CONOY TOWNSHIP

Lancaster County, Pennsylvania

ORDINANCE NO.

1-4-10-2014

AN ORDINANCE TO AMEND THE CONOY TOWNSHIP CODE OF ORDINANCES TO INSERT A NEW ORDINANCE 17, STORMWATER MANAGEMENT, TO IMPLEMENT THE LANCASTER COUNTY ACT 167 STORMWATER MANAGEMENT PLAN.

BE AND IT IS HEREBY ORDAINED AND ENACTED by the Board of Supervisors of Conoy Township, Lancaster County, Pennsylvania, as follows:

Section 1. The Code of Ordinances of Conoy Township, Ordinance 17, Stormwater Management, shall be deleted in its entirety and a new Ordinance 17, Stormwater Management, shall be inserted which shall provide as follows:

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ARTICLE I
GENERAL PROVISIONS

Section 101. Short Title

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

Section 102. Statement of Findings

The Conoy Township Board of Supervisors 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 Conoy Township 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.

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

Ordinance 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 Conoy Township.

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:

Conoy Township 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. Conoy Township also is empowered to regulate land use activities that affect stormwater impacts by the authority of the Act of February 1, 1966, P.L. (1965) 1656, No. 581, as reenacted and amended by the Act of May 17, 2012, P.L. 262, No. 43, as amended, The Township Code.

B. Secondary Authority:

Conoy Township 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

The provisions, regulations, limitations and restrictions of this ordinance shall apply to regulated activities, as defined in this Ordinance.

Section 106. Repeals and Continuation of Prior Regulations

A. Except as otherwise required by law, this Ordinance is intended as a continuation of, and not a repeal of, existing regulations governing the subject matter. To the extent that this Ordinance restates regulations contained in ordinances previously enacted by the Conoy Township Board of Supervisors, this Ordinance shall be considered a restatement and not a repeal of such regulations. It is the specific intent of the Conoy Township Board of Supervisors that all provisions of this Ordinance shall be considered in full force and effect as of the date such regulations were initially enacted. All ordinances or parts of ordinances inconsistent with the provisions of this Ordinance are hereby repealed. It is expressly provided that the provisions of this Ordinance shall not affect any act done, contract executed or liability incurred prior to its effective date, or affect any suit or prosecution pending or to be instituted to enforce any rights, rule, regulation or ordinance, or part thereof, or to punish any violation which occurred under any prior stormwater regulation or ordinance. In the event any violation has occurred under any prior stormwater regulation or ordinance of Conoy Township, prosecution may be initiated against the alleged offender pursuant to the provisions of said prior stormwater regulation or ordinance, and the provisions and penalties provided in said prior stormwater regulation or ordinance shall remain effective as to said violation.

B. Any Plan (hereinafter defined) pending at the time of the effective date of this Ordinance shall be allowed to proceed with revisions, finalization and implementation in accordance with any Ordinance in effect prior hereto.

Section 107. 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 108. 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 109. 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 Conoy Township purporting to validate such a violation.

Section 110. Municipal Liability

Except as specifically provided by the Pennsylvania Stormwater 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 Conoy Township or any of its officials or employees shall not constitute a representation, guarantee or warranty of any kind by Conoy Township of the practicability or safety of any proposed structure or use with respect to damage from erosion, sedimentation, stormwater runoff, flood, or any other matter, and shall create no liability upon or give rise to any cause of action against Conoy Township and its officials and employees. Conoy Township, by enacting and amending this Ordinance, does not waive or limit any immunity granted to Conoy 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 111. 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.

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 Conoy Township Board of Supervisors 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 the Stormwater Management Act.

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 Conoy Township for approval to engage in any regulated activity at a Development Site, located within the Township.

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 activities[1]. See also Non-structural BMP and Structural BMP.

BMP Manual – The Pennsylvania Stormwater Best Management Practices Manual of December 2006.

Board of Supervisors – The governing body of the Township.

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.

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

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

Ordinance 106 – 25 Pa. Code, Ordinance 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 District – The Lancaster County Conservation District or any agency successor thereto which shall administer and enforce Ordinance 102.

Conservation Plan – A plan written by an NRCS 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 Conservation Plan.

Conveyance – (n) Any structure that carries a flow. (v) 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.

DCNR – The Pennsylvania Department of Conservation and Natural Resources.

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

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 Township 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.

Disconnected Impervious Area (DIA) – An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration and increased time of concentration. For use in small project plans only.

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 drainage ways 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 Manual – The DEP Erosion and Sediment Pollution Control Manual, No. 363-2134-008.

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 materials[1].

Environmentally Sensitive Area – Slopes greater than 15% percent, shallow bedrock (located within six (6) feet of ground surface[2]), 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.

Exemption – Released from meeting ordinance requirements when project conditions meet the criteria listed in Section 401.A.

Existing Conditions – The dominant land cover during the five (5) year period immediately preceding a proposed regulated activity.

FEMA – The Federal Emergency Management Agency or any agency successor thereto.

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 – The portion of the floodplain outside of the floodway[3]**.**

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 – The channel of the watercourse and those portions of the adjoining floodplains which are reasonably required to carry and discharge the 100-year (1%) 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 (1%) 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 stream[4].

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.

1. Group 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).

2. Group 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).

3. Group 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).

4. Group 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) – Surfaces which prevent the infiltration of water into the ground. All structures, buildings, parking areas, driveways, roads, streets, sidewalks, decks and any areas of concrete, asphalt, packed stone and compacted soil shall be considered impervious surface if they prevent infiltration. In addition, other areas determined by the Township to be impervious within the meaning of this definition will also be classified as impervious surfaces.

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 at www.dcnr.state.pa.us/forestry/plants/invasiveplants/index.htm.

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 (1) lot or two (2) or more contiguous lots, tracts or parcels of land for any purpose involving:

   a. A group of two (2) or more residential or nonresidential buildings, whether proposed initially

or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or

b. The division or allocation of land or space, whether initially or cumulatively, between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups or other features.

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 effluent[12]. 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.

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 Township'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]

Meadow – A limited, relatively flat area of low vegetation dominated by grasses, either in its natural state or used as pasture or for growing hay.

Modification – A process for alleviating specific requirements imposed by this Ordinance may occur in one (1) of three (3) forms, as follows:

A. **DEFERRAL** – An approval by the Board of Supervisors to delay the time frame in which to comply with one (1) or more regulations of this Chapter.

B. **MODIFICATION** – An approval by the Board of Supervisors to alter/adjust/modify the requirement as specified in this Ordinance in order to meet the intent of the requirement while accounting for pre-existing conditions or constraints.

C. **WAIVER** – The granting of full relief of compliance to a specific requirement or standard in this Ordinance, which in the opinion of the Board of Supervisors will not be detrimental to the general welfare, impair the intent of the regulations or conflict with the Comprehensive Plan.

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, Township, 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).

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

National Pollution Discharge Elimination System (NPDES) – A permit issued under 25 Pa. Code Ordinance 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.

Permit – Certificate issued to the applicant by the Township or Township designated agent acknowledging receipt and satisfactory review of the submitted application in compliance with the provisions of this Ordinance.

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 the Township.

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 (2) 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 Township determines that said activities may affect any existing watercourse's stormwater management facilities, or stormwater drainage patterns.

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 periodically[6].

Riparian Buffer – A BMP that is an area of permanent vegetation along a watercourse. Plantings to be determined based on site conditions (i.e. soils) and the types of plants and vegetation indigenous to the development area.

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 floodplain[6].

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 erosion[1].

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

Sediment Pollution – The placement, discharge or any other introduction of sediment into the waters of the Commonwealth 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 Commonwealth[1].

Seepage Pit/Seepage Trench – An area of excavated earth filled with clean 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 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 and maintenance of the SWM facilities in accordance with Article VI of this Ordinance.

Stormwater Management Plan (SWM Plan) – The Plan prepared by the Developer or his representative identifying regulated earth disturbance activities and indicating how stormwater runoff will be managed at a particular development site according to this Ordinance. Stormwater (SWM) Plans shall be classified and addressed as follows:

A. Small Project Plan – Regulated activities on existing lots of record that, measured on a cumulative basis from May 7, 2014, create additional impervious areas of 1,001 sq. ft. to 2,500 sq. ft. or involves an Earth Disturbance Activity such as removal of ground cover, grading, filling or excavation of an area less than 5,000 sq. ft. and do not involve the alteration of stormwater facilities or watercourses.

B. Minor Stormwater Management (SWM) Plan – The use of land for any purpose involving:
(1) Installation of new impervious or semi-impervious surface between 2,501 and 5,000 square feet; or
(2) Removal of ground cover, grading, filling or excavation between 5,000 square feet and an acre (43,560 square feet), except for the agricultural use of land when operated in accordance with a farm conservation plan approved by the Conservation District.

C. Major Stormwater Management (SWM) Plan – The use of land for any purpose involving:
(1) Installation of new impervious or semi-impervious surface that is either in excess of 5,001 square feet; or
(2) Diversion of piping of any natural or man-made watercourse; or
(3) Any use within the floodplain area; or
(4) Removal of ground cover, grading, filling or excavation in excess of one (1) acre, except for the agricultural use of land when operated in accordance with a farm conservation plan approved by the Conservation District.

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 devises, transfer of ownership, or building, or lot development: Provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

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 (representative of the project) 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.

Township – Conoy Township, Lancaster County, Pennsylvania.

USDA – United States Department of Agriculture or any agency successor thereto.

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 (2) 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 401 or the activity qualifies as a Small Project as provided in Section 402.

B. No regulated activities shall commence until the Township issues unconditional written approval of a stormwater plan in the form of a Stormwater Permit.

C. SWM Site Plans approved by Conoy Township, in accordance with Section 406, shall be on site throughout the duration of the regulated activity.

D. The Township 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 Township 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. The applicant shall initiate and facilitate all consultations between DEP and the Township.

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 E&S Manual, BMP Manual and Section 307 of this Ordinance.

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 Township 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 Conoy Township's Zoning Ordinance, which regulates construction and development within the areas of the 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 covered with gravel or crushed stone shall be assumed to be impervious if subject to vehicular/pedestrian traffic.

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 drainage ways 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 areas (Refer to Appendix D) shall include an evaluation of measures to minimize adverse effects and to certify the following:

1. No stormwater facilities shall be placed in, over or immediately adjacent to the following features:

a. Sinkholes.
b. Closed depressions.
c. Lineaments in carbonate areas.
d. Fracture traces.
e. Caverns.
f. Intermittent lakes.
g. Ephemeral streams.
h. Bedrock pinnacles (surface or subsurface).

2. Stormwater Management Facilities shall not be located closer than 100 feet from the rim of sinkholes or closed depressions, nor within 100 feet from disappearing streams; nor shall

these facilities be located closer than 50 feet from lineaments or fracture traces; nor shall these facilities be located close than 25 feet from surface or identified subsurface pinnacles unless lined with an impermeable liner or equivalent design as signed and sealed by a professional geologist..

3. Stormwater resulting from regulated activities shall not be discharged into sinkholes.

4. It shall be the Developer's responsibility to verify if the development is underlain by carbonate geology. The following certificate shall be included on all stormwater site plans and shall be signed and sealed by the Developer's Professional Geologist, "I, _____, certify that the proposed stormwater/BMP facility (circle one) is / is not underlain by carbonate geology."

5. Whenever a SWM Facility will be located in an area underlain by carbonate geology, a geological evaluation of the proposed location by a registered professional geologist shall be conducted to determine susceptibility to sinkhole formation. The evaluation may include the use of impermeable liners to reduce or eliminate the separation distances listed in Subsection J.1 and J.2.

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. Modifications will be considered if it is demonstrated to the satisfaction of the Township 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 305.

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. The list of Invasive Vegetation in Pennsylvania can be found on the DCNR website at the following address: www.dcnr.state.pa.us/forestry/plants/invasiveplants/index.htm

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 tress on the outside edge need to be effectively marked to promote protection of the trees during construction. No construction, storage of material, temporary parking, pollution of soil or re-grading 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, including but not limited to fencing to limit construction traffic over the infiltration area. 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 20 foot wide access easement shall be provided for all SWM 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. This shall be noted on the plan.

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. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may affect adversely the flow of stormwater within any portion of the easement. Also maintenance and mowing of vegetation within the easement shall be required.

S. The Township 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 surface infiltration or vegetative BMPs. Use of catchment facilities for the purpose of reuse is also permitted. When it is more advantageous to connect directly to streets or storm sewers, roof drain connections to streets or roadside ditches may be permitted on a case-by-case basis by the Township. It shall be the burden of the person seeking to make the connection to demonstrate to the Township that such connection is more advantageous and such connection shall not violate any state or federal statue, rule or regulation. Proposed storm sewer piping may connect to an existing storm sewer piping system provided the existing storm sewer is adequate.

U. Non-structural BMPs shall be utilized for all regulated activities unless proven to be impractical.

Section 302. 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, 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 Township 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. At least the first one (1) inch 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 504 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 based on a field tested infiltration rate, provided that none of this water will be discharged into Waters of this Commonwealth.

E. Any portion of the volume control storage that meets all of 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 303. 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 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.

B. Where the pre-development hydrograph cannot be matched, the post-development discharge rates shall not exceed the pre-development 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 pre-development 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 3-1 in Section 305.

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 304. 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[10], 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 drainage way, 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 evidence of a written certified letter of notification to 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 land disturbance plan submission.

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. The SWM and BMP facility site design shall prevent the mixing of off-site and on-site runoff, unless the upstream drainage area is less than 5% of the total on-site area.

G. 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.

H. 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*. The SWM report shall also provide calculations verifying the 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.

I. 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.

J. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent practicable.

K. Stormwater management facilities which involve a state highway shall be subject to the approval of PennDOT.

L. A concentrated discharge of stormwater to an adjacent property shall be within an existing watercourse or otherwise an easement shall be required.

Section 305. 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 Township. Table 3-1 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 3-1
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, Tc<60 min. or as approved by the Township.
EFH2	USDA NRCS	Applicable in rural and undeveloped areas subject to the Program Limits.
Other Methods	Varies	Other methodologies approved by the Township.

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" 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. (Refer to Appendix B-3)

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 (3) times the time of concentration (3xTc) and the descending leg shall have a length equal to seven (7) times the time of concentration (7xTc) 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 Plan for review and approval by the Township.

2. A sample worksheet for calculating Tc is provided in Appendix B-5. Times of concentration (Tc) shall be based on the following design parameters or as calculated by an approved hydraulic program:

   a. Sheet Flow: The maximum length for each reach of sheet or overland flow before shallow concentrated or open channel flow develops is 150 feet. Flow lengths greater than 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-4, or the Manning's kinematic solution shown in the Sheet Flow section of Worksheet No. 1 in Appendix B-5.

   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-6.

   c. Open Channel Flow: 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 Township 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 Township.

4. Peak rate control is not required for off-site runoff. Off-site runoff may be by-passed around the site provided all other discharge requirements are met. If off-site 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. Tc for channel and pipe flow shall be computed using Manning's Equation. Supporting documentation and calculations must be submitted for review and approval.

Section 306. Riparian Corridors

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

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

C. Minimum Management Requirements for Riparian Corridors.

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

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

D. The Riparian Corridor Easement shall be enforceable by the Township and shall be recorded in the Lancaster County Recorder of Deeds Office, so that it shall run with the land and shall limit the use of the property located therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area as required by Zoning, unless otherwise specified in Conoy Township's Zoning Ordinance.

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

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

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

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

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

Section 307. Stormwater Management Facility Design Standards

A. General.

1. For all above ground storage facilities the bottom of the excavated basin shall be a minimum of two (2) feet or 24 inches above the seasonal high water table or bedrock, or other limiting zone. Soil sampling, test pits or auger testing must be completed in the proposed location of the facilities in support of the design.

2. Above ground storage facilities without restricted access shall have impoundment areas with side slopes no greater than five horizontal to one vertical (5:1). Basins with side slopes steeper than five horizontal to one vertical (5:1) shall be protected by fencing that will discourage access.

3. Above ground storage facilities with a facility depth greater than eight (8) feet shall not be permitted in residential areas.

4. Above ground storage facilities with a facility depth greater than 15 feet require a dam permit from DEP.

5. All pipe collars, when required, shall be designed in accordance with Chapter 7 of the E&S Manual. The material shall consist of concrete or otherwise non-degradable material approved by the Township Engineer, around the outfall barrel and shall be watertight.

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

7. 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 (5) passes of the compaction equipment over the entire surface of each lift is required. Embankment compaction to visible non-movement is also required.

8. 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.

9. When required, dewatering shall be provided through the use of underdrain, surface device or alternate approved by the Township 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.

10. When required, pretreatment elements shall consist of forebays, filter strips or alternate approved by the Township Engineer, to keep silt to a smaller portion of the facility for ease of maintenance.

11. 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.

12. For facilities with a depth of two (2) feet or greater, a type D-W endwall or riser box outlet structure shall be provided.

13. For facilities with a depth less than two (2) feet, no outlet structure is required.

14. All discharge control devices with appurtenances shall be made of reinforced concrete and stainless steel. Bolts/fasteners shall be stainless steel.

15. The spillway shall be designed to provide a non-erosive, stable condition when the project is completed.

16. The spillway shall be designed to convey the 100-year post-development peak inflow when required.

17. Freeboard shall be measured from the top of the water surface elevation in the spillway to the top of the berm for emergency use.

18. The Township may require a breach analysis for basins 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 Township.

19. Embankment construction.

    a. 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.

    b. 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. The contractor shall provide the soils test results to the Township.

    c. 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.

    d. 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.

    e. 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.

