adjustment | Adjusted Stormwater Volume cu ft (C) |
| Cistern | (B) _____ (cu ft) x 1.25 x 7.50 | |
| Rain Gardens/Bioretention Areas/Non-Stone lined dry wells | No Volume Adjustment Needed | (B) _____ |
| Stone Lined Infiltration Trench or Dry Well | (B) _____ (cu ft) x 2.5 = | |

I propose to use a _____ of _____
(size)
 for the stormwater control of my small project.

APPENDICES



APPENDIX - A
Stormwater Control BMPs

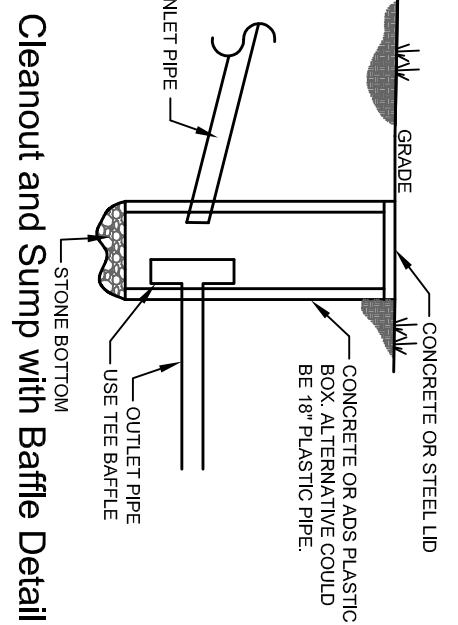


STONE LINED INFILTRATION TRENCH SIZING CALCULATIONS

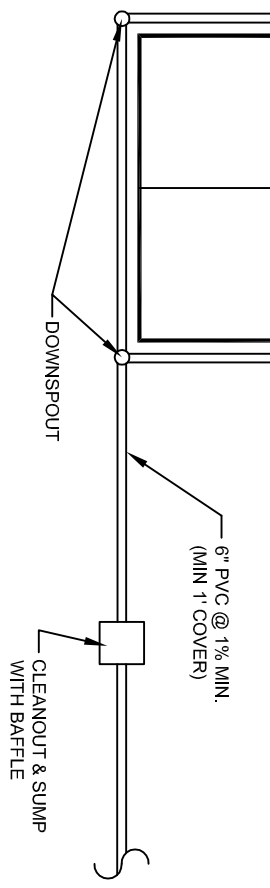
EXAMPLE:
 STORMWATER RUNOFF VOLUME (B)* = 250 cu ft
 ADJUSTED STORMWATER VOLUME (C)*
 = (B) X 2.5 = 250 cu ft X 2.5 = 625 cu ft
 W X L X D ≥ C
 USER COULD PROVIDE W = 10', L = 32', D = 2'
 W X L X D = 10' X 32' X 2' = 640 cu ft ≥ 625 cu ft

STORMWATER RUNOFF VOLUME (B)* = _____ cu ft
 ADJUSTED STORMWATER VOLUME (C)* = (B) X 2.5 = _____ cu ft
 W = _____ ft L = _____ ft D = _____ ft
 W X L X D = _____ cu ft ≥ _____ (C)

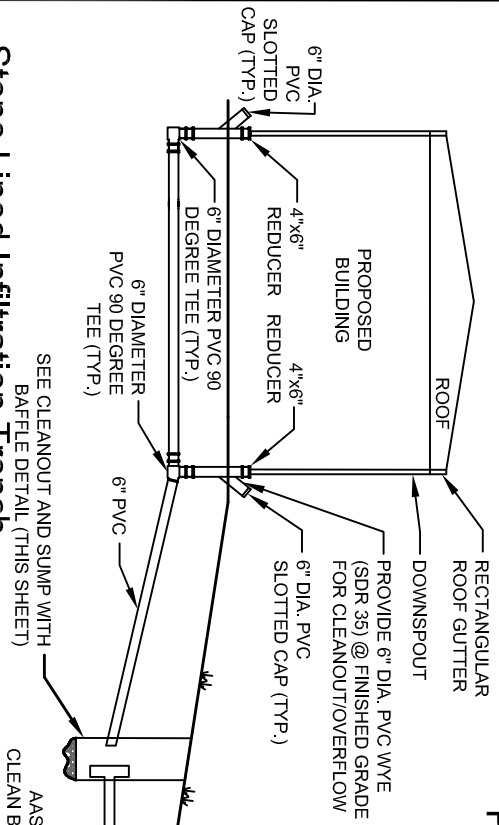
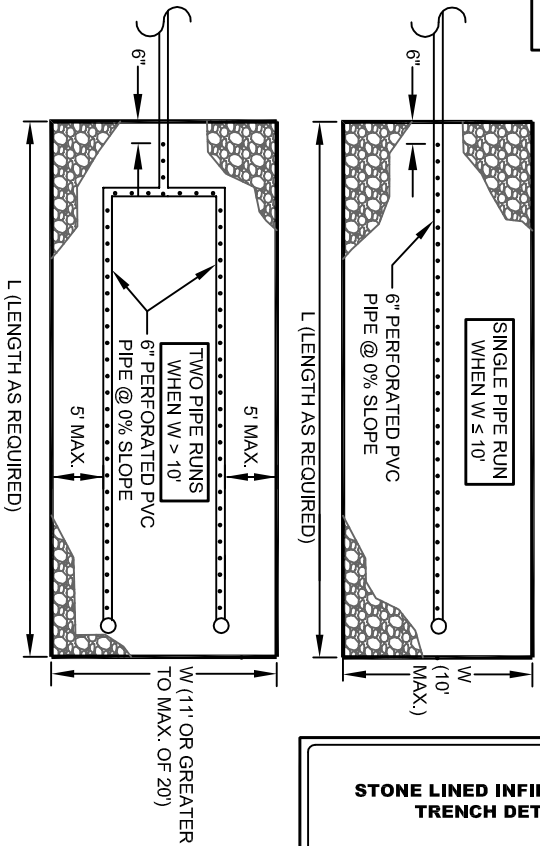
* From page 6 of the Small Project Application



Cleanout and Sump with Baffle Detail



Plan view



Section view

Stone Lined Infiltration Trench

Scale: N.T.S.

STONE LINED INFILTRATION TRENCH DETAIL

SHEET 2 OF 5

LIGHT-HEIGEL AND ASSOCIATES, INC.
 ENGINEERS and SURVEYORS
 830 RED ROSE COURT, SUITE 103
 LANCASTER, PA 17601 (717) 882-7002

OTHER OFFICES
 PALMYRA, PA
 HALIFAX, PA SCHUYLKILL HAVEN, PA
 MONTANDOK, PA

**STONE LINED INFILTRATION TRENCH
SIZING CALCULATIONS**

EXAMPLE:

STORMWATER RUNOFF VOLUME (B)* = 250 cu ft

ADJUSTED STORMWATER VOLUME (C)*

= (B) X 2.5 = 250 cu ft X 2.5 = 625 cu ft

W X L X D ≥ C

USER COULD PROVIDE W = 10', L = 32', D = 2'

W X L X D = 10' X 32' X 2' = 640 cu ft ≥ 625 cu ft

STORMWATER RUNOFF VOLUME (B)* = _____ cu ft

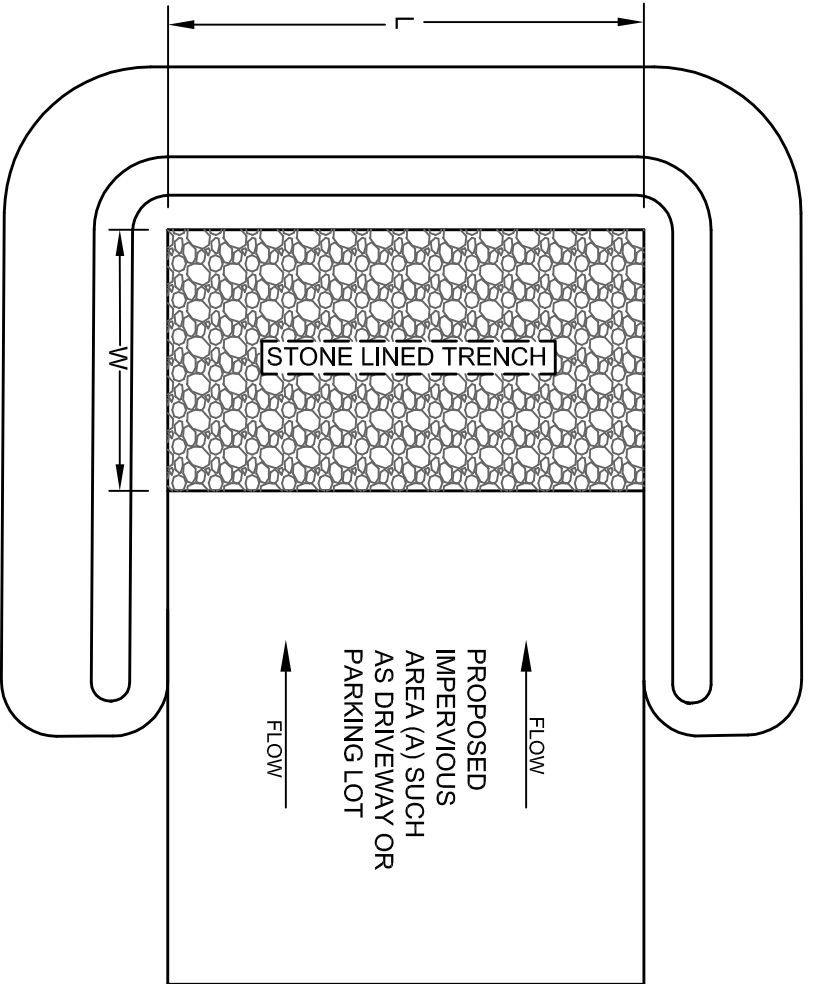
ADJUSTED STORMWATER VOLUME (C)* = (B) X 2.5 = _____ cu ft