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

g. The core shall be constructed concurrently with the outer shell of the embankment.

h. The trench shall be dewatered during backfilling and compaction operations.

B. 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. Refer to Table 3-2 – Above Ground Storage Facility Design Criteria.

a. Facility with facility depth of less than two (2) feet.
   1) The minimum top of embankment width shall be two (2) feet.
   2) Maximum interior side slope 2:1.
   3) Maximum exterior side slope 2:1.
   4) Minimum outlet pipe diameter shall be six (6) inches.
   5) Outlet pipe material: PVC, HDPE or RCP.
   6) Anti-clogging device is required in the outlet structure.
   7) The spillway freeboard shall be a minimum three (3) inches.
   8) The spillway may be used to route the 100-year storm.

b. Facility with depth of two (2) to eight (8) feet.
   1) Embankment minimum top width of five (5) feet.
   2) Maximum interior side slope 5:1.
   3) Maximum exterior side slope 3:1.
   4) A key trench and anti-seep collar shall be provided.
   5) Compaction density testing of the embankment is required. Test logs shall be provided to the Township as part of the inspection requirements.
   6) A dewatering feature is required.
   7) Pretreatment filtering of runoff prior to entering the facility is required.
   8) Minimum outlet pipe diameter of 12 inches.
   9) Outlet pipe material: HDPE or RCP.
   10) An anti-clogging device is required in the outlet structure.
   11) The outlet structure is required to have an antivortex design.
   12) Watertight joints shall be provided.
   13) The spillway freeboard shall be a minimum six (6) inches.
   14) The minimum spillway width is 10 feet and the maximum spillway width is 50 feet.
   15) The downstream channel into which the spillway discharges shall be checked for adequate capacity and stability.

16) The spillway shall not be considered to function as part of the primary outlet structure and shall be only for emergency situations.

c. Facility with depth greater than eight (8) feet.
   1) Embankment minimum top width of eight (8) feet.
   2) Maximum interior side slope 5:1.
   3) Maximum exterior side slope 3:1.
   4) A key trench and anti-seep collar shall be provided.
   5) Compaction density testing of the embankment is required. Test logs shall be provided to the Township as part of the inspection requirements.
   6) A dewatering feature for the facility is required.
   7) Pretreatment filtering of runoff prior to entering the facility is required.
   8) The minimum outlet pipe diameter is 15 inches.
   9) Outlet pipe material shall be RCP.
   10) An anti-clogging device is required in the outlet structure.
   11) The outlet structure is required to have an antivortex design is required.
   12) Watertight joints shall be provided.
   13) The spillway freeboard shall be a minimum 12 inches.
   14) The minimum spillway width is 20 feet, the maximum spillway width is 50 feet.
   15) The downstream channel into which the spillway discharges shall be checked for adequate capacity and stability.
   16) The spillway shall not be considered to function as part of the primary outlet structure and shall be only for emergency situations.

d. General Requirements for above ground storage facilities:
   1) Where practical, the spillway shall be constructed in undisturbed ground.
   2) The effect on the downstream areas if the facility embankment fails shall be considered in the design of all facilities. Where possible the facility shall be designed to minimize the potential damage caused by such failure of the embankment.
   3) For all above ground facilities that do not rely on infiltration to dewater the runoff, a flow path length to width ratio of 2:1 shall be provided to maximize the treatment time between the inflow point and the outlet structure.

Table 3-2. Above Ground Storage Facility Design Criteria.

Above-ground storage facility design criteria			
	Facility Depth		
	Less than 2 feet	**2 feet to 8 feet**	**Greater than 8 feet**
Embankment Geometry			
Top width (minimum)	2 feet	5 feet	8 feet
Interior side slope (maximum)	2 : 1	5 : 1	5 : 1
Exterior side slope (maximum)	2 : 1	3 : 1	3 : 1
Embankment construction			
Key trench	Not required	Required	Required
Pipe collar	Not required	Required	Required
Compaction density	Not required	Required	Required
Internal Construction			
Dewatering feature	N/A	Required	Required
Pretreatment elements	Not required	Required	Required
Outlet Structure			
Pipe size (minimum)	6 inches	12 inches	15 inches
Pipe material	HDPE, PVC, RCP	HDPE, RCP	RCP
Anticlogging devices	Required	Required	Required
Antivortex design	Not required	Required	Required
Watertight joints in piping	No	Yes	Yes
Spillway Requirements			
Spillway freeboard (minimum)	3 inches	6 inches	12 inches
Width (minimum)	Not required	10 feet	20 feet
Width (maximum)	Not required	50 feet	50 feet
Spillway channel design	Not required	Required	Required
Routing of 100 year storm	Permitted	Not Permitted	Not Permitted

C. Subsurface storage facilities.

Subsurface storage facilities consist of all SWM 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 SWM Facilities designed for conveyance.

1. General

   a. The stone used for infiltration beds shall be clean washed, uniformly graded coarse aggregate (AASHTO No. 3 or equivalent approved by the Township). The void ratio for design shall be assumed to be 0.4.

   b. 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 six (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.

   c. 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.

   d. When located under pavement, the top of the subsurface facility, facility piping or conveyance shall be a minimum of six (6) inches below the bottom of pavement subbase. 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.

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

2. Design Criteria. Refer to Table 3-3 – Subsurface Storage Facility Design Criteria.

   a. Infiltration and Storage Facility:
      1) Maximum Depth from Surface: Two (2) feet less than limiting zone
      2) Loading Ratio: Per December 2006 BMP Manual, as amended. The maximum impervious loading ratio of 5:1 relating impervious drainage area to infiltration area. The maximum total loading ratio of 8:1 relating to total drainage area to infiltration area. In areas of Karst Geology, the maximum impervious drainage area to infiltration area is 3:1.
      3) Minimum distribution pipe size shall be four (4) inches. Distribution system piping may be PVC or HDPE.
      4) Pretreatment of runoff to the facility is required to provide a method to eliminate solids, sediment, and other debris from entering the subsurface facility.
      5) Observation/access ports shall be provided in the facility. For facilities with the bottom less than 12 feet below the average grade of the ground surface, a clean-out shall be an acceptable observation port. For facilities with the bottom 12 feet or more below the average grade of the ground surface, a manhole or other means

acceptable to the Township shall be provided for access to and monitoring of the facility. The number of access points shall be sufficient to flush or otherwise clean out the system.

6) 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.

b. Storage without Infiltration Facility:

1) Minimum distribution pipe size shall be four (4) inches. Distribution system piping may be PVC, HDPE or RCP.
2) Pretreatment of runoff to the facility is required to provide a method to eliminate solids, sediment, and other debris from entering the subsurface facility.
3) Observation/access ports shall be provided in the facility. For facilities with the bottom less than 12 feet below the average grade of the ground surface, a clean-out shall be an acceptable observation port. For facilities with the bottom 12 feet or more below the average grade of the ground surface, a manhole or other means acceptable to the Township shall be provided for access to and monitoring of the facility. The number of access points shall be sufficient to flush or otherwise clean out the system.

Table 3-3. Subsurface Storage Facility Design Criteria:

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

*Unless otherwise determined by professional geologic evaluation.

D. Conveyance Facilities.

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

1. General.

   a. 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.

   b. Conveyance pipes, culverts, manholes, inlets and endwalls which are otherwise subject to vehicular loading shall be designed for the HS-25 loading condition.

   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 six (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.

   d. 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.

   e. Access/maintenance ports. An access/maintenance port is required it may either be an inlet or manhole.

   f. Watertight joints shall be provided where pipe sections are joined, except for perforated pipe installed as pavement base drain.

   g. Elliptical pipe of an equivalent cross-sectional area may be substituted in lieu of circular pipe where cover or utility conflict conditions exist.

   h. The roughness coefficient (Manning "n" values) used for conveyance pipe capacity calculations should be determined in accordance with the manufacturer's specifications or with PennDOT Publication 584, PennDOT Drainage Manual (Appendix B-7).

   i. All pipes must enter inlets completely through one of the sides. No corner entry of pipes is permitted.

   j. Within the public street right-of-way, the gutter spread based on the 25-year storm shall be no greater than one half (1/2) of the travel lane and have a maximum depth of three (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 (7) feet wide if parking is permitted on the street.

   k. Flow depth within intersections. Within intersections of streets, the maximum depth of flow shall be one and one-half (1 1/2) inches based on the 25-year storm.

l. Inlets in streets shall be located along the curb line and have PennDOT Type "C" top units. The hood shall be aligned with the adjacent curb height accounting for the required two (2) inch inlet sump.

m. All inlets placed in paved areas shall have heavy duty bicycle-safe grating consistent with PennDOT Publication 72M. A note to this effect shall be added to the SWM Site Plan or inlet details therein.

n. Inlets, junction boxes or manholes greater than five (5) feet in depth shall be detailed on the SWM Site Plan.

o. A swale shall be considered as any man-made ditch designed to convey stormwater directly to another SWM Facility or surface waters.

p. Inlets within swales shall have PennDOT Type "M" top units or equivalent approved by the Township Engineer.

q. 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 Township Engineer.
        (d) 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 Township Engineer.

r. Trash racks shall be provided on all endwalls and storm sewer discharge points for pipe diameters of 18 inches of greater. The proposed trash rack shall be subject to review and approval by the Township. Such protection devices shall be designed to be removable for cleaning.

s. Headwalls and endwalls shall be constructed of concrete.

t. Flared end sections shall be of the same material as the connecting pipe and be designed for the size of the connecting pipe.

u. Level spreaders:
    1) Shall discharge at existing grade onto undisturbed vegetation.
    2) Discharge at a depth not exceeding 3.0 inches for a 50-year, 24-hour design storm.

v. Energy dissipaters shall be designed in accordance with the requirements in the E&S Manual.

w. 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.

x. 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 pending DEP approval of the necessary permit(s).

2. Design criteria. Refer to Table 3-4 – Conveyance Facility Design Criteria.

a. Within public street right-of-way.

1) Conveyance system material shall consist of HDPE or RCP pipe.
2) The minimum pipe slope shall be 0.5%.
3) A minimum one (1) foot of cover to the stone subgrade shall be provided over the conveyance pipes in paved or vehicular areas; in grassed areas a minimum pipe cover of one (1) foot shall be provided.
4) The minimum pipe diameter shall be 15 inches.
5) The minimum street crossing angle for the conveyance system shall be 75° to 90°. The street crossing angle shall be measured between the pipe centerline and street centerline.
6) Maximum spacing between access or maintenance ports shall be 400 feet.
7) Inlets and manholes shall be concrete.
8) Inlets shall be depressed a minimum of two (2) inches below the surface grade to provide positive flow.
9) Swales shall be provided with a minimum freeboard of six (6) inches.
10) The maximum swale velocity shall be determined based on the stability of the channel.
11) The minimum allowable swale slope shall be 1 %.
12) Swale side slopes in residential and non-residential areas shall be a maximum of 4:1.
13) The bottom width to flow depth ratio in any swale shall be 12:1.
14) Pipe entrances/discharges in public street right-of-ways shall be provided with a headwall/endwall treatment or equivalent as approved by the Township.
15) The conveyance system discharge locations shall be provided with an energy dissipater designed to handle the anticipated flow conditions. The supporting design calculations shall be provided in the stormwater management report.

b. Outside public street right-of-way: vehicular loading

1) Conveyance system material shall consist of PVC, HDPE or RCP pipe.
2) The minimum pipe slope shall be 0.5%.
3) A minimum one (1) foot of cover to the stone subgrade shall be provided over the conveyance pipes.
4) The minimum pipe diameter shall be 15 inches.
5) The maximum spacing between access or maintenance ports shall be 400 feet.
6) Inlets and manholes shall be constructed of concrete.
7) Inlets shall be depressed a minimum of two (2) inches below the surface grade to provide positive flow.

c. Outside public street right-of-way: non-vehicular loading

1) Conveyance system material shall consist of PVC, HDPE or RCP pipe.
2) The minimum pipe slope shall be 0.5%.
3) A minimum one (1) foot of cover to the surface shall be provided over the conveyance pipes.
4) The minimum pipe diameter shall be eight (8) inches.
5) Maximum spacing between access or maintenance ports shall be 400 feet.
6) Manholes shall be constructed of concrete.
7) Inlets shall be depressed a minimum of one (1) inches below the surface grade to provide positive flow.
8) Swales shall be provided with a minimum freeboard of six (6) inches.
9) The maximum swale velocity shall be determined based on the stability of the channel.
10) The minimum swale slope (longitudinal) shall be 1 %.
11) Swale side slopes in residential areas shall be a maximum of 4:1, and a maximum of 3:1 in non-residential areas.
12) The bottom width to flow depth ratio in swales shall be 12:1.
13) Pipe entrances/discharges in public street right-of-ways shall be provided with a headwall/endwall or flared end section treatment.
14) The conveyance system discharge locations shall be provided with an energy dissipater designed to handle the anticipated flow conditions.

Table 3-4. Conveyance facility design criteria:

Conveyance facility design criteria			
Location	**Within public street right-of-way**	**Outside public street right-of-way**	
Loading	**All**	**Vehicular loading**	**Non-vehicular Loading**
Pipe design			
Material	HDPE, RCP	PVC, HDPE, RCP	PVC, HDPE, RCP
Slope (minimum)	0.5%	0.5%	0.5%
Cover	1 foot to stone subgrade	1 foot to stone subgrade	1 foot to surface
Diameter (minimum)	15 inches	15 inches	8 inches
Street crossing angle	75° to 90°	N/A	N/A
Access/maintenance port frequency (maximum)	400 feet	400 feet	400 feet
Inlet design			
Material	Concrete	Concrete	N/A
Grate depression	2 inches	2 inches	1 inch minimum
Manhole design			
Material	Concrete	Concrete	Concrete
Swale design			
Freeboard (minimum)	6 inches	N/A	6 inches
Velocity (maximum)	Stability check	N/A	Stability check
Slope (minimum)	1%	N/A	1%
Side slopes (residential area)	4 : 1 max	N/A	4 : 1 max
Side slopes (non-residential area)	4 : 1 max	N/A	3 : 1 max
Bottom width to flow depth ratio	12 : 1	N/A	12 : 1
Outlet design			
End treatment	Headwall/endwall	N/A	Headwall/ endwall or flared end section
Energy dissipater	Required	N/A	Required

E. Capture and Reuse Facilities.

1. Design Requirements:

a. Calculation of water usage to insure adequate capacity is available for storage of follow-up rainfall events. The property will draw from the cistern on a daily basis; the cistern

shall be dewatered in 72 hours to maintain the capacity of the storage facility. This shall be noted on the plan and maintenance agreement.

b. Verification of conveyance pipe capacity in the roof leader design shall be provided in the stormwater management report.

c. The stormwater runoff storage container(s) shall be protected from direct sunlight to minimize algae growth

d. An alternative supply of water shall be available for the property use during dry periods if the reuse facility is used to supplying the dwelling with water.

e. Stormwater runoff storage containers should be watertight with smooth interior surfaces.

f. The cover (or lid) should have a tight fit to keep out surface water, children, animals, dust and light. The cover or lid opening should be a minimum 24 inches in order to access the facility for maintenance and repair.

g. Cisterns shall be designed to store the runoff volume of a 100-year storm event for the area served by the stormwater runoff storage facility.

h. Every stormwater runoff storage facility (cistern, rain barrel, etc.) shall be provided with an overflow or an emergency outlet. The overflow shall be designed to discharge away from buildings and other structures and towards existing natural or manmade channels, stormwater facilities or vegetated slopes.

i. The plans proposing a water storage facility shall include the following:

   i. All calculations and assumptions used in the design.
   ii. Sufficient detail showing the proposed method of dewatering (i.e. pump).
   iii. Structural details.

j. Maintenance responsibilities for water storage and reuse facilities shall include flushing the storage units to remove any accumulated sediment, the inside surfaces shall be brushed and thoroughly disinfected.

k. The stormwater runoff collected shall not be allowed to freeze in the devices.

Section 308. Erosion and Sedimentation Control.

A. The Applicant must comply with the Erosion Control Rules and Regulations of Chapter 102.

B. The design plan and construction schedule shall incorporate measures to prevent soil erosion and sedimentation.

C. The following principles shall be applied to the design plan and construction schedule to minimize soil erosion and sedimentation:

1. Erosion and sedimentation controls designed in conformance with the E&S Manual shall be implemented during the construction and post-construction periods to prevent soil erosion, sedimentation and other pollutants from entering streams, lakes, etc.

2. Natural vegetation shall be retained and protected on all undisturbed areas.

3. The extent of the disturbed area and the duration of its exposure shall be kept to a minimum. Stockpiles to remain in place longer than 20 days shall be seeded.

4. It shall be the Applicant's responsibility during construction to prevent soil pollution to neighboring property, public streets, and streams. Soil dropped from construction equipment and sedimentation shall be immediately removed from roads, public and private property, and streams.

5. Drainage provisions shall accommodate the stormwater runoff both during and after construction.

6. Soil erosion and sedimentation facilities shall be installed prior to any on-site earth disturbances.

D. The Developer shall maintain a copy of the erosion and sedimentation control plan and notes on site during construction.

ARTICLE IV
PLAN PROCESSING PROCEDURES

Section 401. 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. An Applicant proposing the cumulative installation of 1,000 square feet or less of Impervious Surface coverage may be exempt from design, plan submittal, and processing requirements of Articles III, IV and V of this Ordinance. No person or activity is exempted from compliance with Section 604 and Articles VII, VIII and IX of this Ordinance. The Applicant shall comply with the erosion and sediment control requirements of 25 Pa Code, Chapter 102. Exemptions do not relieve the applicant of the responsibility to secure the required permits or approvals for activities regulated by any other code, law, regulation, or ordinance. Exemption shall not relieve an applicant from implementing such measures as necessary to meet compliance with any NPDES Permit requirements. Any exemption based on false, misleading, or erroneous information provided by an applicant is void without the necessity of any proceeding for revocation. Any work undertaken or use established pursuant to such permit or other authorization is unlawful. An exemption shall not relieve an applicant from complying with the lot coverage amounts per lot as regulated by the Zoning Ordinance, as amended.