= _____ cu ft

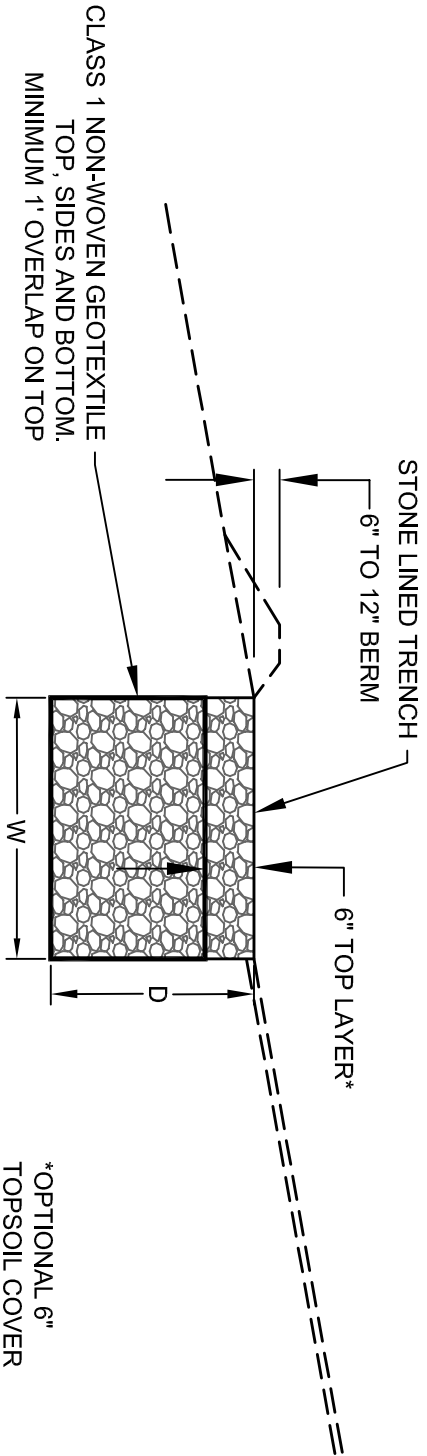
W = _____ ft L = _____ ft D = _____ ft

W X L X D = _____ cu ft ≥ _____ (C)

* From page 6 of the Small Project Application



Plan view



Section view (Scale: N.T.S)

**STONE LINED INFILTRATION
TRENCH AT GRADE DETAIL**

**RAIN GARDEN / BIORETENTION AREA
SIZING CALCULATIONS**

EXAMPLE:

STORMWATER RUNOFF VOLUME (B)* = 125 cu ft
(NO VOLUME ADJUSTMENT NEEDED)

W X L X D X SSF ≥ B

USER COULD PROVIDE W = 7', L = 15', D = 1'

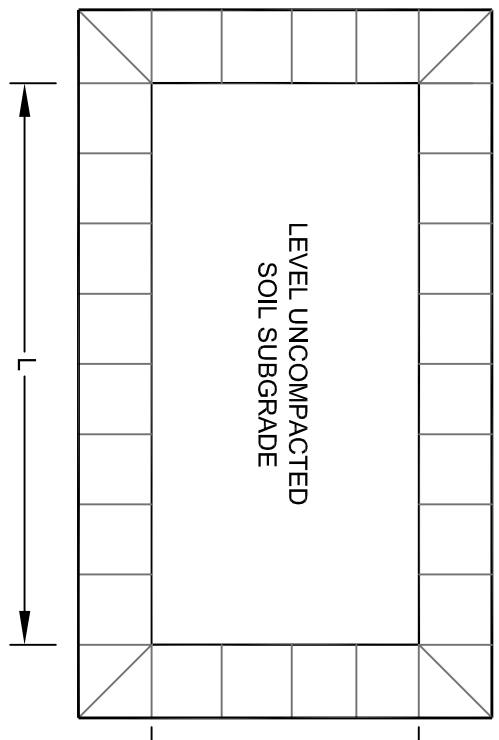
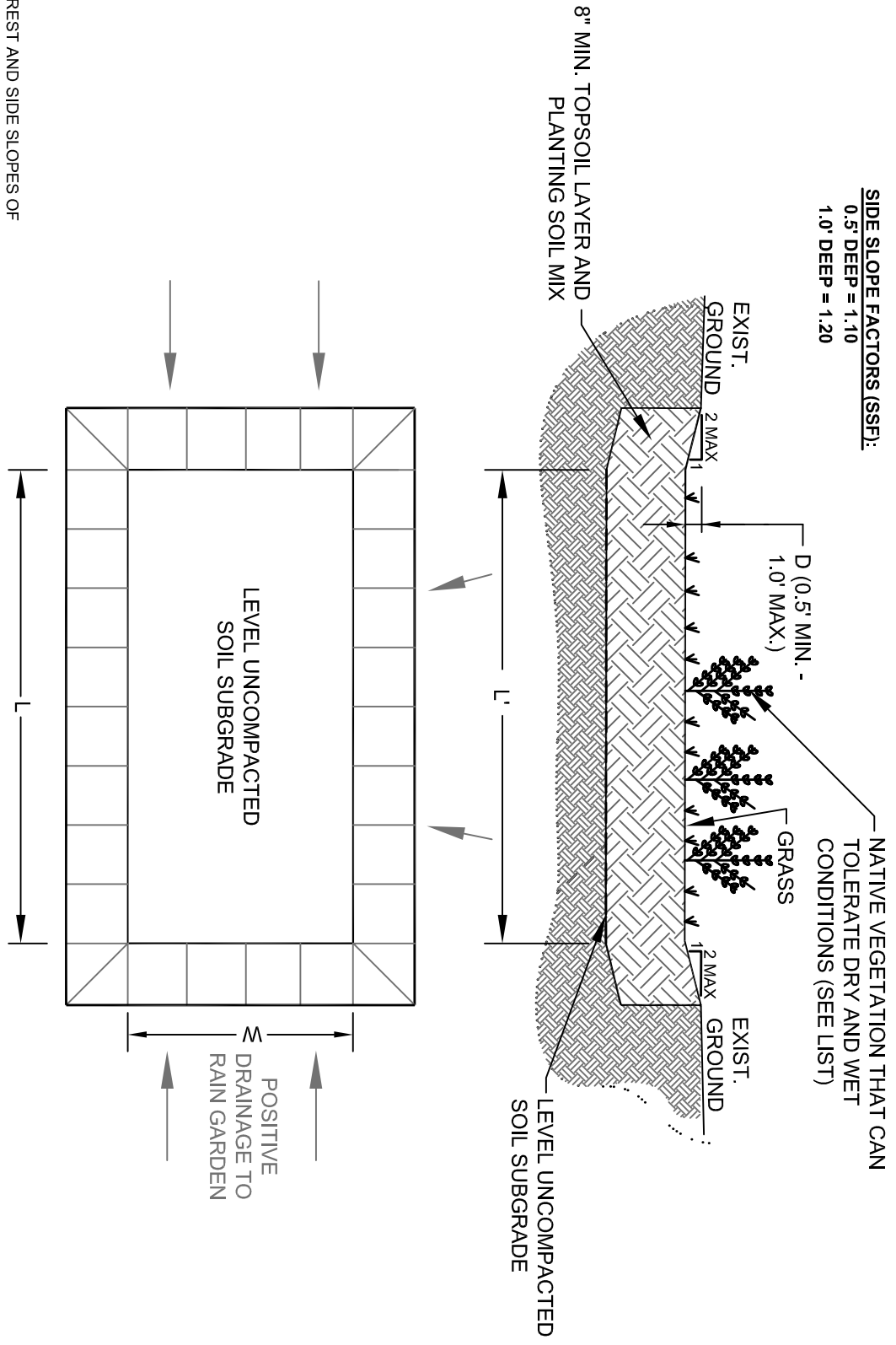
W X L X D X SSF = 7' X 15' X 1' X 1.20 = 126 cu ft ≥ 125 cu ft