   Any Applicant desiring exemption form design, plan submission, and plan processing requirements shall complete an application for exemption in the form set forth in Appendix A-1 and pay any applicable filing fee.

2. Agricultural activity (see definitions) provided the activities are performed according to the requirements of Chapter 102.

3. Conservation Practices being installed as part of the implementation of a Conservation Plan written by an NRCS certified planner.

4. Domestic landscape and/or vegetable gardening.

5. Maintenance of utility line (linear).

B. The Stormwater Exemption Application (Refer to Appendix A-1) shall be completed and two (2) copies shall be submitted to the Township. Upon receipt of a written approval from the Township the Applicant may proceed with the proposed improvements.

C. The Township may deny or revoke any exemption pursuant to this Section at any time for any project that the Township believes may pose a threat to public health, safety, property or the environment.

Section 402. Small Projects

A. Anyone proposing a Small Project shall submit two (2) copies of the Small Project Application to the Township.

B. A complete Small Project Design/Application shall include:

1. Small Project Application Form (Appendix A-2).
2. Small Project Sketch Plan including the following (Appendix A-5.):
   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.

3. Filing fee (in accordance with the Township's current fee schedule).

C. The Small Project Application shall be submitted in a format that is clear, concise, legible, neat and well organized.

D. The Small Project Application shall be reviewed by Township staff and does not require processing through the Planning Commission or Board of Supervisors. Upon receipt of a written approval and from the Township the Applicant may proceed with the proposed improvements. The Township's approval will include a copy of the application packet to be retained by the applicant or homeowner for use during construction of the proposed facilities.

Section 403. Pre-Application Meeting

Applicants are encouraged to schedule a pre-application meeting to review the overall stormwater management concept with Township Staff/Engineer. The pre-application meeting is not mandatory and shall not constitute formal filing of a plan with the Township. Topics discussed may include the following:

A. The Developer shall provide available geological maps, plans and other available data.

B. Findings of the site analysis including identification of any environmentally sensitive areas, wellhead protection areas, riparian corridors, hydrologic soil groups, existing natural drainage ways, karst features, areas conducive to infiltration to be utilized for volume control, etc.

C. Results of infiltration tests.

D. Applicable Township Subdivision and Land Development and/or Zoning Ordinance provisions.

E. The conceptual project layout, including proposed structural and non-structural BMPs.

F. The applicant shall reimburse the Township for any Engineer or Solicitor invoices associated with a pre-application meeting.

Section 404. Minor Stormwater Management Plan Submission

A. When a Minor SWM Plan is required, the Applicant shall submit the following submission copies, one (1) to the Township, one (1) to the Township Engineer and one (1) to the Township Solicitor:
   1. One (1) copy of the SWM Plan prepared in accordance with the requirements of Article V of this Ordinance.
   2. One (1) copy of all supplemental data including Minor Stormwater Management Application (Appendix A-3).
   3. A filing fee (in accordance with the Township's current fee schedule), shall be provided to the Township.

B. The Minor SWM Plan shall be submitted in a format that is clear, concise, legible, neat and well organized.

C. The applicant is responsible for submitting plan to any other agencies when required, including, but not limited to 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.

D. Incomplete submissions as determined by the Township Staff or its designee shall be returned to the Applicant within 15 business 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 Township's decision not to accept a particular application in accordance with Section 1004 of this Ordinance.

E. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the Township may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Township may accept submission of revisions.

F. The Minor Stormwater Management Plans shall be reviewed by Township staff or its designee and do not require processing through the Planning Commission or Board of Supervisors. Upon

receipt of a written approval from the Township the Applicant may proceed with the proposed improvements.

Section 405. Major Stormwater Management Site Plan Submission

A. When a Major SWM Site Plan is required, the Applicant shall submit the following submission copies, one (1) to the Township, one (1) to the Township Engineer, and one (1) to the Township Solicitor:

   1. One (1) copy of the SWM Site Plan prepared in accordance with the requirements of Article V of this Ordinance.

   2. One (1) copy of all supplemental data including Major Stormwater Management Plan application (Appendix A-4.).

   3. A filing fee (in accordance with the Township's current fee schedule) shall be provided to the Township.

B. The SWM Site Plan shall be submitted in a format that is clear, concise, legible, neat and well organized.

C. 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.

D. Incomplete submissions as determined by the governing body or its designee shall be returned to the Applicant within 15 business 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 Township's decision not to accept a particular application in accordance with Section 1004 of this Ordinance.

E. At its sole discretion and in accordance with this Article, when a SWM Site Plan is found to be deficient, the Township may either disapprove the submission and require a resubmission, or in the case of minor deficiencies, the Township may accept submission of revisions.

F. The Major Stormwater Management plan shall be processed through the Township Planning Commission and Board of Supervisors.

Section 406. Township Review

A. An application for a Stormwater Management Permit may be submitted to the Township on any business day. In the event that a question arises as to whether a proposed activity requires a

Stormwater Management Permit, the landowner or developer shall furnish the Township with such information as the Township's Engineer may deem necessary to determine whether the proposed activity constitutes a land disturbance activity. A decision by the authorized Township representative may be appealed to the Board of Supervisors in accordance with Section 1004.

B. When the regulated activity constitutes a Subdivision or Land Development, the SWM Site Plan and Subdivision/Land Development Plan shall be processed concurrently according to the plan processing procedure outlined in the applicable Subdivision and Land Development Ordinance.

C. When the regulated activity constitutes a Small Project, the Township shall review and take action on the Small Project Application within 30 business days of filing.

D. When the regulated activity does not constitute an Exemption or Small Project the Township Engineer shall review the SWM Site Plan for conformance with the provisions of this Ordinance.

E. Following receipt of the Township Engineer's report and within 90 days following the date of the first regular meeting of the Board of Supervisors after the date the application is filed, the Board of Supervisors will schedule the SWM Site Plan Application for action at a regularly scheduled Public Meeting.

F. Within 15 days of the meeting at which the SWM Site Plan Application is acted upon by the Board of Supervisors, written notice of the Board of Supervisors' action shall be sent to the following individuals:

1. Applicant.
2. Firm that prepared the Plan.
3. Landowner or his agent.

G. If the Township disapproves the SWM Site Plan, the Township will state the reasons for the disapproval in writing. The Township 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.

H. Upon unconditional plan approval, the Township or its designee will complete and issue the Stormwater Management Permit allowing construction of the project to commence.

Section 407. Modification Procedures

A. The provisions of this Ordinance are intended as minimum standards for the protection of the public health, safety and welfare. The Board of Supervisors may grant a modification from the literal compliance with mandatory provisions of this Ordinance if the applicant can demonstrate either:

1. That compliance will cause undue hardship as it applies to a particular property;

And

2. That an alternative proposal will allow for equal or better results.

B. The approval of the modification shall not have the effect of making null and void the intent and purpose of this Ordinance. In the approval of a modification, the Board of Supervisors may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this Ordinance.

C. All requests for modifications shall be processed in accordance with the following:

1. A request for a modification shall be submitted to the Township. The request shall be made in writing and identify:
   (a) The specific section of this Ordinance or decision which is requested for modification;
   (b) The proposed alternative to the requirement, when applicable; and
   (c) Justifications for an approval of the modification.

2. The Township shall:
   (a) Schedule the request for consideration by the Board of Supervisors at a public meeting within 45 days of receipt; and
   (b) Provide adequate notice to the Applicant and any other involved parties of the meeting at which consideration of the request is scheduled.

3. The Board of Supervisors shall, following consideration of the request, take such public action as it shall deem advisable and notify all parties involved of the action. Such notice shall cite the findings and reasons for the deposition of the modification.

4. Any application requesting a modification under this section shall be accompanied by adequate supporting engineering data and plans and shall be subject to review and recommendations of the Township Engineer prior to any action by the Township.

D. Waivers or modifications of Section 302 relating to water quality and volume control, require processing and approval by the regional office of PADEP. The Applicant shall initiate and facilitate all consultations between DEP and the Township.

Section 408. Revision of Plans

A. Revisions to a SWM Site Plan after submission, but before Township action, shall require a re-submission of the modified SWM Site Plan consistent with Section 404 and 405 of this Ordinance and be subject to review as specified in Section 406 of this Ordinance.

B. For the purposes of review deadlines, each resubmission required under Section 408.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 Township, accompanied by the applicable review fee.

Section 409. Authorization to Construct and Term of Validity

Approval of a SWM Site Plan shall be valid for a period of one (1) year unless extended by the Township. Any time extensions shall not exceed four (4) additional one (1) year extensions for a total of five (5) years. If a Certificate of Completion as required by Section 413 of this Ordinance has not been submitted within the specified time period, then the Township may consider the SWM Site Plan disapproved and may revoke any and all permits issued by the Township. SWM Site Plans that are considered disapproved by the Township may be resubmitted in accordance with Article IV of this Ordinance.

Section 410. Financial Security

A. A financial security (bond, restricted account or letter of credit) for stormwater related improvements shall be supplied by the Developer in conjunction with the subdivision/land development approval, or in conjunction with the SWM Site Plan approval if no subdivision/land development plan is required. The Township shall, prior to issuing a Stormwater Management Permit, require financial security to be posted.

B. The Applicant shall provide financial security to the Township 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 Board of Supervisors 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 Board of Supervisors, and the Board of Supervisors shall have 45 days from receipt of such request within which to allow the Township Engineer to certify, in writing, to the Board of Supervisors 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 Board of Supervisors shall authorize release by the bonding company or lending institution of an amount as estimated by the Township Engineer fairly representing the value of the SWM Facilities completed. The Board of Supervisors 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 Board of Supervisors 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 Township 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.

Section 411. Small Project Financial Guarantee

All small projects upon approval of the design application and prior to the Township's issuance of the Stormwater Management Permit, the applicant shall provide the required Small Project Financial Guarantee amount to the Township. The financial guarantee will be released to the applicant upon satisfactory completion of the proposed improvements.

Section 412. Authorization to Construct and Term of Validity

Approval of a SWM Site Plan shall be valid for a period of one (1) year unless extended by the Township. Any time extensions shall not exceed four (4) additional for a total of five (5) years. This time period shall commence on the date that the Township approves the SWM Site Plan. If a Certificate of Completion as required by Section 413 has not been submitted within the specified time period, then the Township may consider the SWM Site Plan disapproved and may revoke any and all permits issued by the Township. SWM Site Plans that are considered disapproved by the Township may be resubmitted in accordance with Article IV of this Ordinance.

Section 413. Certificate of Completion

A. At the completion of the project, and as prerequisite for the release of the Financial Security, the Applicant shall provide the Certification of Completion (Appendix A-8) 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 Township shall conduct a final inspection to certify compliance with this Ordinance.

Section 414. Plan Recordation

A. Upon completion of the plan improvements and prior to the release of financial security, the applicant shall submit an As-Built Plan to the Township. The As-Built Plan must show the final design specifications for all SWM Facilities, grading and site improvements and be sealed by a registered professional engineer or surveyor. As-Built Plans shall include all information identified on the Checklist included in Appendix A-7.

B. Review by Township Engineer.

(1) The As-Built Plan shall be reviewed by the Township Engineer to verify the plan includes all of the SWM Facilities on the subject property and the facilities are shown at the correct location.

(2) The Township Engineer shall either approve the As-Built Plan or identify corrections required.

(3) If the Township Engineer identifies corrections required to the As-Built Plan, the Applicant shall submit a revised As-Built Plan to the Township addressing the corrections.

C. Following approval of the As-Built Plan by the Township Engineer, the Applicant shall submit the SWM Site Plan for recordation in the Office of the Recorder of Deeds. Recording fees will be the responsibility of the Applicant/Developer.

D. Upon completion of recording, a digital copy of the As-Built Plan, the SWM Site Plan signed and sealed with the recording information and calculations, waiver requests and other documents shall be submitted to the Township along with one (1) paper copy of the recorded plan.

(1) The digital inventory shall be in an electronic format acceptable to the Township Engineer.

(2) All coordinates as depicted on the plan shall be based on the PA South Zone State Plan Coordinate System (NAD83 for horizontal and NAVD88 for vertical).

ARTICLE V
INFORMATION TO BE INCLUDED ON OR WITH STORMWATER MANAGEMENT SITE PLANS

Section 501. 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 and design calculations shall be signed and sealed by the qualified person responsible for the design (Appendix A-6).

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 applicable Subdivision and Land Development Ordinance.

Section 502. Minor Stormwater Management Plan

A. Drafting Standards.

1. The Plan should be clearly and legibly drawn.

2. 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.

3. Each sheet shall be numbered to show the relationship to the total number of sheets in the Plan (e.g. Sheet 1 of 5). The cover page shall include a Sheet Index indicating which plan sheets are to be recorded.

4. 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.

5. 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.

6. The total Development Site boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

7. The Proposed name or identifying title of the plan.

B. SWM Site Plan Information.

The following items shall be included in the SWM Plan:

1. The date of the SWM Plan and all revision dates, graphic scale, written scale and North arrow.

2. 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.

3. The file or project number assigned by the firm that prepared the Plan.

4. 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 Township, shall be included on a plan sheet intended for recording.

5. For SWM Facilities located off-site,

    a. 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.
    b. All off-site SWM Facilities shall meet the performance standards specified in this Ordinance.

6. A note informing the Owner that the Township shall have the right of entry for the purposes of inspecting all stormwater conveyance, treatment or storage facilities.

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

8. A note on the plan indicating any area that is not to be offered for dedication along with the statement that the Township is not responsible for maintenance of any area not dedicated to and accepted for public use, and that no alteration to swales, basins or placement of structures shall be permitted within easements.

9. Certificate, signed and sealed by a qualified professional registered in the Commonwealth of Pennsylvania and qualified to perform such duties. See form of certificate in Appendix A-6.

10. The names of all Owners of all immediately adjacent lands, including those properties located across street rights-of-way.

11. Existing Features.

    a. In areas of disturbance, contours at intervals of one (1) or two (2) feet. In areas of steep slopes (greater than 15%) and areas undisturbed, five (5) foot contour intervals may be used. In areas of very flat slopes, one (1) foot contours are required.
    b. The locations of all existing utilities (including on lot disposal systems and wells), sanitary sewers, and water lines and associated easements within 100 feet of the Development site boundary.
    c. 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 six (6) inch diameter at breast height, woodlands, other environmentally sensitive areas and the total extent of the upstream area draining through the Development Site within 100 feet of the Development site boundary.
    d. An overlay showing soil names and boundaries.
    e. All existing man-made features within 100 feet of the Development Site boundary.

12. Proposed Features.

    a. 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%) and areas undisturbed, five (5) foot contour intervals may be used.
    b. Proposed structures, roads, paved areas, buildings and other impervious and semi-impervious areas
    c. The location of any proposed on-lot disposal systems, replacement drainfield easements and water supply wells.
    d. A note indicating existing and proposed land use(s).
    e. Plan and profile drawings of all proposed SWM Facilities, including BMPs, drainage structures, pipes, open channels and swales. This information shall be of the quality required for construction of all facilities.
    f. Where pervious pavement is to be installed, pavement material and construction specifications shall be included.
    g. The location of all existing and proposed easements, including drainage easements, access easements and riparian corridor easements.
    h. A planting plan shall be provided for all vegetated BMPs in accordance with Section 301.N.

13. The location of all E&S Control Facilities and Sequence of Construction.

14. The plan shall include a note on the cover page identifying the number of square feet of impervious coverage for which the stormwater management facilities have been designed to accommodate.

C. Additional Information.

1. General description of the Development Site, including a description of existing natural and hydrologic features and any environmentally sensitive areas.

2. 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 SWM Facilities are meant to function with each other to manage stormwater runoff.

3. The effect of the project (in terms of runoff volumes, water quality and peak flows) on adjacent properties and on any existing Township SWM Facilities that may receive runoff from the Development Site.

4. Complete hydrologic, hydraulic and structural computations for all SWM facilities.

5. Expected project time schedule.

Section 503. Major Stormwater Management Plan

A. Drafting Standards.

1. The Plan should be clearly and legibly drawn.

2. 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.

3. Each sheet shall be numbered to show the relationship to the total number of sheets in the Plan (e.g. Sheet 1 of 5).

4. 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.

5. SWM Plans shall be prepared in a form that meets the requirements for recording for the Office of the Recorder of Deeds of Lancaster County.

6. The total Development Site boundary and size with distances marked to the nearest foot and bearings to the nearest degree.

7. The proposed name or identifying title of the plan.

8. The plan sheets or sheet index shall clearly indicate which sheets are to be recorded as part of the project.

B. SWM Site Plan Information.

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

1. The date of the SWM Site Plan and latest revision, graphic scale, written scale and North arrow.

2. 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.

3. The file or project number assigned by the firm that prepared the Plan.

4. 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 Township, shall be included on a plan sheet intended for recording.

5. For SWM Facilities located off-site:

    a. 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.
    b. All off-site SWM Facilities shall meet the performance standards specified in this Ordinance.

6. A note informing the Owner that the Township shall have the right of entry for the purposes of inspecting all stormwater conveyance, treatment, or storage facilities.

7. The Conoy Township SWM Plan Approval Certification shall be included on the plan (Appendix A-6).

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

9. A note on the plan indicating any area that is not to be offered for dedication along with the statement that the Township is not responsible for maintenance of any area not dedicated to and accepted for public use, and that no alteration to swales, basins or placement of structures shall be permitted within easements.

10. Certificate, signed and sealed by a qualified professional registered in the Commonwealth of Pennsylvania and qualified to perform such duties. See form of certificate in Appendix A-6.

11. The names of all Owners of all immediately adjacent lands, including those properties located across street rights-of-way.

12. Existing Features.

    a. In areas of disturbance, contours at intervals of one (1) or two (2) feet. In areas of steep slopes (greater than 15%) and areas undisturbed, five (5) foot contour intervals may be used. In areas of very flat slopes, one (1) foot contours are required.

b. The locations of all existing utilities (including on lot disposal systems and wells), sanitary sewers and water lines and associated easements within 200 feet of the Development Site boundary.
c. 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 within 200 feet of the Development Site boundary.
d. An overlay showing soil names and boundaries.
e. All existing man-made features within two hundred (200) feet of the Development Site boundary.

13. Proposed Features

a. 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%) and areas undisturbed, five (5) foot contour intervals may be used.
b. Proposed structures, roads, paved areas, buildings and other impervious and semi-impervious areas.
c. The location of any proposed on-lot disposal systems, replacement drainfield easements and water supply wells.
d. A note indicating existing and proposed land use(s).
e. Plan and profile drawings of all proposed SWM Facilities, including BMPs, drainage structures, pipes, open channels and swales. This information shall be of the quality required for construction of all facilities.
f. Where pervious pavement is to be installed, pavement material and construction specifications shall be included.
g. The location of all existing and proposed easements, including drainage easements, access easements and riparian corridor easements.
h. A planting plan shall be provided for all vegetated BMPs in accordance with Section 301.N.

14. The location of all E&S control facilities and Sequence of Construction.

15. The Plan shall include a note on the cover page identifying the number of square feet of impervious coverage for which the stormwater management facilities have been designed to accommodate.

C. Additional Information

1. General description of the Development Site, including a description of existing natural and hydrologic features and any environmentally sensitive areas.

2. 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 SWM Facilities are meant to function with each other to manage stormwater runoff.

3. The effect of the project (in terms of runoff volumes, water quality and peak flows) on adjacent properties and on any existing municipal SWM Facilities that may receive runoff from the Development Site.

4. Complete hydrologic, hydraulic and structural computations for all SWM Facilities.

5. Expected project time schedule.

Section 504. Supplemental Information

A. In areas of carbonate geology, a detailed geologic evaluation prepared by a registered Professional Geologist (PG) 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 SWM Facilities on adjacent karst features and impacts of karst features on adjacent SWM Facilities.

4. The requirements of Section 301.J shall be addressed in the geologic evaluation.

B. An E&S Plan, including all approvals, as required by Chapter 102, shall be provided to the Township prior to unconditional final plan approval.

C. Evidence of review and approval of the NPDES permit by appropriate agencies shall be provided to the Township if the project disturbance is greater than one (1) acre.

D. 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.

E. An Operation and Maintenance (O&M) Plan that addresses the requirements of Section 603.

F. A declaration of adequacy/highway occupancy permit from PennDOT when PennDOT SWM Facilities are proposed to be utilized.

G. An analysis of the effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection systems that may receive runoff from the Development Site.

H. For SWM Facilities that would be located off-site, a note on the SWM Site Plan referencing a recorded Stormwater Maintenance Agreement which indicates the location and responsibility for maintenance of the off-site SWM Facilities. All off-site SWM Facilities shall meet the performance standards and design criteria specified in this Ordinance.

I. If wetlands are located onsite, a wetlands impact report by a qualified professional shall be provided to the Township verifying the limits of any wetlands located within the site or project boundary. Orange construction fence or an approved equivalent shall be posted around any wetlands areas determined by wetlands impact report found onsite during construction. Major and minor stormwater project applicant shall provide a wetland investigation study/report to the Township as part of the application.

ARTICLE VI
OPERATION AND MAINTENANCE (O&M)

Section 601. Responsibilities of Developers and Landowners

A. The Landowner, its successor and assigns shall maintain all SWM Facilities in good working order in accordance with the approved O&M Plan.

B. The Landowner shall convey to the Township easements to assure the Township the right, but not the responsibility, to access the site for inspections and maintenance.

C. The Landowner shall keep on file with the Township 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 Township within 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 Landowner of the Development Site shall sign and record an Operation and Maintenance (O&M) Agreement (Stormwater Management Agreement) covering all SWM Facilities, including riparian buffers and riparian forest buffers, which are to be privately owned. Said agreement, designated as Appendix E, 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 Township Solicitor, Township Engineer and Board of Supervisors.

B. The Township 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 SWM Facilities and E&S 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 shall be inspected by a qualified person, which may

include the landowner, or the owner's designee (including the Township for dedicated and owned facilities), according to the following minimum frequencies:

i. Annually for the first five (5) years.
ii. Once every three (3) years thereafter.
iii. During or immediately after the cessation of a 10-year or greater storm (six (6) inch equivalent).
iv. 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 Township.

2. Riparian forest buffer management plan prepared in accordance with 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 SWM and E&S facilities.

4. Establishment of suitable easements for access to all SWM Facilities.

Section 604. Maintenance of Existing Facilities / BMPs

A. SWM Facilities existing on the effective date of this Ordinance, which have not been accepted by the Township, 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 Township 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 Township 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 Township 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 Township may file a Municipal Claim against the property upon which the work was performed in accordance with the applicable laws. The Township shall have the right to choose among the remedies and may use one or more remedies concurrently.

Section 605. Permanence of Stormwater Management/BMP facilities.

A. The following note shall be included on the cover page: "No person shall modify, remove, fill, landscape or alter SWM Facilities and/or BMP facilities which may have been installed on a property unless a stormwater management permit has been obtained to permit such modification, removal, filling, landscaping or alteration. No person shall place any structure, fill, landscaping or vegetation into a SWM Facility, a BMP facility or within a drainage easement."

ARTICLE VII
FEES AND EXPENSES

Section 701. General

Conoy Township may include all costs incurred in the fees charged to an Applicant.

Section 702. Expenses Covered by Fees

The fees (per the Township Fee Schedule, as amended) may include, but not be limited to, costs for the following:

A. Administrative and clerical costs.

B. Review of the SWM Site Plan.

C. Review of the Stormwater Operation and Maintenance Plan and Stormwater Agreement by the Township Solicitor/Engineer/Staff.

D. Inspections.

E. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations and assure proper completion of stipulated remedial actions.

Section 703. Conoy Township Stormwater Management Inspection Fund

A. Persons installing SWM Storage Facilities or BMPs shall be required to pay a specified amount to the Conoy Township Stormwater Management Inspection Fund to help defray costs of periodic inspection expenses.

B. The amount of the deposit shall be determined as follows:

1. If the storage facility is to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Township for a period of 10 years.

2. If the storage facility is to be owned and maintained by the Township, the deposit shall cover the cost of periodic inspections performed by the Township for a period of 10 years.

3. The Township Engineer will establish the estimated costs utilizing information submitted by the Applicant. If the Applicant is not satisfied with costs prepared by the Township Engineer, the Applicant can appeal the same pursuant to Section 1004.

C. All interest earned shall become the property of the Township to be further used for inspection.

D. Nothing contained herein in Section 703 shall constitute a waiver of any duty of any private owner to maintain its SWM Storage Facilities at its sole expense.

E. At a minimum the Township shall inspect the stormwater and BMP facilities:

1. Once the first three (3) years.
2. Once every two (2) years thereafter.
3. During or immediately after the cessation of a rainfall event of six (6) inches or greater.

F. The Township shall prepare a report of the site inspection for the file records and if deficiencies are found or the owner is in violation of the Stormwater Management Maintenance and Declaration of Easement Agreement the Township shall issue a letter of violation to the property owner to be satisfactory addressed within the timeframe indicated in the letter. The property owner shall be responsible to reimburse the Township for legal, engineering and administrative costs of enforcement if the violations are not remedied within the timeframe indicated.

ARTICLE VIII
CONSTRUCTION INSPECTIONS

Section 801. Schedule of Inspections

A. The Township or its designee shall inspect all phases of the installation of any temporary or permanent SWM Facilities.

B. A schedule of required inspections shall be determined through a pre-construction meeting with Township Staff. The schedule shall include, but not be limited to, inspections for erosion and sedimentation control measures, pipe installation prior to backfilling, outlet structure installation prior to backfilling, seepage bed installation, underdrain installation prior to backfilling, site grading, anti-seep collar installation, impermeable liner installation, roof leader installation and connection, site stabilization, etc.

C. Required inspections shall be scheduled through the Township a minimum of 48 hours prior to the time the inspection is requested.

D. During any stage of work, if the Township or its designee determines that any temporary or permanent SWM Facilities are not being installed in accordance with the approved SWM Site Plan, the Township shall revoke any existing permits until a revised SWM Site Plan is submitted and approved, as specified in this Ordinance.

ARTICLE IX
PROHIBITIONS

Section 901. Prohibited Discharges and Connections

A. The following connections are prohibited, except as provided in Section 901.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 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 which has not been documented in plans, maps or equivalent records, and approved by the Township.

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 901.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.

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 Township or DEP determines that any of the discharges identified in Section 901.D above significantly contribute to pollution of the waters of this Commonwealth, the Township or DEP will notify the responsible person(s) to cease the discharge.

ARTICLE X
ENFORCEMENT AND PENALTIES

Section 1001. Right-of-Entry

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

Section 1002. Enforcement

The Board of Supervisors is hereby authorized and directed to enforce all of the provisions of this ordinance.

A. Any permit or approval issued by Conoy Township pursuant to this ordinance may be suspended by the Township 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 Conoy Township when:

   1. The Township has inspected and approved the corrections to the violation that caused the suspension;

   2. The Township is satisfied that the violation has been corrected.

Section 1003. Violations, penalties and remedies

A. It shall be a violation of this Ordinance to commit or permit any other person to commit any of the following acts:

   1. To commence Regulated Activities prior to obtaining unconditional approval of a SWM Site Plan or in violation of the terms or conditions of a SWM Site Plan approved under this Ordinance.

2. To install, repair, modify or alter SWM Facilities prior to obtaining approvals under this Ordinance or in a manner which violates the terms and conditions of any Approval issued under this Ordinance.

3. To misuse or fail to maintain any SWM Facility installed upon a property.

4. To construct any improvements upon, grade, fill or take any other action which will impair the proper functioning of any SWM Facility.

5. To place false information on or omit relevant information from an application for Approval under this Ordinance.

6. To fail to comply with any other provisions of this Ordinance.

B. For each violation of the provisions of this Ordinance, the owner, agent, lessee, contractor or any other person who commits, takes part in, or assists in any such violation shall be liable upon conviction thereof in a summary proceeding to pay a fine of not less than $200.00 nor more than $1,000.00 for each offense, together with the costs of prosecution. Any person found guilty of violating this Ordinance may be assessed reasonable attorneys' fees incurred by the Township in the enforcement proceeding. Each day or portion thereof in which a violation exists shall be considered a separate violation of this Ordinance, and each Section of this Ordinance which is violated shall be considered a separate violation.

C. The Township may also institute suits to restrain, prevent, or abate a violation of this Ordinance in equity or at law. Such proceedings in equity or at law may be initiated before any court of competent jurisdiction. In cases of emergency where, in the opinion of the court, the circumstances of the case require immediate abatement of the unlawful conduct, the court may, in its decree, fix a reasonable time during which the person responsible for the unlawful conduct shall correct or abate the same. The expense of such proceedings shall be recoverable from the violator in such manner as may now or hereafter be provided by law. Any person found guilty of violating this Ordinance may be assessed reasonable attorneys' fees incurred by the Township in the enforcement proceeding.

D. Board of Supervisors may also take actions relating to suspension or revocation of permits set forth in Section 1002.

E. Board of Supervisors may, by resolution, appoint a code enforcement officer to enforce this Ordinance and may authorize such code enforcement officer to institute summary criminal proceedings without prior action by Board of Supervisors.

Section 1004. Appeals

A. Any person aggrieved by any administrative action of the Township may appeal to the Conoy Township Board of 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. Section 501 et seq.

B. Any person aggrieved by any decision of the 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 1005. 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 Township 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 to the satisfaction of the Township 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 SWM Site 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 Township may impose such conditions as will, in its judgment, secure substantially the objectives of the standards and requirements of this Ordinance.

ARTICLE XI
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 Chapter105*

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 Conoy l. 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

DULY ORDAINED this 10th day of April, 2014, by Board of Supervisors of Conoy Township, Lancaster County, Pennsylvania, in lawful session duly assembled. This Ordinance shall take effect on May 7, 2014.

CONOY TOWNSHIP
Lancaster County, Pennsylvania

Attest: _____ By: _____
Secretary
Chair
Board of Supervisors

[TOWNSHIP SEAL]

ATTEST:

_____
John L. Shearer, Secretary

I hereby certify that the foregoing Ordinance was advertised in the Intelligencer Journal – Lancaster New Era on April 2, 2014, a newspaper of general circulation in Conoy Township and was duly enacted and approved as set forth at a regular meeting of the Conoy Township Board of Supervisors held on April 10, 2014.

_____
John L. Shearer, Secretary

APPENDIX A
STORMWATER MANAGEMENT AND BMP PLAN APPLICATIONS

APPENDIX A-1.

STORMWATER MANAGEMENT EXEMPTION APPLICATION

TOWNSHIP FILE NO._____
DATE OF RECEIPT/FILING _____
(FOR TOWNSHIP USE ONLY)
PROPERTY NO.: ____-_____

The undersigned hereby applies for an exemption under Conoy Township's Stormwater Management Ordinance for the proposed improvement(s) outlined in the application submitted herewith and described below:

The allowable impervious coverage per lot is subject to the regulations of the Township Zoning Ordinance, as amended, and any subdivision and land development plan impervious coverage limits for existing developments.

1. Name of Property Owner(s): _____
2. Address: _____
3. Phone No.: Home: _____ Cell: _____
4. Email Address: _____
5. Application Date: _____
6. Total Property Acreage: _____
7. Description of Proposed Improvements: _____

   _____

   _____

8. Total Impervious Added (maximum 1000 Sq. Ft) since May 7, 2014: _____

The undersigned hereby represents that, to the best of his/her knowledge and belief, all information listed above and on the land disturbance plan herewith submitted is true, correct, and complete. No part of the proposed construction is located within an existing easement or wetland area.

_____ _____
Signature of Applicant (all property owners must sign) Date

Attach Sketch of Project Site and Proposed Improvements to the application. Refer to Appendix A-5 for information to be included in site sketch.

APPENDIX A-2.

STORMWATER MANAGEMENT
SMALL PROJECT DESIGN/APPLICATION

Conoy Township, Lancaster County, Pennsylvania

This application pertains to projects that qualify as a Small Project (between 1,001 and 2,500 square feet of impervious area (cumulative)). If a formal Stormwater Management Plan is required in accordance with the Conoy Township Stormwater Management Ordinance, **please consult a qualified person (ex. Engineer, Surveyor, Landscape Architect).**

Property Owner's Name _____

Address of Property _____

Parcel ID ____-_____

Phone Number: Home:_____ Cell: _____

Email Address: _____

1000 SF Exemption Used since May 7, 2014: _____ No_____ Yes: how much: _____

New Impervious Area Associated with this Project _____

Lot Size (Sq. Ft.) _____

Existing Impervious Coverage (Sq. Ft.) _____

Total New Impervious Area Since Adoption of SWM Ordinance_____

The allowable impervious coverage per lot is subject to the regulations of the Township Zoning Ordinance, as amended.

Acknowledgement - I declare that I am the property owner, or representative of the owner, and that the information provided is accurate to the best of my knowledge. I understand that stormwater may not adversely affect adjacent properties or be directed onto another property without written permission. I also declare that the proposed construction is not within an existing easement or wetland area. I also understand that false information may result in a stop work order or revocation of permits. Municipal representatives are also granted reasonable access to the property for review and/ or inspection of this project if necessary.

Signature _____ Date _____

*All property owners must sign.

Small Project Plan – Regulated activities on existing lots of record that, measured on a cumulative basis from May 7, 2014 create additional impervious areas of 1,001 sq. ft. to 2,500 sq. ft. or involves an Earth Disturbance Activity such as removal of ground cover, grading, filling or excavation of an area less than 5,000 sq. ft. and do not involve the alteration of SWM Facilities or watercourses.

- Small projects are not required to provide for Rate Control.
- Small projects are required to address at least the first one (1) inch 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.

Disconnected Impervious Area (DIA) – An impervious or impermeable surface that is disconnected from any stormwater drainage or conveyance system and is redirected or directed to a pervious area, which allows for infiltration, filtration, and increased time of concentration.

Step 1: Determine the amount of new impervious surface area created by the proposed project. This includes any new impervious surface area that prevents or decreases infiltration of stormwater into the ground. New stone and gravel areas are considered impervious. Impervious surface areas existing before May 7, 2014 are not included in this calculation. Use additional sheets if necessary.

Calculate new impervious area by completing this table.

Surface	Length (ft)	x	Width (ft)	=	Impervious Area (ft^2)
Buildings		x		=	
Driveway		x		=	
Parking Areas		x		=	
Other		x		=	
Existing Impervious Area to be Removed (if applicable)					
Surface	**Length (ft)**	**x**	**Width (ft)**	**=**	**Impervious Area (ft^2)**
		x		=	
Total Proposed Impervious Surface Area (Sum of all new impervious areas – all existing impervious area to be removed)					

- If the total new impervious surface area is between 0 and 1,500 SF and the Applicant has previously used any available exemptions or is deferring any available exemption use to a future project or the area is between 1,001 and 2,500 ft^2 and the Applicant has not previously used any available exemption as part of this permit application, the project is eligible to qualify as a Small Project. Continue to Step 2.