STORMWATER RUNOFF VOLUME (B)* = _____ cu ft
W = _____ ft L = _____ ft D = _____ ft SSF = _____
W X L X D X SSF = _____ cu ft ≥ _____ (B)

SIDE SLOPE FACTORS (SSF):

0.5' DEEP = 1.10

1.0' DEEP = 1.20



NOTE
LINE CREST AND SIDE SLOPES OF
SPILLWAY W/ NORTH AMERICAN
GREEN TYPE STS EROSION CONTROL
BLANKET (OR EQUAL).

| | |
|---|--|
| <p>RAINGARDEN / BIORETENTION AREA DETAIL</p> <p>SHEET 4 OF 5</p> | <p>LIGHT-HEIGEL AND ASSOCIATES, INC. ENGINEERS and SURVEYORS 830 RED ROSE COURT, SUITE 103 LANCASTER, PA 17601 (717) 852-7002</p> <p>OTHER OFFICES PALMYRA, PA HALIFAX, PA SCHEIKELL HAVEN, PA MONTANDON, PA</p> |
|---|--|

Rain Garden/Bioretention Areas

A Rain Garden (Bioretention Area) is an excavated depression area on the surface of the land in which native vegetation is planted to filter and use stormwater runoff. Runoff ponds on top of the surface of the rain garden and then infiltrates into an enhanced soil/planting mix below the surface where plants can use the water to grow. Bioretention also improves water quality, vegetation filters the water, and the root systems encourage or promote infiltration. Key elements of a rain garden include:

- Ponding depths recommended to **1 foot** or less.
- Native vegetation that can tolerate dry and wet weather.
- An overflow area where, if the bioretention area were to overflow, the overflow would flow over pervious area (i.e. grass, meadow), and would not cause harm to property, or;
- An overflow such as a domed riser to allow excess flow from large storms to travel to other substantial infiltration areas or pervious areas.
- For most areas, maximum 3:1 slopes are recommended, however, where space is limited, 2:1 side slopes may be acceptable with approval from the Municipal Engineer.
- The soil/planting mix depth should be between 1.5 feet to 6 feet deep.

Rain Garden Native Planting List

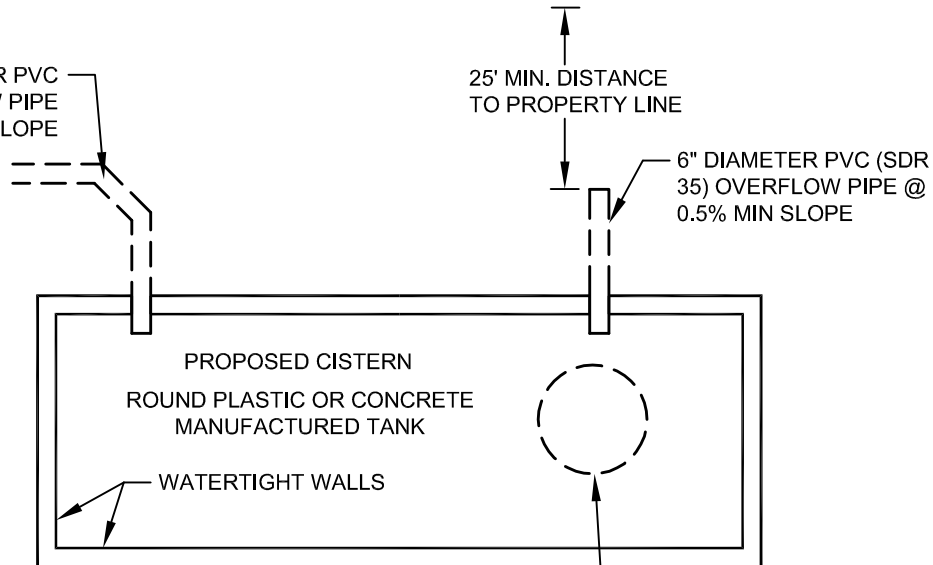
Perennials and Ferns:

Blue false indigo (*Baptisia australis*)
Blue flag iris (*Iris versicolor*)
Blue star (*Amsonia tabernaemontana*)
Blue vervain (*Verbena hastata*)
Boltonia (*Boltonia asteroides*)
Boneset (*Eupatorium perfoliatum*)
Bottlebrush grass (*Hystrix patula*)
Broomsedge (*Andropogon virginicus*)
Cardinal flower (*Lobelia cardinalis*)
Cinnamon fern (*Osmunda cinnamomea*)
Culvers root (*Veronicastrum virginicum*)
Golden ragwort (*Senecio aureus*)
Goldenrod (*Solidago patula*, *S. rugosa*)
Great blue lobelia (*Lobelia siphilitica*)
Green bullrush (*Scirpus atrovirens*)
Horsetail (*Equisetum species*)
Marsh marigold (*Caltha palustris*)
Mistflower (*Eupatorium colestinum*)
Monkey flower (*Mimulus ringens*)
New England aster (*Aster novae-anglia*)
New York aster (*Aster novi-belgii*)
Obedient plant (*Physotegia virginiana*)
Royal fern (*Osmunda regalis*)
Seedbox (*Ludwigia alternifolia*)
Sensitive fern (*Onoclea sensibilis*)
Sneezeweed (*Helenium autumnale*)
Soft rush (*Juncus effusus*)
Swamp milkweed (*Asclepias incarnata*)
Swamp rose mallow (*Hibiscus moscheutos*)
Swamp sunflower (*Helianthus angustifolius*)
Switchgrass (*Panicum virgatum*)
Threadleaf coreopsis (*Coreopsis verticillata*)
Tussock sedge (*Carex stricta*)
White turtlehead (*Chelone glabra*)
Woolgrass (*Scirpus cyperinus*)

Shrubs:

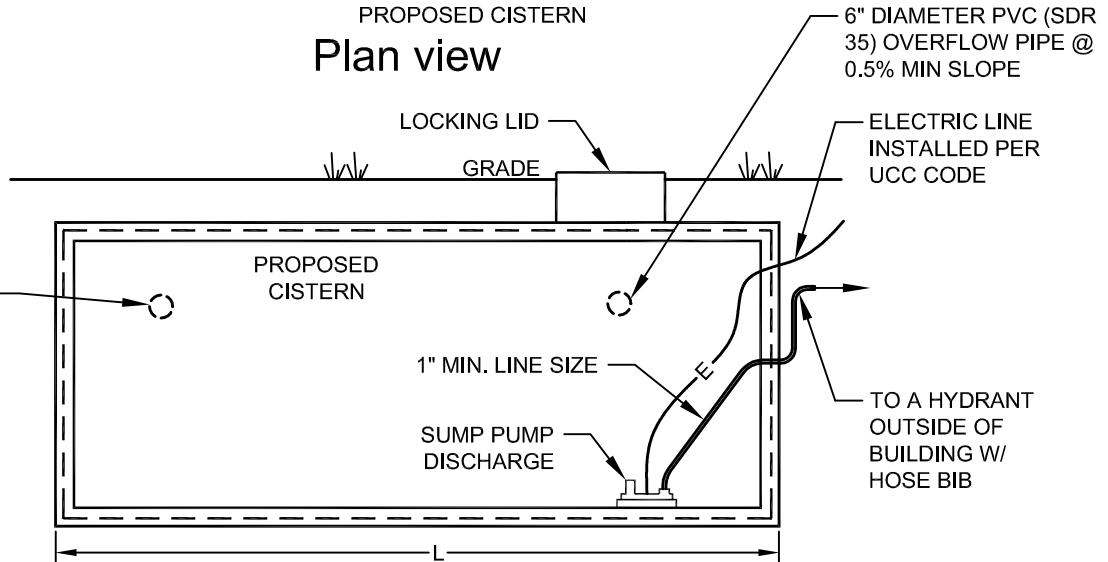
American beautyberry (*Callicarpa americana*)
Arrowwood (*Viburnum dentatum*)
Black chokeberry (*Aronia melanocarpa*)
Broad-leaved meadowsweet (*Spirea latifolia*)
Buttonbush (*Cephalanthus occidentalis*)
Elderberry (*Sambucus canadensis*)
Inkberry (*Ilex glabra*)
Narrow-leaved meadowsweet (*Spirea alba*)
Ninebark (*Physocarpus opulifolius*)
Possumhaw (*Viburnum nudum*)
Red-osier dogwood (*Cornus sericea*)
St. Johnswort (*Hypericum densiflorum*)
Silky dogwood (*Cornus amomum*)
Smooth alder (*Alnus serrulata*)
Spicebush (*Lindera benzoin*)
Swamp azalea (*Rhododendron viscosum*)
Swamp rose (*Rosa palustris*)
Sweet pepperbush (*Clethra alnifolia*)
Wild raisin (*Viburnum cassinoides*)
Winterberry (*Ilex verticillata*)
Virginia sweetspire (*Itea virginica*)

NOTE:
 ACTUAL SIZE AND SHAPE OF CISTERN WILL VARY DEPENDING ON REQUIRED AMOUNT OF STORMWATER STORAGE VOLUME. THIS IS AN EXAMPLE. ACTUAL DESIGN, SIZE AND SHAPE MAY VARY AS LONG AS FUNCTION IS MET. EXTERNAL ACCESS MUST BE PROVIDED WITH A LOCKABLE MECHANISM.



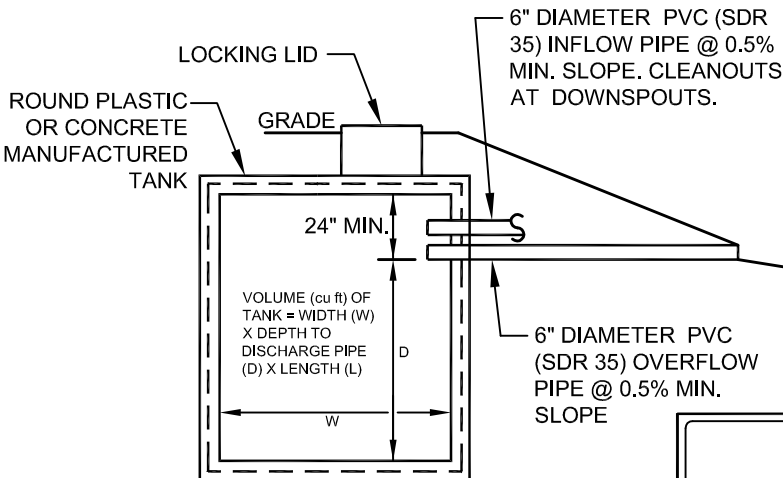
OPENING FOR ACCESS TO PROPOSED CISTERN

Plan view



Interior Elevation

6" DIAMETER PVC (SDR 35) INFLOW PIPE @ 0.5% MIN SLOPE



Section View

CISTERN SIZING CALCULATIONS

EXAMPLE:
 STORMWATER RUNOFF VOLUME (B) = 250 cu ft
 ADJUSTED STORMWATER VOLUME (C)
 = (B) X 1.25 = 250 cu ft X 1.25 = 312.5 cu ft
 = 312.5 cu ft X 7.5 GAL/cu ft = 2,343.75 GAL.
W X L X D ≥ C
 USER COULD PROVIDE W = 12', L = 10', D = 3'
W X L X D = 12' X 10' X 3' = 360 cu ft ≥ 312.5 cu ft (2,343.75 GAL.)

STORMWATER RUNOFF VOLUME (B)* = _____ cu ft
 ADJUSTED STORMWATER VOLUME (C)* = (B) X 1.25 = _____ cu ft X 7.5 GAL/cu ft = _____ GAL.
 W = _____ ft L = _____ ft D = _____ ft
W X L X D = _____ cu ft ≥ _____ (C) (OR _____ GAL.)

* From page 6 of the Small Project Application

CISTERN DETAILS

LIGHT-HEIGEL AND ASSOCIATES, INC.
ENGINEERS and SURVEYORS
 930 RED ROSE COURT, SUITE 103
 LANCASTER, PA 17601 (717) 892-7002
 OTHER OFFICES
 PALMISTON, PA
 HALIFAX, PA SCHUYLKILL HAVEN, PA
 MONTANDON, PA

APPENDIX - B

**Stormwater Control BMPs Operation, Maintenance, and
Inspection Plan and Agreement**

Sizing and design considerations for Stormwater Control BMPs

There are several different types of Stormwater Control BMPs the applicant can choose from for their projects needs. A combination of Stormwater Control BMPs may be needed to control stormwater runoff from the proposed impervious areas. The following is only a partial list of more common storm water Control BMPs and does not cover all of the BMPs available.

These BMPs are:

1. Cisterns
2. Rain Garden/Bioretenion Areas
3. Stone Lined Trench or Stone Filled Dry Well

Cisterns

Cisterns are large containers that collect drainage from roof leaders and temporarily store water to be released to lawns, gardens, and other landscaped areas after the rainfall event has ended. Cisterns can have volumes of 200 gallons (27 cu ft) or more, and can be placed either on the surface or underground. Figure 1 shows examples of cisterns that could be used to manage stormwater from a project. Cisterns are manufactured in a variety of shapes and sizes. All of these facilities must make provisions for the following items:

- There must be a means to release the water stored in the container between storm events in order for the necessary storage volume to be available for the next storm.
- Stormwater must be kept from entering other potable systems, and pipes and storage units must be clearly marked “Do Not Drink”.
- An overflow outlet should be placed a few inches below the top of the storage container with an overflow pipe to divert flow away from structures once the storage containers are filled.
- Use screens to filter debris, and covers (lids) placed over the containers to prevent insects and debris from entering the storage chamber.
- Make sure cisterns are watertight and do not leak.
- Rain barrels are typically assumed to be 25% full to calculate volume since they are not always emptied before each storm.



Figure 1: Source (for both photographs): Pennsylvania Stormwater BMP Manual (PADEP, 2006)

Stone Lined Infiltration Trench

An infiltration trench is a long, narrow, rock-filled trench with or without a perforated pipe that receives stormwater runoff, and has no outlet. Runoff is stored in the void space between the stones and in the pipe, and infiltrates through the bottom and into the underlying soil matrix. Infiltration trenches perform well for removal of fine sediment and associated pollutants. Infiltration trenches shall incorporate or make provisions for the following elements:

- Perforated pipe is to be set level.
- The width is limited to between 3 to 8 feet, and the depth ranges from 2 to 6 feet.
- Trench should be wrapped in nonwoven geotextile (top, sides, and bottom).
- There should be a positive overflow that allows stormwater that cannot be stored or infiltrated to be discharged into a nearby vegetated area.
- Roof downspouts may be connected to infiltration trenches, but should contain a cleanout to collect sediment and debris before entering the infiltration area.
- Infiltration testing is recommended to ensure soil is capable of infiltrating stormwater.
- It is recommended that there be a 2 foot clearance above the regularly occurring seasonal high water table, and have a minimum depth to bedrock of 2 feet.
- The infiltration trench should be at least 50 feet from individual water supply wells, 100 feet from community or municipal water supply wells, and 50 feet from any septic system component. It should not be located near hotspots which are areas where land use or activities generate highly contaminated runoff, with concentrations of pollutants that are higher than those that are typically found in stormwater (e.g. vehicle salvage yards, recycling facilities, vehicle fueling stations, maintenance facilities, etc.).
- The infiltration trench should be located so that it presents no threat to sub-surface structures such as building foundations and basements.
- Protect infiltration areas from compaction by heavy equipment during and after construction.
- The ratio of the collected area to the footprint of the facility should be as small as possible with a ratio of less than 5:1 preferred.

Dry Wells

A dry well, also referred to as a seepage pit, is a subsurface storage facility that temporarily stores and infiltrates runoff from the roofs of buildings or other impervious surfaces. A dry well can be either a structural prefabricated chamber (Dry Well #1) or an excavated pit filled with stone fill (Dry Well #2). Dry Wells discharge the stored runoff via infiltration into the surrounding or underlying soils. Figure 4 shows a typical prefabricated dry well and a typical dry well configuration with stone fill. The following elements shall be incorporated into all dry well designs:

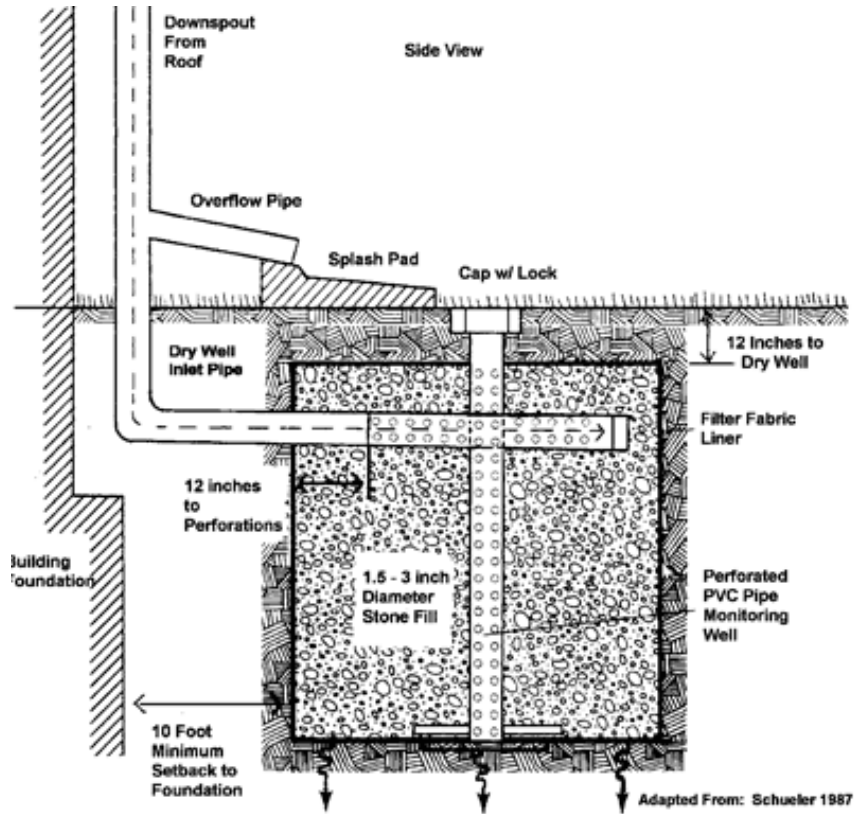
- These facilities should be located a minimum of ten (10) feet from the building foundation to avoid foundation seepage problems, and are not recommended if their installation would create a risk for basement flooding.
- Construction of a dry well should be performed after surface soils in all other areas of the site are stabilized to avoid clogging.
- During construction, compaction of the subgrade soil in the bottom of the dry well should be avoided, and construction should be performed only with light machinery.

- For Dry Well #2 designs, the depth of dry well should be between **1.5 feet to 4 feet**. Gravel fill should consist of stone with an average of one and one half to three (1.5 – 3.0) inches in diameter with the gravel fill wrapped in a nonwoven geotextile that separates the stone fill from the surrounding soil.
- At least 1 foot of soil needs to be placed over the top of the dry well.
- Dry wells should be inspected at least four (4) times annually as well as after large storm events.
- Dry wells should have overflow pipes to allow high volumes of runoff to connect to other on-site substantial infiltration areas or pervious areas.
- Every dry well needs to have at least one monitoring well.
- Infiltration testing is recommended to ensure the underlying soil is capable of infiltrating the needed volume of stormwater.



Dry Well #1

Source (for photograph): <http://www.copelandconcreteinc.net/1800652.html>



Dry Well #2

Source (for photograph): <http://www.seagrant.sunysb.edu/cprocesses/pdfs/BMPsForMarinas.htm>

Figure 4: Typical Dry Well Structural Prefabricated Chamber (Dry Well #1) and Typical Dry Well Configuration filled with Stone Fill (Dry Well #2)

Operation, Maintenance, Inspection Plan, and Agreement

Regardless to which stormwater control BMPs the applicant chooses to use an Operation, Maintenance, and Inspection Plan and Agreement will need to be signed, notarized, and submitted to the Municipality.

Following approval and signature by East Drumore Township, the landowner must have the agreement recorded at the Lancaster County Office of the Recorder of Deeds, so that the agreement will be applicable to future landowners, with a copy of the recorded agreement submitted to the Township.

See Ordinance for the Operation, Maintenance, and Inspection Plan and Agreement.

APPENDIX - B

Storm Water Table Factors

APPENDIX NO. B-1

RUNOFF COEFFICIENTS "C" FOR
RATIONAL FORMULA

TABLE 5.2
Runoff Coefficients for the Rational Equation*

| LAND USE | A Soils ¹ | | | B Soils ¹ | | | C Soils ¹ | | | D Soils ¹ | | |
|---|----------------------|--------|------|----------------------|--------|------|----------------------|--------|------|----------------------|--------|------|
| | < 2% | 2 - 6% | >6% | < 2% | 2 - 6% | >6% | < 2% | 2 - 6% | >6% | < 2% | 2 - 6% | >6% |
| Cultivated land | 0.08 | 0.13 | 0.16 | 0.11 | 0.15 | 0.21 | 0.14 | 0.19 | 0.26 | 0.18 | 0.23 | 0.31 |
| Pasture | 0.12 | 0.20 | 0.30 | 0.18 | 0.28 | 0.37 | 0.24 | 0.34 | 0.44 | 0.30 | 0.40 | 0.50 |
| Meadow | 0.10 | 0.16 | 0.25 | 0.14 | 0.22 | 0.30 | 0.20 | 0.28 | 0.36 | 0.24 | 0.30 | 0.40 |
| Forest | 0.05 | 0.08 | 0.11 | 0.08 | 0.11 | 0.14 | 0.10 | 0.13 | 0.16 | 0.12 | 0.16 | 0.20 |
| Residential lot size 1/8 acre | 0.25 | 0.28 | 0.31 | 0.27 | 0.30 | 0.35 | 0.30 | 0.33 | 0.38 | 0.33 | 0.36 | 0.42 |
| Residential lot size 1/4 acre | 0.22 | 0.26 | 0.29 | 0.24 | 0.29 | 0.33 | 0.27 | 0.31 | 0.36 | 0.30 | 0.34 | 0.40 |
| Residential lot size 1/3 acre | 0.19 | 0.23 | 0.26 | 0.22 | 0.26 | 0.30 | 0.25 | 0.29 | 0.34 | 0.28 | 0.32 | 0.39 |
| Residential lot size 1/2 acre | 0.16 | 0.20 | 0.24 | 0.19 | 0.23 | 0.28 | 0.22 | 0.27 | 0.32 | 0.26 | 0.30 | 0.37 |
| Residential lot size 1 acre | 0.14 | 0.19 | 0.22 | 0.17 | 0.21 | 0.26 | 0.20 | 0.25 | 0.31 | 0.24 | 0.29 | 0.35 |
| Industrial | 0.67 | 0.68 | 0.68 | 0.68 | 0.68 | 0.69 | 0.68 | 0.68 | 0.69 | 0.69 | 0.69 | 0.70 |
| Commercial | 0.71 | 0.71 | 0.72 | 0.71 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 | 0.72 |
| Streets | 0.70 | 0.71 | 0.72 | 0.71 | 0.72 | 0.74 | 0.72 | 0.73 | 0.76 | 0.73 | 0.75 | 0.78 |
| Open Space | 0.05 | 0.10 | 0.14 | 0.08 | 0.13 | 0.19 | 0.12 | 0.17 | 0.24 | 0.15 | 0.21 | 0.28 |
| Parking | 0.85 | 0.86 | 0.87 | 0.85 | 0.86 | 0.87 | 0.85 | 0.86 | 0.87 | 0.85 | 0.86 | 0.87 |
| Construction Sites - Bare packed soil, smooth | 0.30 | 0.35 | 0.40 | 0.35 | 0.40 | 0.45 | 0.40 | 0.45 | 0.50 | 0.50 | 0.55 | 0.60 |
| Construction Sites - Bare packed soil, rough | 0.20 | 0.25 | 0.30 | 0.25 | 0.30 | 0.35 | 0.30 | 0.35 | 0.40 | 0.40 | 0.45 | 0.50 |

* Runoff Coefficients for storm recurrence intervals less than 25 years

Adapted from McCuen, R.H., Hydrologic Analysis and Design (2004)

1. According to the USDA NRCS Hydrologic Soils Classification System

APPENDIX NO. B-2

RUNOFF CURVE NUMBERS "CN" FOR SCS METHOD*

Table 2-2a Runoff curve numbers for urban areas ^{1/}

| Cover description | Average percent impervious area ^{2/} | Curve numbers for hydrologic soil group | | | |
|--|--|--|----|----|----|
| | | A | B | C | D |
| <i>Fully developed urban areas (vegetation established)</i> | | | | | |
| Open space (lawns, parks, golf courses, cemeteries, etc.) ^{3/} : | | | | | |
| Poor condition (grass cover < 50%) | | 68 | 79 | 86 | 89 |
| Fair condition (grass cover 50% to 75%) | | 49 | 69 | 79 | 84 |
| Good condition (grass cover > 75%) | | 39 | 61 | 74 | 80 |
| Impervious areas: | | | | | |
| Paved parking lots, roofs, driveways, etc. (excluding right-of-way) | | 98 | 98 | 98 | 98 |
| Streets and roads: | | | | | |
| Paved; curbs and storm sewers (excluding right-of-way) | | 98 | 98 | 98 | 98 |
| Paved; open ditches (including right-of-way) | | 83 | 89 | 92 | 93 |
| Gravel (including right-of-way) | | 76 | 85 | 89 | 91 |
| Dirt (including right-of-way) | | 72 | 82 | 87 | 89 |
| Western desert urban areas: | | | | | |
| Natural desert landscaping (pervious areas only) ^{4/} | | 63 | 77 | 85 | 88 |
| Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders) | | 96 | 96 | 96 | 96 |
| Urban districts: | | | | | |
| Commercial and business | 85 | 89 | 92 | 94 | 95 |
| Industrial | 72 | 81 | 88 | 91 | 93 |
| Residential districts by average lot size: | | | | | |
| 1/8 acre or less (town houses) | 65 | 77 | 85 | 90 | 92 |
| 1/4 acre | 38 | 61 | 75 | 83 | 87 |
| 1/3 acre | 30 | 57 | 72 | 81 | 86 |
| 1/2 acre | 25 | 54 | 70 | 80 | 85 |
| 1 acre | 20 | 51 | 68 | 79 | 84 |
| 2 acres | 12 | 46 | 65 | 77 | 82 |
| <i>Developing urban areas</i> | | | | | |
| Newly graded areas (pervious areas only, no vegetation) ^{5/} | | | | | |
| | | 77 | 86 | 91 | 94 |
| Idle lands (CN's are determined using cover types similar to those in table 2-2c). | | | | | |