- If total new impervious surface area is **greater than 2,501 ft², then** a Stormwater Management Plan shall be submitted in accordance with the Conoy Township Stormwater Management Ordinance.

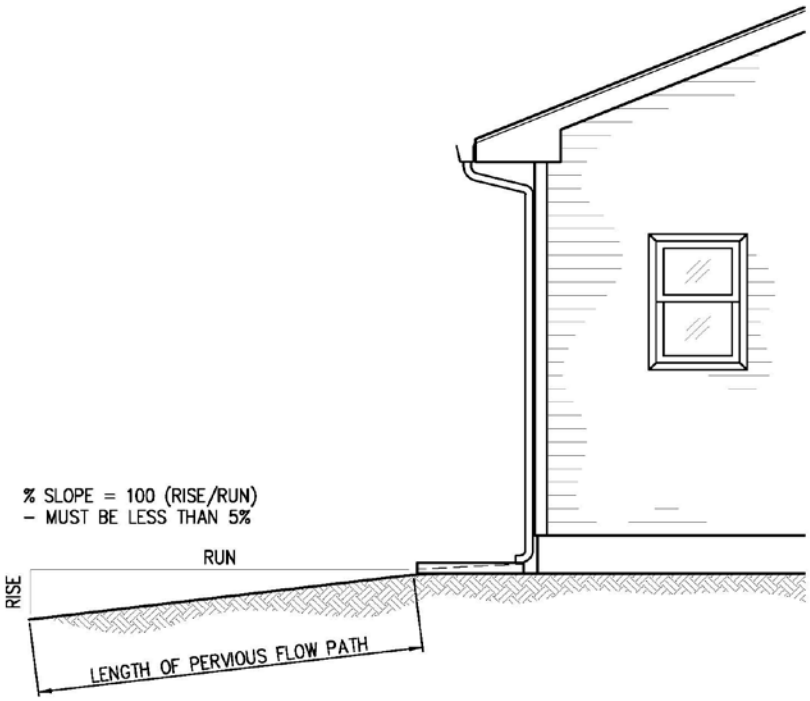
Step 2: Determine Disconnected Impervious Area (DIA). All or parts of new impervious surfaces may qualify as Disconnected Impervious Area if runoff is directed to a pervious area that allows for infiltration, filtration, and increased time of concentration. The volume of stormwater that needs to be managed could be reduced through use of DIAs.

Partial Rooftop Disconnection	
Length of Pervious Flow Path (ft.)	**DIA Credit Factor**
75 or more	0
60 – 74	0.2
45 – 59	0.4
30 – 44	0.6
15 – 29	0.8
0 - 14	1.0
Pervious flow path must be at least 15 feet from any impervious surface	

Rooftop Disconnection Criteria

- Overland flow path from the discharge area or impervious area has a positive slope of 5% or less.
- Runoff is not directed towards dwellings or other occupied structures.
- Soils are not classified as hydrologic soil group "D"
- The receiving pervious area shall not include another person's property unless written permission has been obtained and a copy is provided to Township from the affected property owner.

Paved Disconnection Criteria:
Other impervious surfaces (driveways, walkways, porches, decks with porous ground surface, etc. to be confirmed by Township Engineer or Zoning officer) and gravel can be considered disconnected if it meets the criteria above, and:



Disconnected Impervious Area - Rooftop Disconnection
NOT TO SCALE

- Runoff does not flow over impervious area for more than 75 feet.
- The length of overland flow is greater than or equal to the contributing flow path.
- The slope of the contributing impervious areas is 5% or less.
- If discharge is concentrated at one or more discrete points, no more than 1,000 ft² may discharge to any one point. Non-concentrated discharges along the entire edge of paved

surface must include provisions for the establishment of vegetation along the paved edge and temporary stabilization of the area until the vegetation is established.

- If these criteria can be met, the DIA credit = 0.

Using the calculations from Step 1, complete the table below. This will determine the impervious area that may be excluded from the area that needs to be managed through stormwater BMPs. If the total impervious area to be managed = 0, the area can be considered entirely disconnected.

Surface	Proposed Impervious Area	x	DIA Credit	=	Impervious Area (ft^2) to be Managed
Buildings (area to each downspout)		x		=	
Driveway		x		=	
Parking Areas		x		=	
Patios/ walkways		x		=	
Other		x		=	
Total Proposed Impervious Surface Area to be managed (Sum of all impervious areas)					

- If the total new impervious surface area can be entirely disconnected, sign Acknowledgement and file worksheets with the Township.
- If the total new impervious surface area cannot be entirely disconnected, continue to Step 3.

Step 3: Calculate the volume of stormwater runoff created by new impervious surfaces. Use the following chart to determine this volume.

Impervious Area (ft^2) to be Managed (Sum of Step 2)	X	1.0 in/12 in = 0.083	=	Amount of Stormwater to be Managed (ft^3)
	X	0.083	=	

Step 4: Determine the techniques to be used to manage the stormwater volume calculated in Step 3. Use the following information to determine the BMPs to be used to manage the proposed stormwater volume.

Where permitted by Conoy Township, planting of new trees may be used to manage a portion of the proposed stormwater volume. First, calculate the cubic feet of stormwater that can be managed by planting new trees. If the criteria below can be met, planting of new trees can be used to manage a portion of the proposed stormwater volume:

Deciduous Trees = 6 ft^3 per tree Evergreen Trees = 10 ft^3 per tree

Criteria:

- Trees must be PA native species (See PA Stormwater BMP Manual for a list)
- Trees shall be a minimum 1" caliper tree (min)
- Trees shall be adequately protected during construction
- **No more than 25% of the required capture volume can be mitigated through the use of trees**
- Dead trees shall be replaced by the property owner within 12 months
- Please consider the specifications for each tree species when determining location and spacing

Amount of Stormwater to be Managed (ft^3) (Sum of Step 3)	-	Tree Planting Credit (ft^3)	=	Amount of Stormwater to be Managed (ft^3)
	-		=	

Second, subtract the stormwater volume that can be managed by tree planting from the overall stormwater volume calculated in Step 3. The remaining cubic feet of stormwater must be managed through the installation of properly sized Stormwater BMPs. Select BMPs and size according to the volume of stormwater that needs to be managed.

Alternatively, stormwater BMPs may be sized using the following Simple BMP Sizing table.

BMP Type		Simple BMP Sizing - Amount New Impervious Area to be Managed (ft^2)											
		250	500	750	1000	1500	2000	2500	3000	3500	4000	4500	5000
Bioretention	Ex. Rain garden, Vegetated swale	21 ft^3 or	42 ft^3 or	62 ft^3 or	83 ft^3 or	125 ft^3 or	166 ft^3 or	208 ft^3 or	249 ft^3 or	291 ft^3 or	332 ft^3 or	374 ft^3 or	415 ft^3 or
Infiltration	Ex. Dry well, Infiltration trench	53 ft^3	105 ft^3	155 ft^3	208 ft^3	313 ft^3	415 ft^3	520 ft^3	623 ft^3	728 ft^3	830 ft^3	935 ft^3	1,038 ft^3

(Source: Lycoming County Planning Department)

The Simple BMP Sizing table is used as follows. After subtracting the stormwater volume that can be managed through the planting of new trees (if desired), match the remaining stormwater volume to the "Amount of New Impervious Area to be Managed" in white boxes in the table (rounding up to the next value if the number is between two values). Then look in the light grey box to determine the required size of the type of Stormwater BMP (bioretention or infiltration) being considered. For example, 1,000 square foot of new impervious surface area could be accommodated by an 83 cubic foot bioretention system.

Infiltration Trench/Bed Criteria

- Stone bed shall not be located within 10 feet of any On-lot Sewage Disposal Systems.
- Stone used in the infiltration trenches shall be "clean" stone, i.e. #67, #57, #5 or clean 2B stone for the smaller facilities, and #1 or #3 ballast or R-3 for larger deeper facilities. Copies of the receipt(s) shall be provided to the Township for their records. NO MODIFIED STONE MIXES SHALL BE UTILITZED FOR INFILTRATION.
- The standard void ratio for stone is 0.40 (40% storage for each CF) if calculating by hand or follow the BMP sizing table above.
- It is recommended that the property owner verify that the ground will infiltrate water, this can be accomplished by excavating the trench or pit and placing a large amount of water into the pit to see how long it take to infiltrate.

Once the sizing of necessary stormwater BMPs has been determined, prepare the required information and submit to the Township for review and approval. Bring the worksheets, BMP information (size, location, etc.), Owner Acknowledgement, and BMP Facilities and Maintenance Agreement (if applicable) to the Township.

If an area greater than 5,000 square feet of earth is disturbed, the project qualifies as a minor stormwater management plan and shall be prepared as outlined in the Township's Stormwater Management Ordinance.

OWNER ACKNOWLEDGMENT

- Development activities shall begin only after Conoy Township approves the Small Project.

- The installed Stormwater BMPs will not adversely affect any property, septic systems, or drinking water wells on this or any other property.

- The landowner shall keep on file with the Township the name, address and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted to the Township within 10 days of the change.

- If, after approval of the Small Project by the Township, the applicant wishes to pursue alternative stormwater management measures in support of the project, the applicant will submit revised Small Project information and worksheets to Conoy Township for approval. If a site requires a more complex system or if problems arise, the applicant may need the assistance of a licensed professional engineer, landscape architect or surveyor.

- The applicant acknowledges that the proposed Disconnected Impervious Area and/or Stormwater BMPs will be a permanent fixture of the property that cannot be altered or removed without approval by Conoy Township.

- All small projects upon approval of the design application and prior to the Township's issuance of the Stormwater Management Permit, the applicant shall provide the required Small Project Financial Guarantee amount to the Township. The financial guarantee will be released to the applicant upon satisfactory completion of the proposed improvements.

I (we) _____, hereby acknowledge the above statements and agree to assume full responsibility for the implementation, construction, operation, and maintenance of the proposed stormwater management facilities. Furthermore, I (we) also acknowledge that the steps, assumptions, and guidelines provided in this submission, including but not limited to Conoy Township Stormwater Worksheet, and the Stormwater Management / BMP Facilities and Maintenance Agreement (if applicable) will be adhered to.

Applicant Acknowledgement of Submission

Signature:_____ Date: _____

(All Property Owners Must Sign)

Conoy Township Acknowledgement of Receipt

Signature:_____ Date: _____

Prepared by and Return to Same:
Bernadette M. Hohenadel
Nikolaus & Hohenadel, LLP
212 North Queen Street
Lancaster, PA 17603
717-299-3726

Parcel ID #: 130- -0-0000
Conoy Township

SMALL PROJECT STORMWATER MANAGEMENT AGREEMENT AND DECLARATION OF EASEMENT

THIS AGREEMENT, made and entered into this_____day of_____, 20___, by and between_____hereinafter called the "Landowner," and Conoy Township, Lancaster County, Pennsylvania, hereinafter called Conoy Township.

WHEREAS, the Landowner is the owner of certain real property described as (Lancaster County Tax Map/Parcel Identification Number) 130- -0-0000,_____(Street Address), Conoy Township, as recorded by deed in the land records of Lancaster County, Pennsylvania, Book_____Page_____, hereinafter called the "Property";

WHEREAS, the Landowner is proceeding to build on and develop the property; and

WHEREAS, the Small Project Application, which is expressly made a part hereof, as approved or to be approved by Conoy Township, provides for detention of stormwater within the confines of the property through the use of Stormwater Best Management Practices (Stormwater BMPs); and

WHEREAS, Conoy Township and the Landowner, its successors and assigns, agree that the health, safety, and welfare of the residents of the Township, require that on-site Stormwater BMPs be constructed and maintained on the Property; and

WHEREAS, Conoy Township requires that on-site Stormwater BMPs as shown on the Small Project Application be constructed and adequately maintained by the Landowner, its successors and assigns. Any additional requirements imposed by Conoy Township are considered part of the Small Project Application.

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

1. The Landowner in accordance with the specifications identified within the Small Project Application shall construct the onsite Stormwater BMPs.

2. The Landowner, its successors and assigns, shall adequately maintain the Stormwater BMPs. This includes all pipes and channels built to convey stormwater to the facility, as well as all structures, improvements, and vegetation provided to control the quantity and quality of the stormwater. Adequate maintenance is herein defined as good working condition so that these facilities are performing their design functions.

3. The Landowner, its successors and assigns, shall inspect the Stormwater BMPs after all rainfall events exceeding one inch of precipitation in a 24-hour period.

4. The Landowner, its successors and assigns, hereby grant permission to Conoy Township, its authorized agents and employees, to enter upon the Property without prior notification at reasonable times and upon presentation of proper identification to inspect the Stormwater BMPs whenever Conoy Township deems necessary.

5. In the event the Landowner, its successors and assigns, fails to maintain the Stormwater BMPs as shown on the Small Project Application and in good working condition, Conoy Township may enter upon the Property and take whatever action is deemed necessary to maintain said Stormwater BMPs and to charge the costs of such repairs to the Landowner, its successors and assigns. This provision shall not be construed to allow Conoy Township to erect any structure of permanent nature on the land of the Landowner unless such structures were part of the approved Small Project Application. It is expressly understood and agreed that Conoy Township is under no obligation to routinely maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Township.

6. In the event that Conoy Township, 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 Conoy Township within thirty (30) days of receipt of invoice for all expenses incurred. The Township has the right to file a municipal lien for unpaid costs and expenses that have not been reimbursed thirty (30) days after receipt of invoice.

7. The intent and purpose of this Agreement is to ensure the proper maintenance of the Stormwater BMPs by the Landowner. This Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by nonpoint source pollution runoff. This Agreement imposes no liability of any kind whatsoever on Conoy Township and the Landowner agrees to hold the Township harmless from any liability in the event the Stormwater BMPs fail to operate properly. In the event that a claim is asserted against Conoy Township, its designated representatives or employees, the Township shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit based on the claim. If any judgment or claims against Conoy Township shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment.

8. This Agreement shall be binding to the Landowner, its administrators, executors, assigns, heirs and any other successors in interests, in perpetuity.

Landowner:

Signature:_____ Date: _____
Name:_____

Conoy Township:

Signature:_____ Date: _____
Name:_____
Title:_____

**All parties must sign the Stormwater Management Agreement in the presence of a notary public who must complete the acknowledgment on the following page. If the property is jointly owned by husband and wife, both must sign.

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF LANCASTER)

On this ____day of _____, 20___, before me, the undersigned officer, a notary public in and for the aforesaid Commonwealth and County, personally appeared _____, who acknowledged himself/herself to be the_____of Conoy Township, Lancaster County, Pennsylvania, and that he/she, as such officer, being authorized to do so, executed the foregoing Stormwater Management Agreement and Declaration of Easement for the purposes therein contained by signing the name of such Township by himself/herself as such officer.

IN WITNESS WHEREOF, I set my hand and official seal.

_____
Notary Public

My commission expires:_____

COMMONWEALTH OF PENNSYLVANIA)
) SS:
COUNTY OF LANCASTER)

On this _____ day of _____, 20____, before me, the subscriber, a notary public, in and for the aforesaid Commonwealth and County, came the above-named _____, known to me (or satisfactorily proven) to be the person(s) whose name(s) is/are subscribed on the within instrument, and acknowledged the foregoing Stormwater Management Agreement and Declaration of Easement to be his/her/their act and deed and desired the same to be recorded as such.

Witness my hand and notarial seal.

_____
Notary Public

My commission expires:_____

APPENDIX A-3.

APPLICATION FOR A STORMWATER MANAGEMENT PERMIT
MINOR STORMWATER MANAGEMENT PLAN

Conoy Township
Lancaster County, Pennsylvania

File No._____
Date Received: _____
Property_____

Application is hereby made to Conoy Township for the issuance of a Minor Stormwater Management Permit pursuant to the specifications herewith submitted.

1. Name of Property Owner(s): _____

   Address: _____

   Phone: Home:_____ Cell: _____

   Email Address: _____

2. Project Location:_____

3. Type of Earth Disturbance Activity:

   A. New impervious or semi-impervious surface_____(sq. ft./ac.)
   B. Diversion or piping of natural or man-made watercourse_____(linear ft.)
   C. Installation of the following:

Culvert	_____	Infiltration Seepage Bed	_____
Detention basin	_____	Cistern	_____
Retention basin	_____	Underground Detention Basin	_____
Sediment basin	_____	Infiltration Basin	_____
Other	_____	Rain Garden	_____

   D. Removal of ground cover, grading, filling or excavation _____ (sq. ft./ac.)

4. Land disturbance plan prepared by:

   Name: _____

   Address:_____Phone_____

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

Address:_____

Phone_____

The undersigned hereby represents that, to the best of his/her knowledge and belief, all information listed above and on the land disturbance plan herewith submitted is true, correct and complete.

_____ _____

Signature of Applicant (all property owners must sign) Date

APPENDIX A-4.

APPLICATION FOR A STORMWATER MANAGEMENT PERMIT
MAJOR STORMWATER MANAGEMENT PLAN

Conoy Township
Lancaster County, Pennsylvania

File No._____
Date Received_____
Property: _____

Application is hereby made to Conoy Township for the issuance of a Major Stormwater Management Permit pursuant to the specifications herewith submitted.