¹ Average runoff condition, and $I_a = 0.2S$.² The average percent impervious area shown was used to develop the composite CN's. Other assumptions are as follows: impervious areas are directly connected to the drainage system, impervious areas have a CN of 98, and pervious areas are considered equivalent to open space in good hydrologic condition. CN's for other combinations of conditions may be computed using figure 2-3 or 2-4.³ CN's shown are equivalent to those of pasture. Composite CN's may be computed for other combinations of open space cover type.⁴ Composite CN's for natural desert landscaping should be computed using figures 2-3 or 2-4 based on the impervious area percentage (CN = 98) and the pervious area CN. The pervious area CN's are assumed equivalent to desert shrub in poor hydrologic condition.⁵ Composite CN's to use for the design of temporary measures during grading and construction should be computed using figure 2-3 or 2-4 based on the degree of development (impervious area percentage) and the CN's for the newly graded pervious areas.

Table 2-2b Runoff curve numbers for cultivated agricultural lands ^{1/}

| Cover description | | | Curve numbers for hydrologic soil group | | | |
|--|----------------------------|------------------------------------|---|----|----|----|
| Cover type | Treatment ^{2/} | Hydrologic condition ^{3/} | A | B | C | D |
| Fallow | Bare soil | — | 77 | 86 | 91 | 94 |
| | Crop residue cover (CR) | Poor | 76 | 85 | 90 | 93 |
| | | Good | 74 | 83 | 88 | 90 |
| Row crops | Straight row (SR) | Poor | 72 | 81 | 88 | 91 |
| | | Good | 67 | 78 | 85 | 89 |
| | SR + CR | Poor | 71 | 80 | 87 | 90 |
| | | Good | 64 | 75 | 82 | 85 |
| | Contoured (C) | Poor | 70 | 79 | 84 | 88 |
| | | Good | 65 | 75 | 82 | 86 |
| | C + CR | Poor | 69 | 78 | 83 | 87 |
| | | Good | 64 | 74 | 81 | 85 |
| | Contoured & terraced (C&T) | Poor | 66 | 74 | 80 | 82 |
| | | Good | 62 | 71 | 78 | 81 |
| C&T+ CR | Poor | 65 | 73 | 79 | 81 | |
| | Good | 61 | 70 | 77 | 80 | |
| Small grain | SR | Poor | 65 | 76 | 84 | 88 |
| | | Good | 63 | 75 | 83 | 87 |
| | SR + CR | Poor | 64 | 75 | 83 | 86 |
| | | Good | 60 | 72 | 80 | 84 |
| | C | Poor | 63 | 74 | 82 | 85 |
| | | Good | 61 | 73 | 81 | 84 |
| | C + CR | Poor | 62 | 73 | 81 | 84 |
| | | Good | 60 | 72 | 80 | 83 |
| | C&T | Poor | 61 | 72 | 79 | 82 |
| | | Good | 59 | 70 | 78 | 81 |
| | C&T+ CR | Poor | 60 | 71 | 78 | 81 |
| | | Good | 58 | 69 | 77 | 80 |
| Close-seeded or broadcast legumes or rotation meadow | SR | Poor | 66 | 77 | 85 | 89 |
| | | Good | 58 | 72 | 81 | 85 |
| | C | Poor | 64 | 75 | 83 | 85 |
| | | Good | 55 | 69 | 78 | 83 |
| | C&T | Poor | 63 | 73 | 80 | 83 |
| | | Good | 51 | 67 | 76 | 80 |

¹ Average runoff condition, and $I_a=0.2S$

² Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.

³ Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good $\geq 20\%$), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

Table 2-2c Runoff curve numbers for other agricultural lands ^{1/}

| Cover description | Hydrologic condition | Curve numbers for hydrologic soil group | | | |
|--|----------------------|---|----|----|----|
| | | A | B | C | D |
| Pasture, grassland, or range—continuous forage for grazing. ^{2/} | Poor | 68 | 79 | 86 | 89 |
| | Fair | 49 | 69 | 79 | 84 |
| | Good | 39 | 61 | 74 | 80 |
| Meadow—continuous grass, protected from grazing and generally mowed for hay. | — | 30 | 58 | 71 | 78 |
| Brush—brush-weed-grass mixture with brush the major element. ^{3/} | Poor | 48 | 67 | 77 | 83 |
| | Fair | 35 | 56 | 70 | 77 |
| | Good | 30 ^{4/} | 48 | 65 | 73 |
| Woods—grass combination (orchard or tree farm). ^{5/} | Poor | 57 | 73 | 82 | 86 |
| | Fair | 43 | 65 | 76 | 82 |
| | Good | 32 | 58 | 72 | 79 |
| Woods. ^{6/} | Poor | 45 | 66 | 77 | 83 |
| | Fair | 36 | 60 | 73 | 79 |
| | Good | 30 ^{4/} | 55 | 70 | 77 |
| Farmsteads—buildings, lanes, driveways, and surrounding lots. | — | 59 | 74 | 82 | 86 |

¹ Average runoff condition, and $I_a = 0.2S$.

² *Poor*: <50% ground cover or heavily grazed with no mulch.

Fair: 50 to 75% ground cover and not heavily grazed.

Good: > 75% ground cover and lightly or only occasionally grazed.

³ *Poor*: <50% ground cover.

Fair: 50 to 75% ground cover.

Good: >75% ground cover.

⁴ Actual curve number is less than 30; use CN = 30 for runoff computations.

⁵ CN's shown were computed for areas with 50% woods and 50% grass (pasture) cover. Other combinations of conditions may be computed from the CN's for woods and pasture.

⁶ *Poor*: Forest litter, small trees, and brush are destroyed by heavy grazing or regular burning.

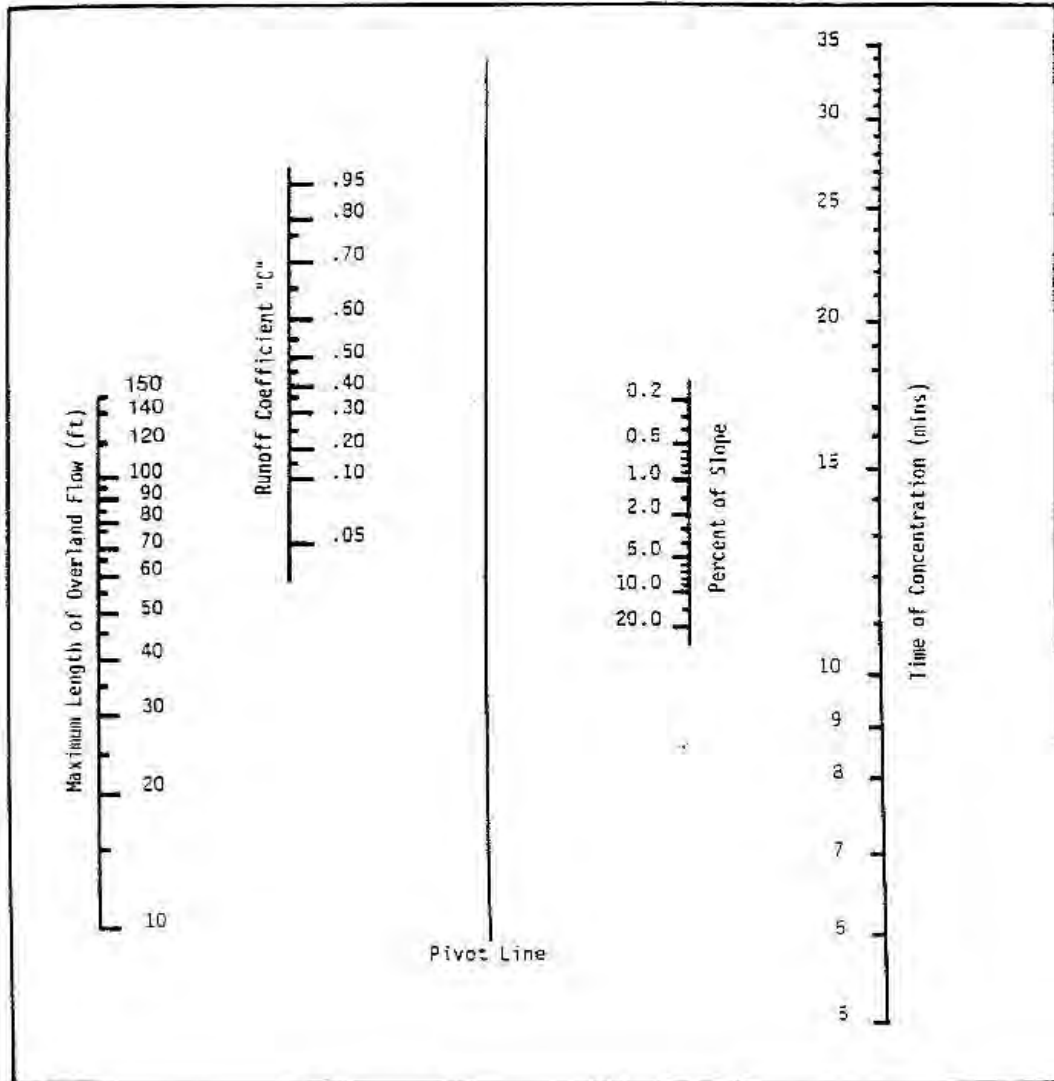
Fair: Woods are grazed but not burned, and some forest litter covers the soil.

Good: Woods are protected from grazing, and litter and brush adequately cover the soil.

APPENDIX NO. B-3

NOMOGRAPH FOR DETERMINING SHEET FLOW

(for use with the Rational Method)



APPENDIX NO. B-4

Worksheet #1: Time of concentration (T_C) or travel time (T_t)

Project _____ By _____ Date _____
 Location _____ Checked _____ Date _____

Circle one: Present Developed

Circle one: T_C T_t through subarea _____

NOTES: Space for as many as two segments per flow type can be used for each worksheet.

Include a map, schematic, or description of flow segments.

| Sheet flow (Applicable to T _C only) | Segment ID | | | |
|---|------------|---|--|------------------------|
| 1. Surface description (table 3-1) | | | | |
| 2. Manning's roughness coeff., n (table 3-1) | | | | |
| 3. Flow length, L (total L ≤ **150 ft) ft | | | | |
| 4. Two-yr 24-hr rainfall, P ₂ in | | | | |
| 5. Land slope, s ft/ft | | | | |
| 6. $T_t = \frac{0.907 (nL)^{0.8}}{P_2^{0.5} s^{0.4}}$ Compute T _t hr | | + | | = <input type="text"/> |

| Shallow concentrated flow | Segment ID | | | |
|--|------------|---|--|------------------------|
| 7. Surface description (paved or unpaved) | | | | |
| 8. Flow length, L ft | | | | |
| 9. Watercourse slope, s ft/ft | | | | |
| 10. Average velocity, V (figure 3-1) ft/s | | | | |
| 11. $T_t = \frac{L}{3600 V}$ Compute T _t hr | | + | | = <input type="text"/> |

| Channel flow | Segment ID | | | |
|--|------------|---|--|------------------------|
| 12. Cross sectional flow area, a ft ² | | | | |
| 13. Wetted perimeter, P _w ft | | | | |
| 14. Hydraulic radius, $r = \frac{a}{P_w}$ Compute r ft | | | | |
| 15. Channel slope, s ft/ft | | | | |
| 16. Manning's roughness coeff., n | | | | |
| 17. $V = \frac{1.49 r^{2/3} s^{1/2}}{n}$ Compute V ft/s | | | | |
| 18. Flow length, L ft | | | | |
| 19. $T_t = \frac{L}{3600V}$ Compute T _t hr | | + | | = <input type="text"/> |
| 20. Watershed or subarea T _C or T _t (add T _t in steps 6, 11, and 19) hr | | | | = <input type="text"/> |

*Table 3-1 per latest TR-55, Urban Hydrology for Small Watershed
 **150' sheet flow length per latest TR-55 revision

APPENDIX NO. B-5

AVERAGE VELOCITIES FOR ESTIMATING TRAVEL TIME FOR SHALLOW CONCENTRATED FLOW

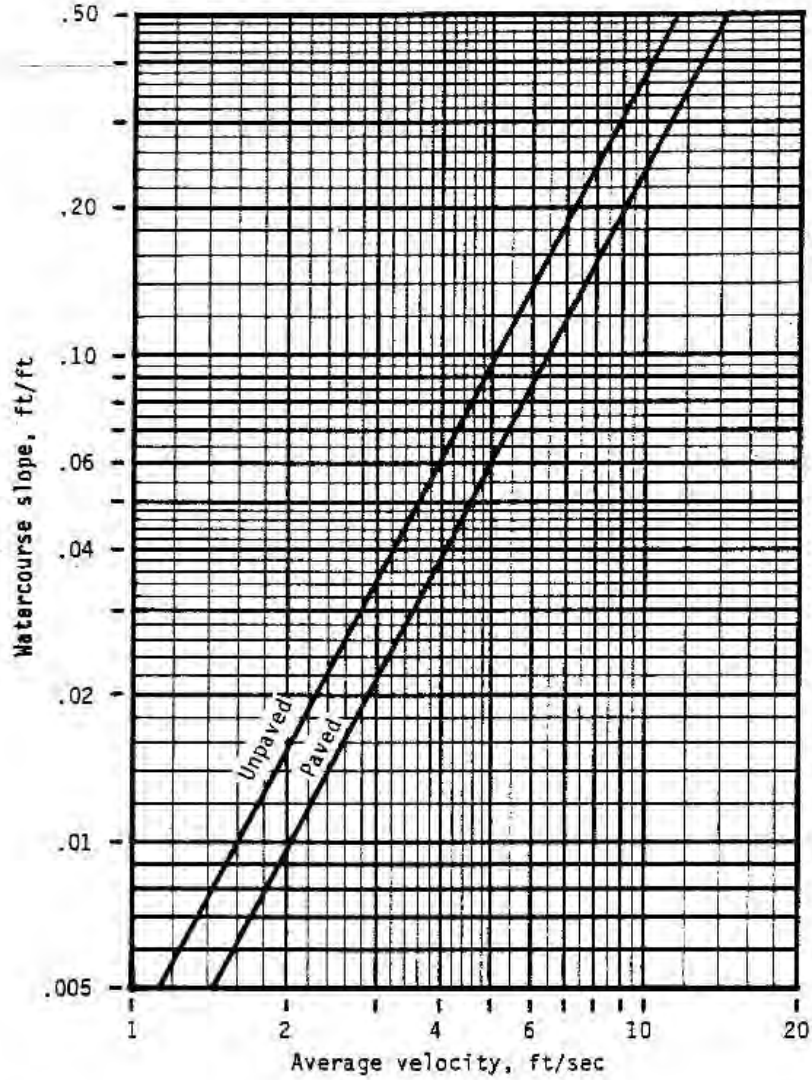


Figure 3-1.—Average velocities for estimating travel time for shallow concentrated flow.

APPENDIX B-6 - MANNING'S EQUATION "n" ROUGHNESS COEFFICIENTS

| Description | Manning's "n" |
|---|---------------|
| Smooth-Wall Plastic Pipe | 0.011 |
| Concrete Pipe | 0.012 |
| Smooth-Lined Corrugated Metal Pipe | 0.012 |
| Corrugated Plastic Pipe | 0.024 |
| Annular Corrugated Steel And Aluminum Alloy Pipe (Plain or Polymer Coated) | |
| 68 mm x 13 mm (2 2/3 in x 1/2 in) Corrugations | 0.024 |
| 75 mm x 25 mm (3 in x 1 in) Corrugations | 0.027 |
| 125 mm x 25 mm (5 in x 1 in) Corrugations | 0.025 |
| 150 mm x 50 mm (6 in x 2 in) Corrugations | 0.033 |
| Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or Polymer Coated) | |
| 75 mm x 25 mm (3 in x 1 in), 125 mm x 25 mm (5 in x 1 in), or 150 mm x 50 mm (6 in x 2 in) Corrugations | 0.024 |
| Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or Polymer Coated) | |
| 68 mm x 13 mm (2 2/3 in x 1/2 in) Corrugations | |
| a. Lower Coefficients* | |
| 450 mm (18 in) Diameter | 0.014 |
| 600 mm (24 in) Diameter | 0.016 |
| 900 mm (36 in) Diameter | 0.019 |
| 1200 mm (48 in) Diameter | 0.020 |
| 1500 mm (60 in) Diameter or larger | 0.021 |
| b. Higher Coefficients** | 0.024 |
| Annular or Helically Corrugated Steel or Aluminum Alloy Pipe Arches or Other Non- Circular Metal Conduit (Plain or Polymer Coated) | 0.024 |
| Vitrified Clay Pipe | 0.012 |
| Ductile Iron Pipe | 0.013 |
| Asphalt Pavement | 0.015 |
| Concrete Pavement | 0.014 |
| Grass Medians | 0.050 |
| Grass - Residential | 0.030 |
| Earth | 0.020 |
| Gravel | 0.030 |
| Rock | 0.035 |
| Cultivated Areas | 0.030 - 0.050 |
| Dense Brush | 0.070 - 0.140 |
| Heavy Timber (Little undergrowth) | 0.100 - 0.150 |
| Heavy Timber (With underbrush) | 0.40 |
| Streams: | |
| Some Grass And Weeds (Little or no brush) | 0.030 - 0.035 |
| Dense Growth of Weeds | 0.035 - 0.050 |
| Some Weeds (Heavy brush on banks) | 0.050 - 0.070 |

Notes:

* Use the lower coefficient if any one (1) of the following conditions apply:

- a. A storm pipe longer than twenty (20) diameters, which directly or indirectly connects to an inlet or manhole, located in swales adjacent to shoulders in cut areas, shoulders in cut areas or depressed medians.
- b. A storm pipe which is specially designed to perform under pressure.