1. Name of Property Owner(s):_____

   Address:_____

   Phone: Home:_____ _____ Cell: _____

   Email Address: _____

2. Project Location:_____

3. Type of Earth Disturbance Activity:

   A. New impervious or semi-impervious surface_____(sq. ft./ac.)
   B. Diversion or piping of natural or man-made watercourse_____(linear ft.)
   C. Installation of the following:

Culvert	_____	Infiltration Seepage Bed	_____
Detention basin	_____	Cistern	_____
Retention basin	_____	Underground Detention Basin	_____
Sediment basin	_____	Infiltration Basin	_____
Other	_____	Rain Garden	_____

   D. Removal of ground cover, grading, filling or excavation _____ (sq. ft./ac.)

4. Land disturbance plan prepared by:

   Name: _____

   Address:_____Phone_____

5. Name of applicant (if other than owner): _____

Address:_____

Phone_____

The undersigned hereby represents that, to the best of his/her knowledge and belief, all information listed above and on the land disturbance plan herewith submitted is true, correct and complete.

_____ _____

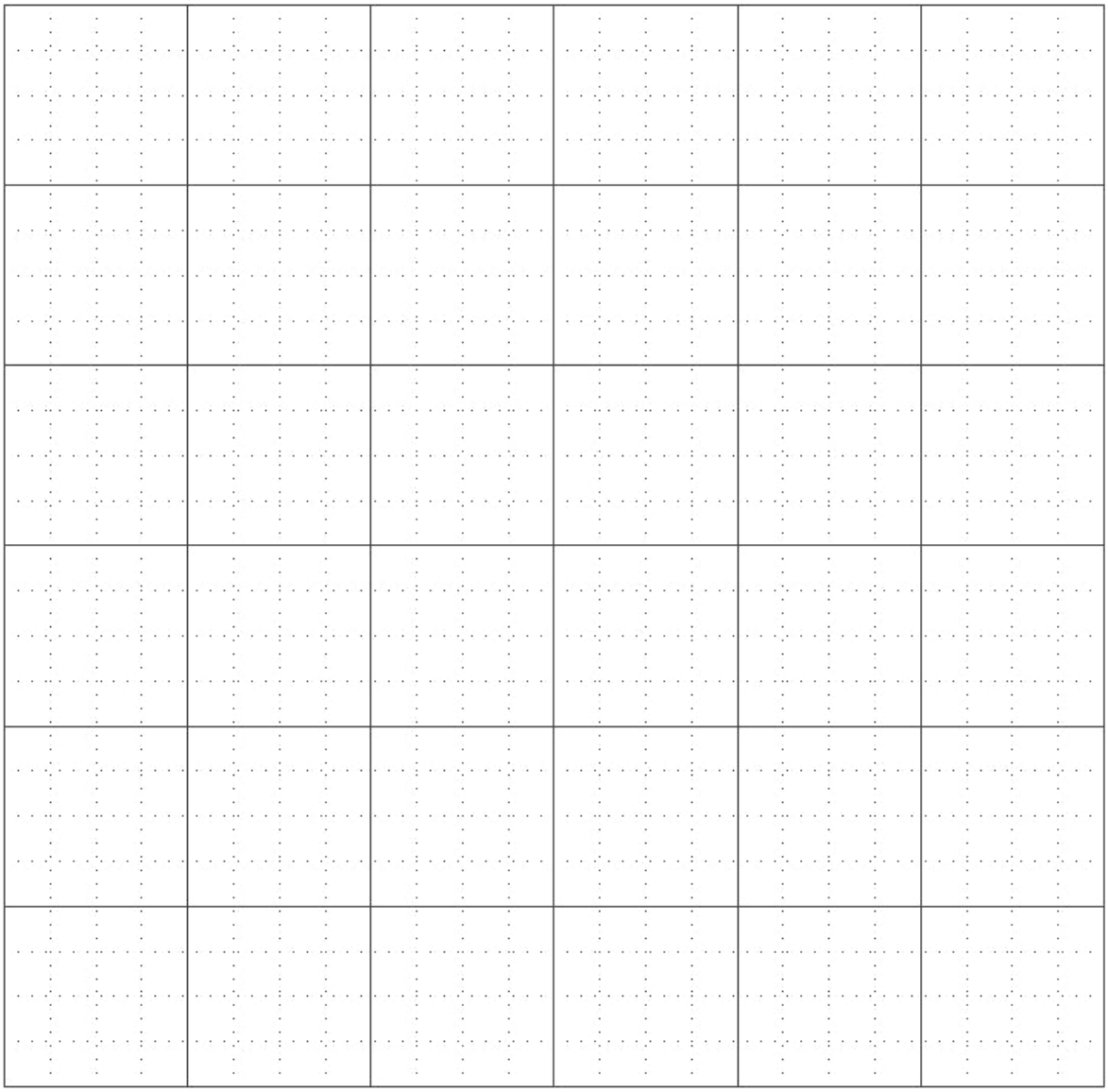
Signature of Applicant (all property owners must sign) Date

APPENDIX A-5.

SITE PLAN FOR EXEMPTIONS OR SMALL PROJECTS

Property Owner: _____ Date:_____

Address: _____



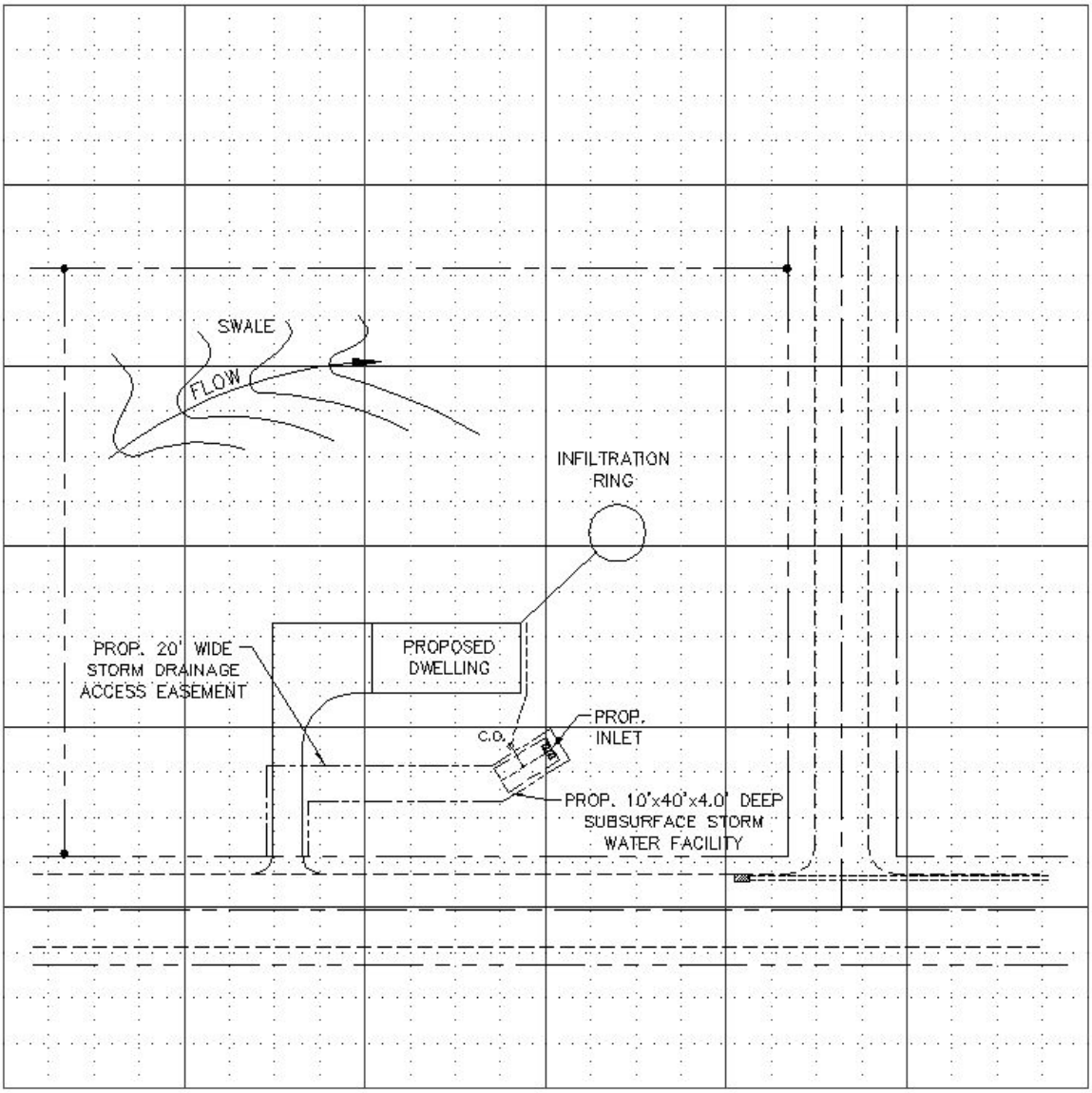
Scale: 1" = _____(4 squares per inch)

The following shall be shown on the Plan:

Lot Configuration	Berms	Infiltration System
Building Location	Terraces	Swales
Contours or Flow Arrows	Bridges	Watercourses
Storm Sewers	Dams	Floodplains
Detention Basins	Retention Basins	Inlets
Cisterns	Seepage Beds	Leach Rings
Sidewalks	Driveways	Patios

APPENDIX A-5a.
SITE PLAN FOR EXEMPTIONS OR SMALL PROJECTS (EXAMPLE)

Property Owner: _____ Date: _____
Address: _____



Scale: 1" = _____(4 squares per inch)

The following shall be shown on the Plan:

Lot Configuration	Berms	Infiltration System
Building Location	Terraces	Swales
Contours or Flow Arrows	Bridges	Watercourses
Storm Sewers	Dams	Floodplains
Detention Basins	Retention Basins	Inlets
Cisterns	Seepage Beds	Leach Rings
Sidewalks	Driveways	Patios

APPENDIX A-6

CERTIFICATE OF APPROVAL BY BOARD OF SUPERVISORS

At a meeting on _____, 20___, the Conoy Township Board of Supervisors approved this project, and all conditions have been met. This approval includes the complete set of plans and information that are filed with Conoy Township in File No. _____, based upon its conformity with the standards of the Conoy Township Stormwater Management Ordinance and with any modification, thereof, approved by the Conoy Township Board of Supervisors.

_____ _____

Township Manager Signature Board of Supervisors President Signature

---

CERTIFICATE FOR REVIEW BY THE PLANNING COMMISSION

Reviewed by the Conoy Township Planning Commission this _____ day of _____, 20____

_____

CERTIFICATE FOR REVIEW BY THE TOWNSHIP ENGINEER

(if required by the Township)

Reviewed by the Conoy Township Engineer this _____ day of _____, 20_____

_____

STORMWATER MANAGEMENT CERTIFICATION

I hereby certify that, to the best of my knowledge, the Stormwater Management Facilities shown and described hereon are designed in conformance with the Conoy Township Stormwater Management Ordinance.

_____, 20____

**

** Signature and seal of the qualified professional responsible for the preparation of the plan.

APPENDIX A-7.

AS-BUILT PLAN REQUIREMENT CHECKLIST – CONOY TOWNSHIP

This checklist is compiled as a minimum list of information to be included on the required stormwater management as-built plans submitted to the Township under this Ordinance.

YES NO (n/a)

GENERAL REQUIREMENTS

_____ _____ 1. Name of the project (consistent with approved plan)
_____ _____ 2. Name of the municipality
_____ _____ 3. Plan Status - Identify as "AS-BUILT PLAN"
_____ _____ 4. North point on each sheet
_____ _____ 5. Written and graphic scale to match original approved plan submission
_____ _____ 6. Date of plan and any subsequent revision dates
_____ _____ 7. Name and address of record owner and developer
_____ _____ 8. Name, address, seal, signature and certification of the registered surveyor responsible for plan
_____ _____ 9. Design engineer's name, project number, date, etc. (if different from as-built preparer)
_____ _____ 10. Names, book and page numbers of any abutting subdivision or land development, or abutting property owners
_____ _____ 11. Key Map if more than one sheet is needed
_____ _____ 12. Tract boundary lines with bearings and distances
_____ _____ 13. Right-of-way lines, lot lines and easement lines with bearings, distances, actual dimensions (width, radius, distance from centerline) and descriptive labels (road names, type of easement or right-of-way)
_____ _____ 14. Location and elevation of any actual monuments and pin locations
_____ _____ 15. Tract and lot areas
_____ _____ 16. Location and elevation of the benchmark which all site elevations tie into.

STREET REQUIREMENTS

_____ _____ 1. Streets and other paved areas (cartway width, pavement markings, spot elevations as needed to show positive drainage).
_____ _____ 2. Sidewalk and other concrete areas.

STORM DRAINAGE

_____ _____ 1. Any field changes that were not shown on the approved plan/permit.
_____ _____ 2. Stormwater Management easement boundaries.
_____ _____ 3. Storm sewer system - type of structure with top and invert elevations
-type of pipe, size, length, and slope
-riprap location, actual swale contours and cross sections.
_____ _____ 4. Floodplain by elevation and location from property line and any lot restrictions associated with the floodplain.
_____ _____ 5. Seepage Bed location, dimensions and pipe connections, cleanouts.
_____ _____ 6. Level spreader grading or structures.
_____ _____ 7. Detention basins -Outlet structure information, top elevation, orifice size and invert, outfall culvert type, size, slope, and invert elevation.
-As-built contours and volume
-Spillway type and location, dimensions, and invert
-Verification of anti-seep collar and clay core installation
-Low flow channel, width, slope and cross section
-Fencing around basin
-Underdrain pipe and cleanouts

OTHER SITE FEATURES

_____ _____ 1. Landscaping within 10 feet of any stormwater facility - Document single trees and planted areas showing compliance with approved landscape plan
-Screen fencing
_____ _____ 2. Buildings -first floor elevations, roof drains/leaders

When located within 25 feet of any stormwater facilities:

_____ _____ 3. Gas Line -valves, service, approx. depth =+-0.5'
_____ _____ 4. Electric Lines -electric transformer boxes, poles, manholes, approx. line location.
_____ _____ 5. Telephone, TV Cable -junction boxes, poles, manholes, approx. line location

ADDITIONAL PLAN REQUIREMENTS

_____ _____ 1. Sheet number located in the bottom right-hand corner of the drawings
_____ _____ 2. Manhole numbers
_____ _____ 3. Matchline information (if applicable)
_____ _____ 4. When located within 25 feet of any stormwater management facilities, any water and sewer lateral information station, size, length, material, depth) within a box on the corresponding lot; alternatively, a chart can be used to show this information

PLAN NOTES TO BE INCLUDED ON AS-BUILT PLANS

_____ _____ 1. All required post-construction maintenance notes and property owner inspection schedule.
_____ _____ 2. Note stating the amount of impervious coverage the stormwater facilities onsite have been designed for.

ADDITIONAL SUBMISSION REQUIREMENTS

_____ _____ 1. Provide two (2) sets of prints initially; upon approval of plans, provide one (1) electronic copy, two (2) set of prints, and two (2) sets of half-size prints.
_____ _____ 2. Pipe material, diameter, slope, length, encasement location and dimensions
_____ _____ 3. Provide individual Plot Plans and legal descriptions for each lot impacted for all water and sanitary sewer rights-of-way/easements for processing of right-of-way agreements (not required on as-built drawing sheets).
_____ _____ 4. Drawings need to be readable when reduced to half size.

The Township Engineer and Township Staff will review the plans for accuracy and completeness.

Appendix A-8.

Certificate of Completion

I, _____, certify that all permanent SWM Facilities have been constructed according to the plans, specification and revisions as approved for the property located at _____.