** Use the higher coefficient if any one (1) of the following conditions apply:

- a. A storm pipe which directly or indirectly connects to an inlet or manhole located in highway pavement sections or adjacent to curb or concrete median barrier.
- b. A storm pipe which is shorter than twenty (20) diameters long.
- c. A storm pipe which is partly lined helically corrugated metal pipe.

APPENDIX - C

Stormwater Control BMP's Operation, Maintenance, and Inspection Plan and Agreement

Annual Written Report of Inspection and Maintenance
NPDES permit – Required Best Management Practices (BMPs) for Post-Construction Stormwater Management

Location of BMP(s) (e.g. street address): _____

Development/Subdivision name: _____ Lot or unit #: _____

Contact Information for BMP Owner(s):

Name & Organization: _____

Address: _____

Phone Number: _____

E-mail Address: _____

Type of BMP(s) and Year of Installation: _____

Description of Maintenance required for BMP(s):

Listing of actual inspections and maintenance activities for each BMP:

Contact information of person completing this form (if other than Owner):

Name & Organization _____

Address: _____

Phone Number _____

E-Mail address: _____

**OPERATION AND MAINTENANCE (O&M) AGREEMENT
STORMWATER MANAGEMENT FACILITIES**

THIS AGREEMENT, made and entered into this _____ day of _____, 20____, by and between _____ (hereinafter the "Landowner"), and East Drumore Township, Lancaster County, Pennsylvania (hereinafter "Municipality");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Lancaster County, Pennsylvania, Deed Book _____ at page _____, (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property; and

WHEREAS, the SWM FACILITIES Operation and Maintenance (O&M) Plan approved by the Municipality (hereinafter referred to as the "O&M Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of Stormwater Management Best Management Practices (BMPs); and

WHEREAS, the Municipality, and the Landowner, his successors and assigns, agree that the health, safety, and welfare of the residents of the Municipality and the protection and maintenance of water quality require that on-site SWM Facilities be constructed and maintained on the Property; and

WHEREAS, the Municipality requires, through the implementation of the SWM Site Plan, that SWM Facilities as required by said SWM Site Plan and the Municipal Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, successors, and assigns.

NOW, THEREFORE, in consideration of the foregoing promises, the mutual covenants contained herein, and the following terms and conditions, the parties hereto agree as follows:

1. The Landowner shall construct the SWM Facilities in accordance with the plans and specifications identified in the SWM Site Plan.

2. The Landowner shall operate and maintain the SWM Facilities as shown on the SWM Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved O&M Plan.
3. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the SWM Facilities whenever necessary. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
4. In the event the Landowner fails to operate and maintain the SWM Facilities per paragraph 2, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said SWM Facilities. It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
5. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred, plus a 10% penalty, within 10 days of receipt of invoice from the Municipality.
6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite SWM Facilities by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
7. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.
8. The Municipality intends to inspect the SWM Facilities at a minimum of once every three years to ensure their continued functioning.

This Agreement shall be recorded at the Office of the Recorder of Deeds of Lancaster County, Pennsylvania, and shall constitute a covenant running with the Property and/or equitable servitude, and shall be binding on the Landowner, his administrators, executors, assigns, heirs, and any other successors in interests, in perpetuity.

ATTEST:

WITNESS the following signatures and seals:

(SEAL)

For the Municipality:

For the Landowner:

ATTEST:

_____ (City, Borough, Township)

County of _____, Pennsylvania

I, _____, a Notary Public in and for the county and state aforesaid, whose commission expires on the _____ day of _____, 20____, do hereby certify that _____ whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ day of _____, 20____, has acknowledged the same before me in my said county and state.

GIVEN UNDER MY HAND THIS _____ day of _____, 20_____.

NOTARY PUBLIC

(SEAL)

APPENDIX - D

Storm Water Management Site Plan Exemption Application
Storm Water Management Plan Application

STORM WATER MANAGEMENT SITE PLAN EXEMPTION APPLICATION
EAST DRUMORE TOWNSHIP

Owner's Name: _____

Address: _____

Project Location: _____

Phone #: _____ Fax #: _____

Email: _____

Person to be completing the work: _____

Address: _____

Phone #: _____ Fax #: _____

Email: _____

Description of Existing Conditions and Proposed Activity

1. Has any impervious surface been installed on this property since the enactment of this Storm Water Management Ordinance (May 2014)?

No

Yes; total area of previously installed impervious surface _____ sq. ft.

2. Are you removing existing impervious surface as part of this project?

No

Yes; total area of impervious surface to be removed _____ sq. ft.

3. Addition of impervious surface with this project (must be less than 1,000 sq. ft.):

Total area of new impervious surface proposed _____ sq. ft.

Type of new impervious surface:

Driveway Shed Garage Deck Walkway Patio Building Addition

Other (please describe) _____

4. Removal of ground cover, grading, filling, or excavation of an area:

Total area of land disturbance _____ sq. ft.

Type of regulated ground work activity (check all that apply):

Ground Cover Change Grading Filling Excavation

Other Earth Disturbance Activity (please describe) _____

5. Provide a copy of the Zoning or Building Permit Sketch.

By my signature below, I certify to the Township that, to the best of my knowledge, the following statements are true:

- The proposed activity will not result in the disturbance of land within floodplains, wetlands, environmentally sensitive areas, riparian forest buffers, or slopes greater than 15%.
- The proposed activity will not be conducted within any existing drainage or storm water easement created by or shown on any recorded plan.
- The proposed activity will minimize soil disturbance, take steps to minimize erosion during construction activity, and promptly reclaim all disturbed areas with topsoil and vegetation.
- The proposed activity will not adversely impact any existing known problem areas or downstream property owners or the quality of runoff entering any storm sewer.
- I will minimize soil disturbance, take steps to minimize erosion during construction activity, and promptly reclaim all disturbed areas with topsoil and vegetation.
- I will take steps to insure that runoff will be directed to pervious areas on the subject property. No runoff will be directed onto an abutting street or neighboring property.
- I acknowledge the Township's right to review the provided information, at my expense, and to deny this application or to revoke this permit application if any of the above statements are found to be false.

The undersigned hereby represents that, to the best of their knowledge and belief, all information listed above is true, correct and complete.

Date

Signature of Owner / Applicant

- Municipal Use Only -

Date Received: _____ File #: _____ Submitted Fee: _____

Property Account #: _____

Approval Date of Application: _____

Comments: _____

STORM WATER MANAGEMENT SITE PLAN APPLICATION

EAST DRUMORE TOWNSHIP

Application is hereby made to East Drumore Township for the issuance of a Storm Water Management Plan approval for a Regulated Activity as defined in the East Drumore Township Storm Water Management Ordinance.

1. Name of Property Owner: _____

Address: _____

Phone #: _____

2. Name of Applicant (if other than owner): _____

Address: _____

Phone #: _____

3. Project location: _____

4. Description of work to be performed: _____

5. Amount of proposed impervious cover (sq. ft.): _____

6. Total area to be disturbed, including storm water management facilities (sq. ft.):
_____ (Note if over 43,560 sq. ft. an NPDES Permit is required)

7. Amount of impervious cover (sq. ft.) installed on this property since the enactment of the Stormwater Management Ordinance (May 2014) as approved exemption: _____

8. Total area (sq. ft.) disturbed since the enactment of this Storm Water Ordinance (May 2014):

I acknowledge the Township's right to review the information and plans provided, at my expense, and to deny this application or revoke this permit if any of the above statements are found to be false.

Owner / Applicant

Date

- Municipal Use Only -

Date Received: _____ File #: _____ Submitted Fee: _____

Property Account #: _____

Approval Date of Application: _____

Comments: _____