_____

(Signature and seal of qualified person)

APPENDIX B

STORMWATER MANAGEMENT AND BMP CALCULATION COEFFICIENTS

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	.040	0.35	.040	0.45	0.40	0.45	0.50	0.50	0.55	0.60
Construction Sites - Bare packed soil, rough	.020	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*

Runoff Curve Numbers "CN" for SCS Method												
Soil Group	A			B			C			D		
Slope / Land Use	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Cultivated Land												
winter conditions	48	60	75	62	73	82	68	78	90	77	88	95
summer conditions	35	51	58	48	55	65	57	65	73	64	69	79
Fallowed Fields	45	54	65	56	63	73	64	74	81	69	77	87
poor conditions	30	44	48	43	48	55	48	54	63	56	60	68
good conditions	30	40	43	42	46	50	45	50	53	50	56	61
Forest/Woodland												
Grass Areas	35	51	53	48	54	63	56	59	73	62	63	79
good conditions	45	53	58	52	55	65	60	63	75	65	69	82
average conditions	48	55	67	56	67	77	66	74	85	73	81	90
poor conditions	96	97	98	96	97	98	96	97	98	96	97	98
Impervious Areas												
Weighted Residential	71	75	78	74	76	82	78	80	87	81	83	90
Lot size 1/8 acre	62	67	71	66	69	76	67	69	76	75	78	88
Lot size 1/4 acre	59	65	69	64	66	74	65	66	75	74	77	87
Lot size 1/3 acre	57	63	68	62	64	73	63	65	73	72	76	86
Lot size 1/2 acre	55	62	67	61	63	72	61	64	72	71	75	85
Lot size 1 acre												

APPENDIX NO. B-3

NOAA Atlas 14, Volume 2, Version 3
Location name: Bainbridge, Pennsylvania, US*
Latitude: 40.1164°, Longitude: -76.6844°
Elevation: 424 ft*
* source: Google Maps

POINT PRECIPITATION FREQUENCY ESTIMATES

G.M. Bonnin, D. Martin, B. Lin, T. Parzybok, M.Yekta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.318 (0.287–0.354)	0.379 (0.340–0.422)	0.447 (0.401–0.497)	0.496 (0.444–0.551)	0.556 (0.496–0.616)	0.599 (0.532–0.663)	0.641 (0.568–0.709)	0.679 (0.599–0.752)	0.727 (0.636–0.804)	0.763 (0.663–0.844)
10-min	0.508 (0.458–0.565)	0.605 (0.544–0.674)	0.715 (0.642–0.796)	0.793 (0.711–0.881)	0.886 (0.790–0.982)	0.954 (0.848–1.06)	1.02 (0.902–1.13)	1.08 (0.949–1.19)	1.15 (1.01–1.27)	1.20 (1.04–1.33)
15-min	0.635 (0.572–0.707)	0.761 (0.684–0.848)	0.905 (0.813–1.01)	1.00 (0.899–1.11)	1.12 (1.00–1.25)	1.21 (1.07–1.34)	1.29 (1.14–1.42)	1.36 (1.20–1.51)	1.45 (1.27–1.60)	1.51 (1.31–1.67)
30-min	0.871 (0.784–0.969)	1.05 (0.945–1.17)	1.29 (1.15–1.43)	1.45 (1.30–1.61)	1.66 (1.48–1.84)	1.82 (1.62–2.01)	1.97 (1.75–2.18)	2.12 (1.86–2.34)	2.30 (2.01–2.55)	2.44 (2.12–2.70)
60-min	1.09 (0.978–1.21)	1.32 (1.19–1.47)	1.65 (1.48–1.83)	1.89 (1.70–2.10)	2.22 (1.98–2.46)	2.46 (2.19–2.73)	2.72 (2.41–3.01)	2.97 (2.62–3.29)	3.30 (2.89–3.66)	3.56 (3.10–3.95)
2-hr	1.27 (1.15–1.42)	1.55 (1.39–1.72)	1.96 (1.76–2.17)	2.28 (2.05–2.53)	2.75 (2.45–3.03)	3.13 (2.78–3.45)	3.54 (3.12–3.90)	3.96 (3.47–4.37)	4.58 (3.97–5.05)	5.09 (4.37–5.62)
3-hr	1.39 (1.26–1.55)	1.69 (1.53–1.88)	2.14 (1.93–2.38)	2.50 (2.25–2.78)	3.00 (2.68–3.32)	3.42 (3.03–3.78)	3.86 (3.41–4.27)	4.33 (3.80–4.79)	5.01 (4.34–5.55)	5.57 (4.77–6.17)
6-hr	1.71 (1.55–1.92)	2.07 (1.87–2.32)	2.62 (2.35–2.93)	3.07 (2.75–3.42)	3.73 (3.31–4.14)	4.29 (3.79–4.75)	4.90 (4.29–5.42)	5.57 (4.83–6.15)	6.55 (5.60–7.24)	7.38 (6.24–8.16)
12-hr	2.08 (1.86–2.37)	2.51 (2.24–2.86)	3.18 (2.84–3.62)	3.76 (3.34–4.26)	4.63 (4.07–5.23)	5.39 (4.70–6.06)	6.23 (5.38–7.00)	7.17 (6.12–8.04)	8.60 (7.22–9.63)	9.84 (8.14–11.0)
24-hr	2.39 (2.20–2.63)	2.89 (2.66–3.18)	3.70 (3.39–4.07)	4.40 (4.03–4.83)	5.49 (4.97–5.98)	6.44 (5.79–7.00)	7.52 (6.69–8.14)	8.75 (7.69–9.45)	10.6 (9.19–11.4)	12.3 (10.5–13.2)
2-day	2.77 (2.56–3.06)	3.35 (3.09–3.70)	4.29 (3.94–4.72)	5.08 (4.64–5.59)	6.28 (5.70–6.87)	7.31 (6.59–7.99)	8.47 (7.57–9.23)	9.76 (8.62–10.6)	11.7 (10.2–12.7)	13.4 (11.5–14.6)
3-day	2.95 (2.72–3.24)	3.56 (3.29–3.91)	4.54 (4.18–4.98)	5.38 (4.94–5.89)	6.64 (6.05–7.25)	7.74 (7.00–8.43)	8.96 (8.04–9.75)	10.3 (9.16–11.2)	12.4 (10.8–13.5)	14.2 (12.2–15.4)
4-day	3.12 (2.89–3.41)	3.77 (3.49–4.12)	4.80 (4.43–5.24)	5.68 (5.23–6.20)	7.01 (6.40–7.63)	8.16 (7.41–8.88)	9.45 (8.51–10.3)	10.9 (9.71–11.8)	13.1 (11.5–14.2)	15.0 (13.0–16.2)
7-day	3.66 (3.40–3.98)	4.40 (4.09–4.80)	5.54 (5.14–6.03)	6.52 (6.02–7.09)	7.98 (7.32–8.66)	9.25 (8.43–10.0)	10.6 (9.63–11.5)	12.2 (10.9–13.2)	14.5 (12.8–15.8)	16.5 (14.4–17.9)
10-day	4.20 (3.92–4.54)	5.04 (4.71–5.45)	6.28 (5.85–6.78)	7.31 (6.79–7.88)	8.81 (8.14–9.48)	10.1 (9.27–10.8)	11.5 (10.5–12.3)	12.9 (11.7–13.9)	15.1 (13.5–16.3)	16.9 (15.0–18.3)
20-day	5.72 (5.39–6.10)	6.80 (6.41–7.26)	8.19 (7.71–8.74)	9.33 (8.75–9.95)	10.9 (10.2–11.6)	12.2 (11.4–13.0)	13.5 (12.6–14.4)	14.9 (13.8–15.9)	16.9 (15.5–18.0)	18.5 (16.8–19.8)
30-day	7.07 (6.69–7.51)	8.36 (7.91–8.87)	9.90 (9.36–10.5)	11.2 (10.5–11.8)	12.9 (12.1–13.7)	14.3 (13.4–15.1)	15.7 (14.6–16.6)	17.1 (15.9–18.2)	19.2 (17.7–20.4)	20.7 (19.0–22.1)
45-day	8.91 (8.47–9.37)	10.5 (9.98–11.0)	12.2 (11.6–12.8)	13.6 (12.9–14.3)	15.3 (14.5–16.1)	16.7 (15.8–17.5)	18.0 (17.0–19.0)	19.4 (18.2–20.4)	21.1 (19.8–22.2)	22.4 (20.9–23.7)
60-day	10.6 (10.2–11.2)	12.5 (11.9–13.1)	14.4 (13.7–15.1)	15.9 (15.1–16.6)	17.7 (16.9–18.6)	19.2 (18.2–20.1)	20.5 (19.4–21.5)	21.9 (20.6–23.0)	23.6 (22.1–24.8)	24.8 (23.2–26.1)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

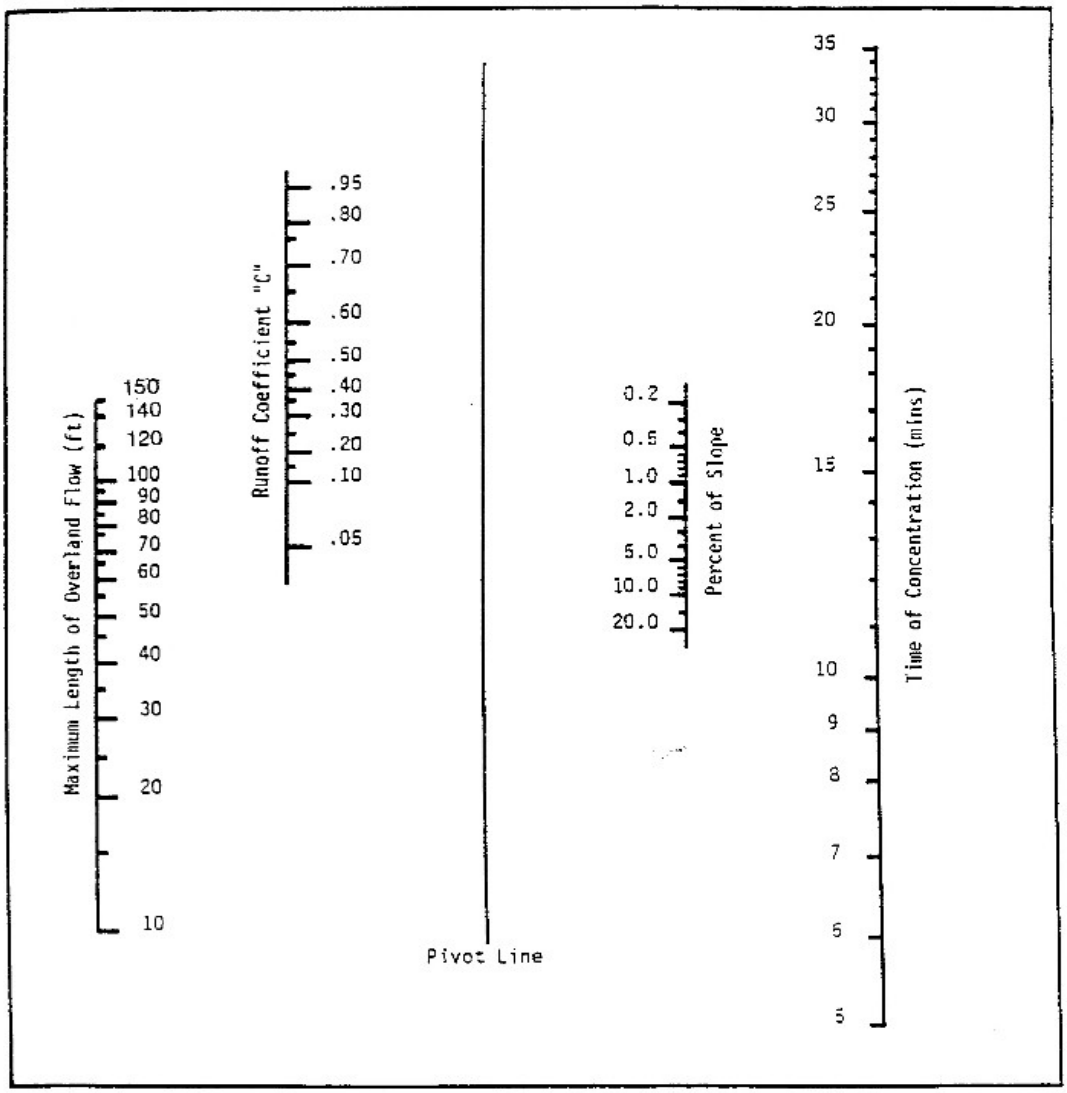
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

APPENDIX NO. B-4

NOMOGRAPH FOR DETERMINING SHEET FLOW

(for use with the Rational Method)



APPENDIX NO. B-5

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. $T_t = \frac{0.007\,(nL)^{0.8}}{P_2^{0.5}\,s^{0.4}}$ Compute T_t hr		+		=
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		+		=
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		+		=
20. Watershed or subarea T_c or T_t (add T_t in steps 6, 11, and 19) hr				

*Table 3-1 per latest TR-55, Urban Hydrology for Small Watershed

**150' sheet flow length per latest TR-55 revision

APPENDIX NO. B-6

AVERAGE VELOCITIES FOR ESTIMATING TRAVEL TIME FOR SHALLOW CONCENTRATED FLOW

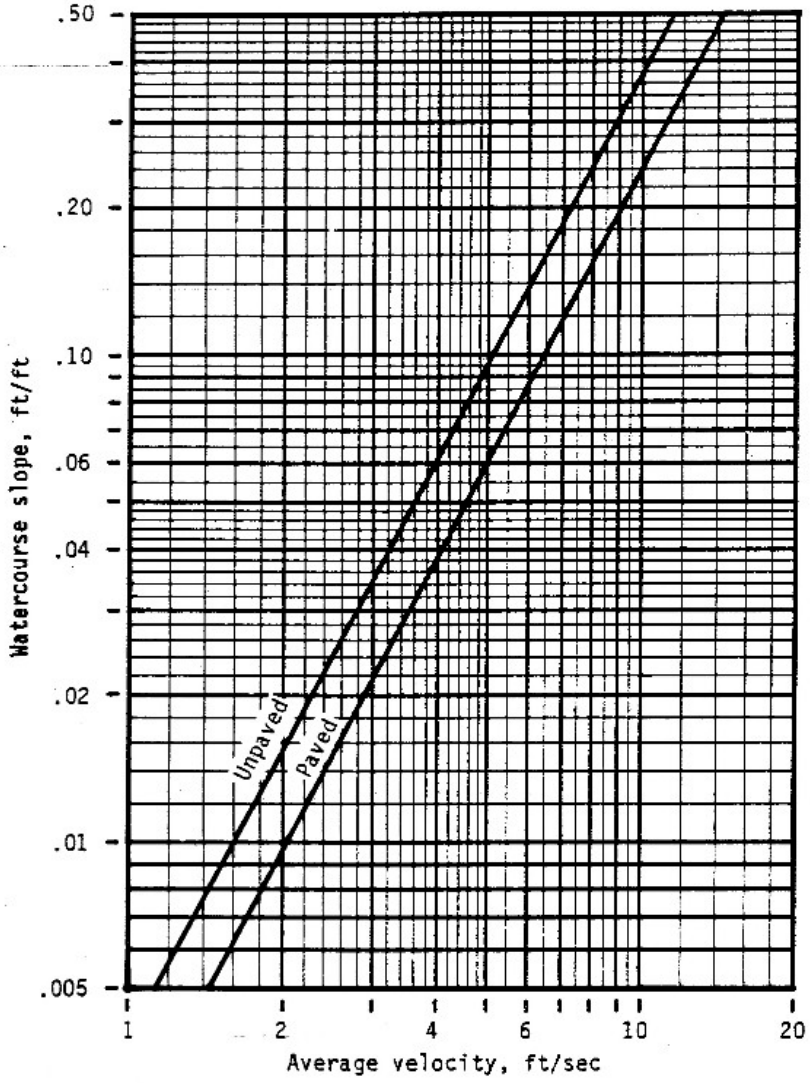


Figure 3-1.—Average velocities for estimating travel time for shallow concentrated flow.

APPENDIX NO. B-7.

Roughness Coefficients n-values for Manning's Equation (Pipes and Pavements)

Description	Manning's n-value
Polyvinyl Chloride (PVC) with smooth Inner Walls	0.010
Corrugated High-Density Polyethylene (HDPE) with Smooth Inner Walls	0.012
Corrugated High-Density Polyethylene (HDPE) with Corrugated Inner Walls	0.015
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 × 13 mm (2 2/3 in × 1/2 in) Corrugations	0.024
75 mm × 25 mm (3 in × 1 in) Corrugations	0.027
125 mm × 25 mm (5 in × 1 in) Corrugations	0.025
150 mm × 50 mm (6 in × 2 in) Corrugations	0.033
Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or polymer coated) 75 mm × 25 mm (3 in × 1 in), 125 mm × 25 mm (5 in × 1 in), or 150 mm × 50 mm (6 in × 2 in) Corrugations	0.024
Helically Corrugated Steel And Aluminum Alloy Pipe (Plain or polymer coated) 68 mm × 13 mm (2 2/3 in × 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:	
a. Some Grass And Weeds (Little or no brush)	0.030 - 0.035
b. Dense Growth of Weeds	0.035 - 0.050
c. Some Weeds (Heavy brush on banks)	0.050 - 0.070

Notes: * Use the lower coefficient if any one of the following conditions apply:

a. A storm pipe longer than 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.

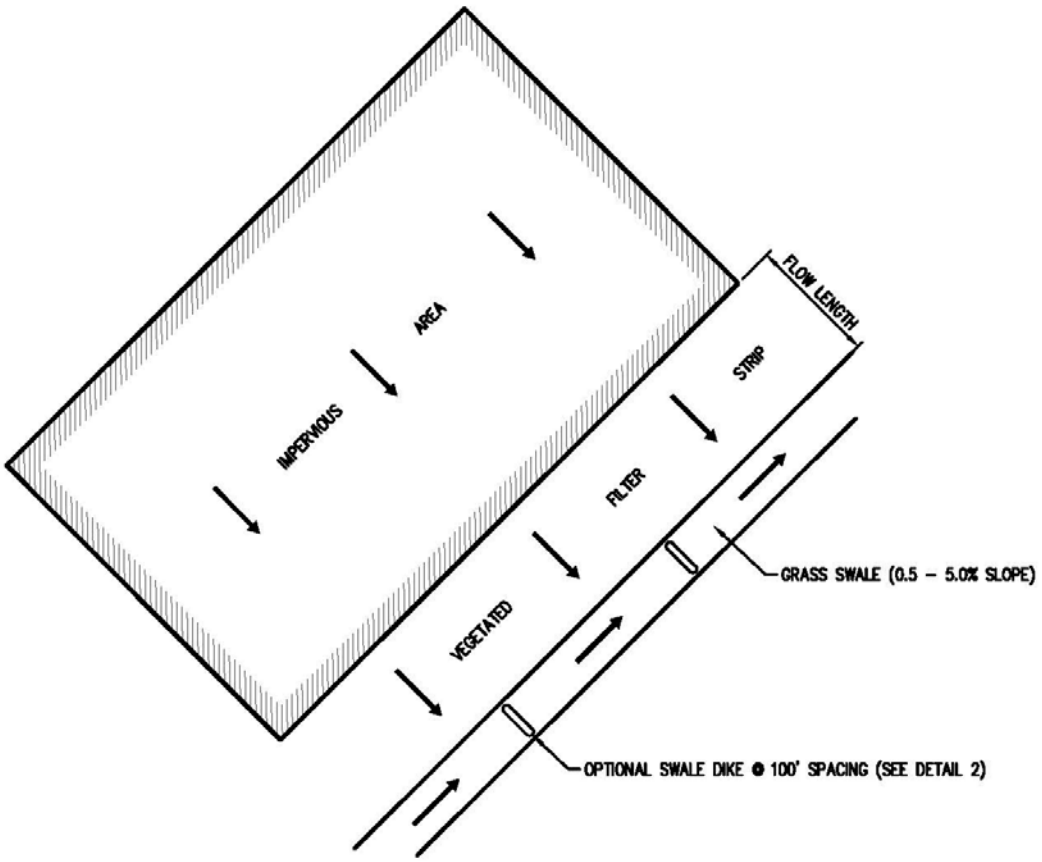
** Use the higher coefficient if any one of the following conditions apply:

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 20 diameters long.

c. A storm pipe which is partly lined helically corrugated metal pipe.

APPENDIX C
STORMWATER MANAGEMENT AND BMP CONSTRUCTION DETAILS



NOTE:
FILTER STRIP MUST BE CONTIGUOUS TO IMPERVIOUS AREA. RUNOFF ACROSS IMPERVIOUS AREA SHALL ALSO BE IN SHEET FLOW.

FILTER STRIP/GRASS SWALE

STANDARD SWM SPECIFICATIONS

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SCALE:	NOT TO SCALE
SHEET NO.	1

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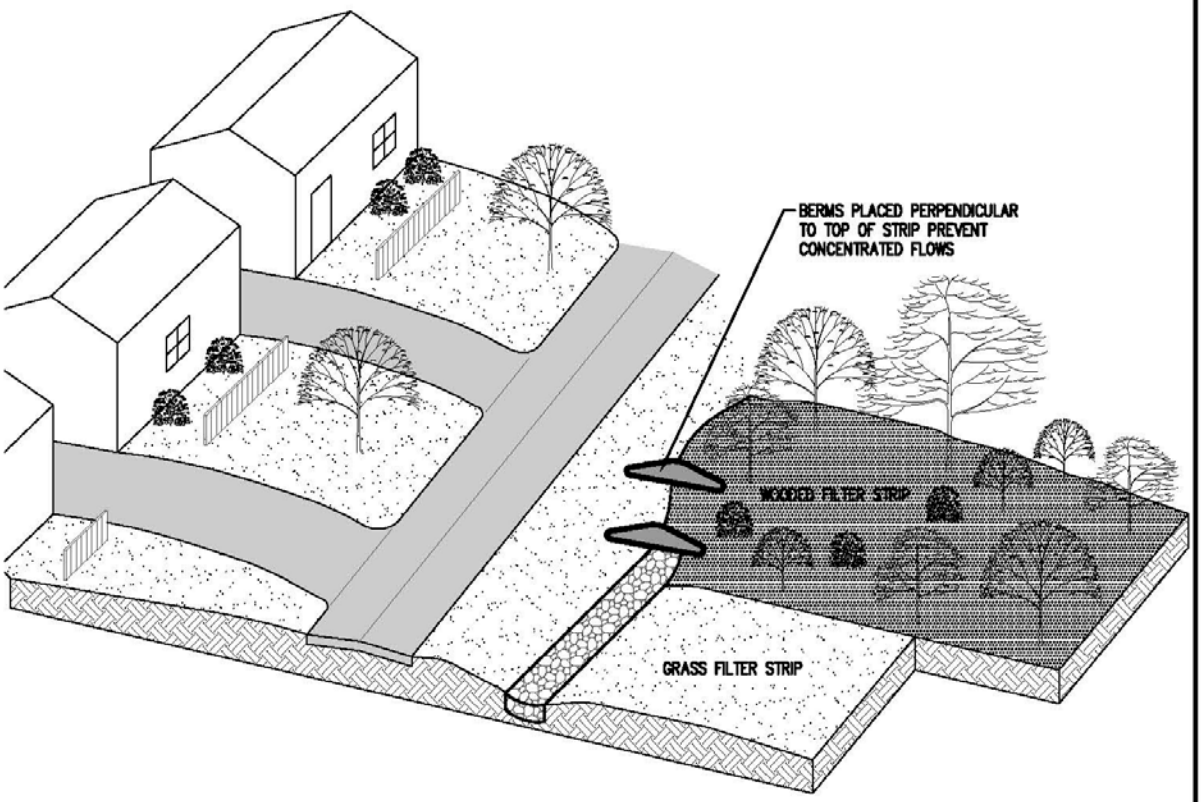

FILTER STRIP

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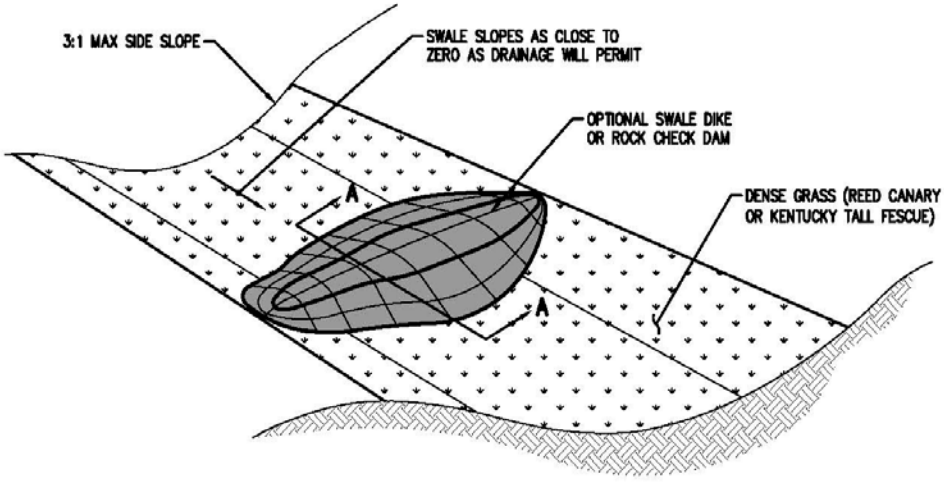

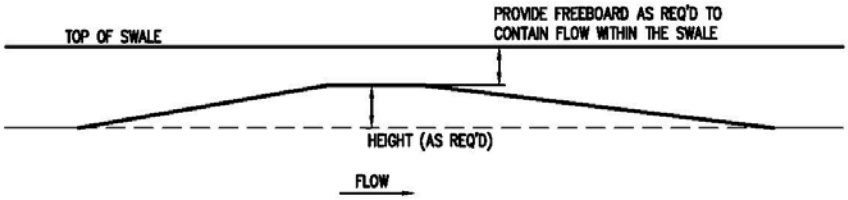

SECTION A-A

GRASS SWALE

STANDARD SWM SPECIFICATIONS

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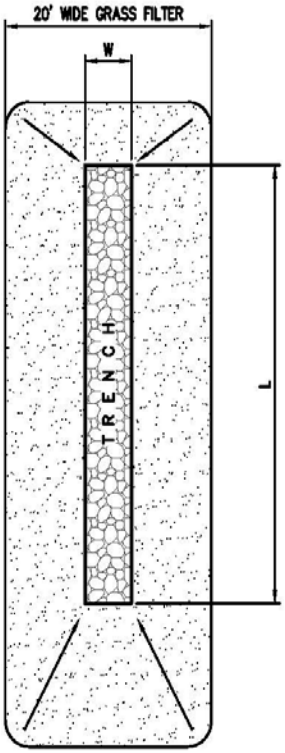
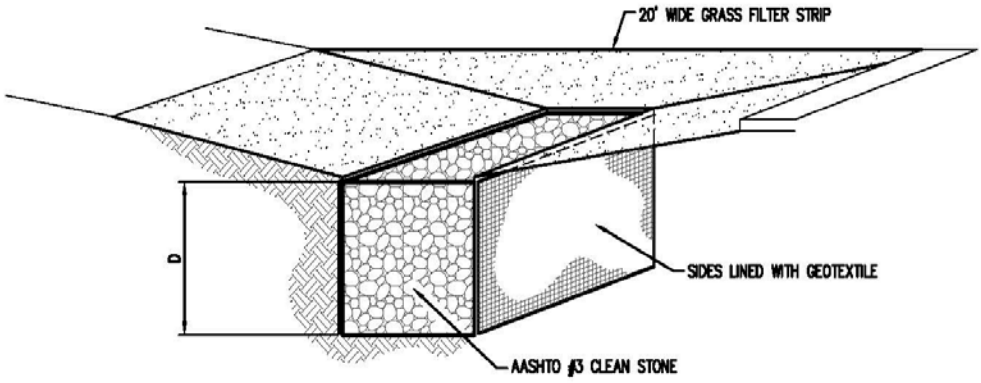
SHEET NO.	3



PLAN



ISOMETRIC SECTION

INFILTRATION TRENCH

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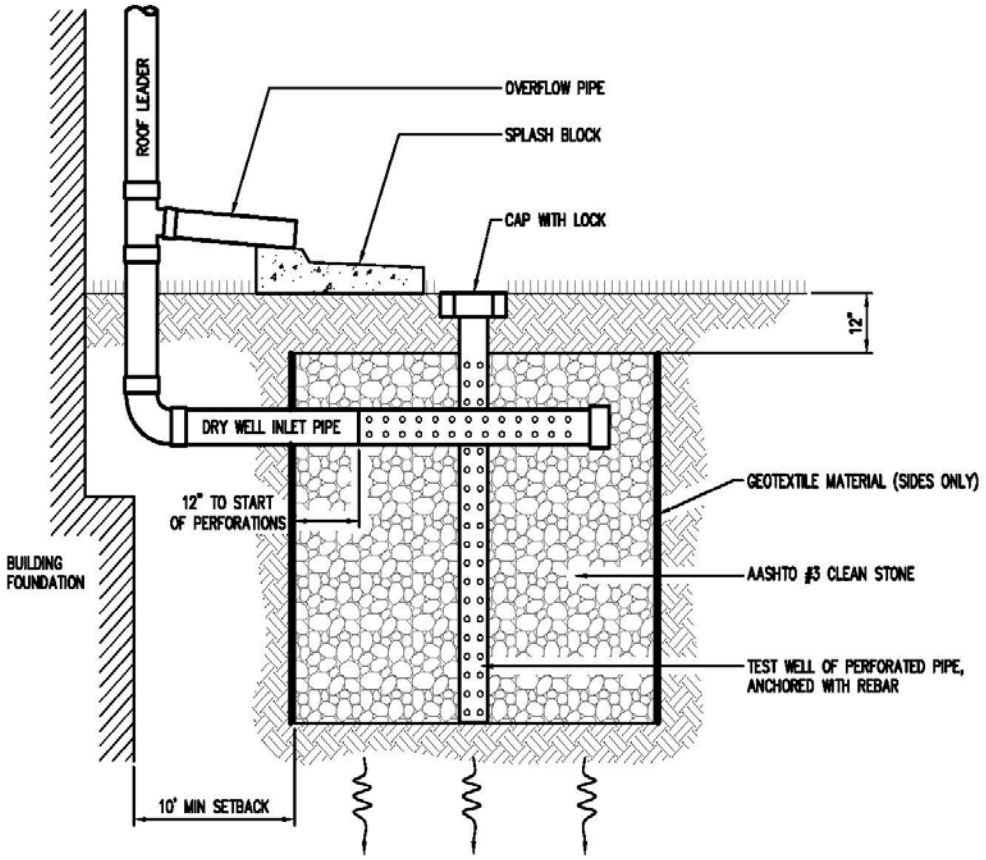

DRY WELL

STANDARD SWM SPECIFICATIONS

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Engineering Associates Inc
20 C Snyder Lane Ephrata, PA 17522-9101
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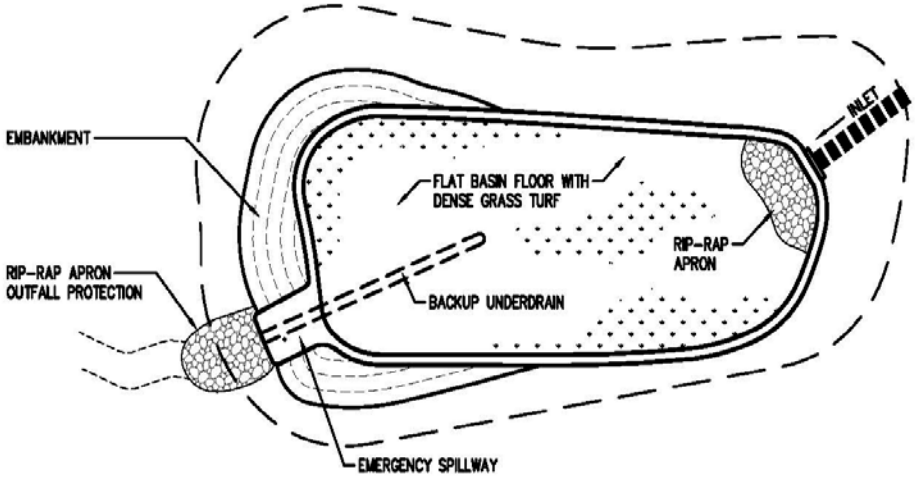
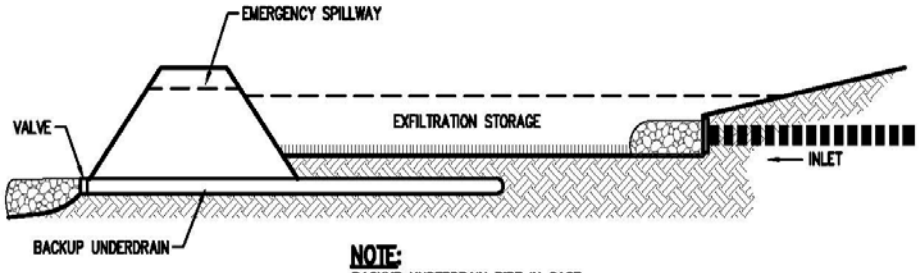


PLAN VIEW



NOTE:
BACKUP UNDERDRAIN PIPE IN CASE OF STANDING WATER PROBLEMS.

SECTION VIEW

INFILTRATION BASIN

STANDARD SWM SPECIFICATIONS

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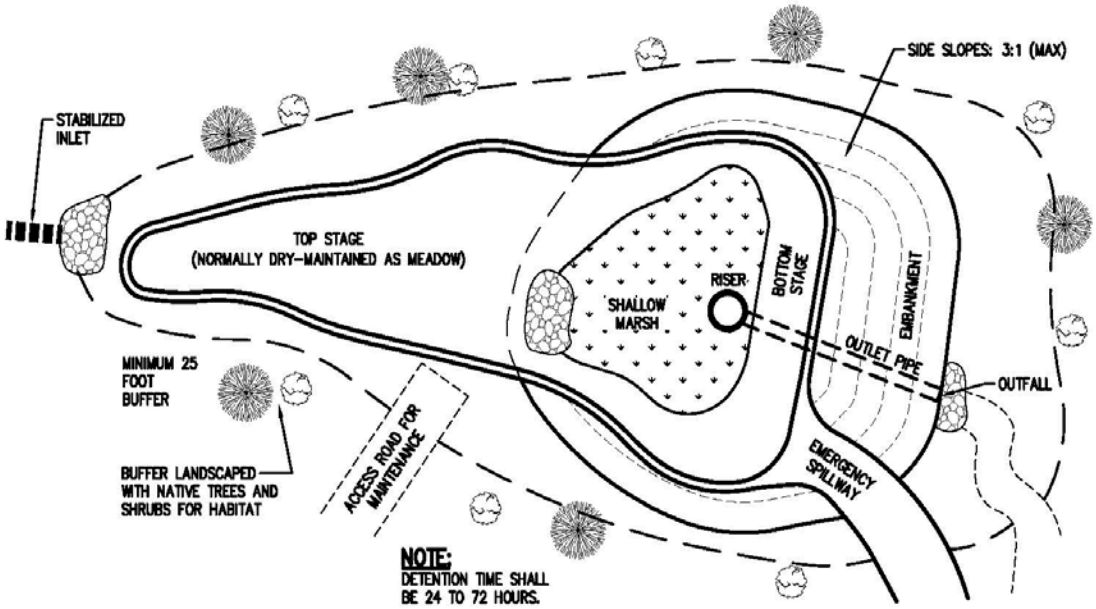

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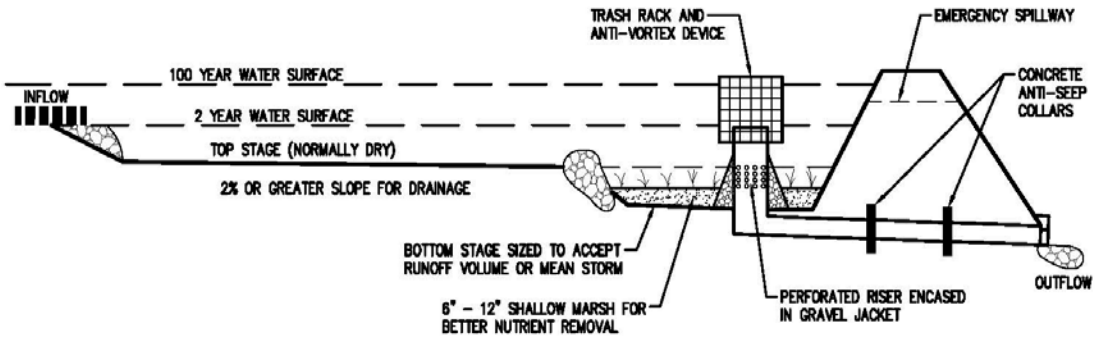

SECTION VIEW

EXTENDED DRY DETENTION POND

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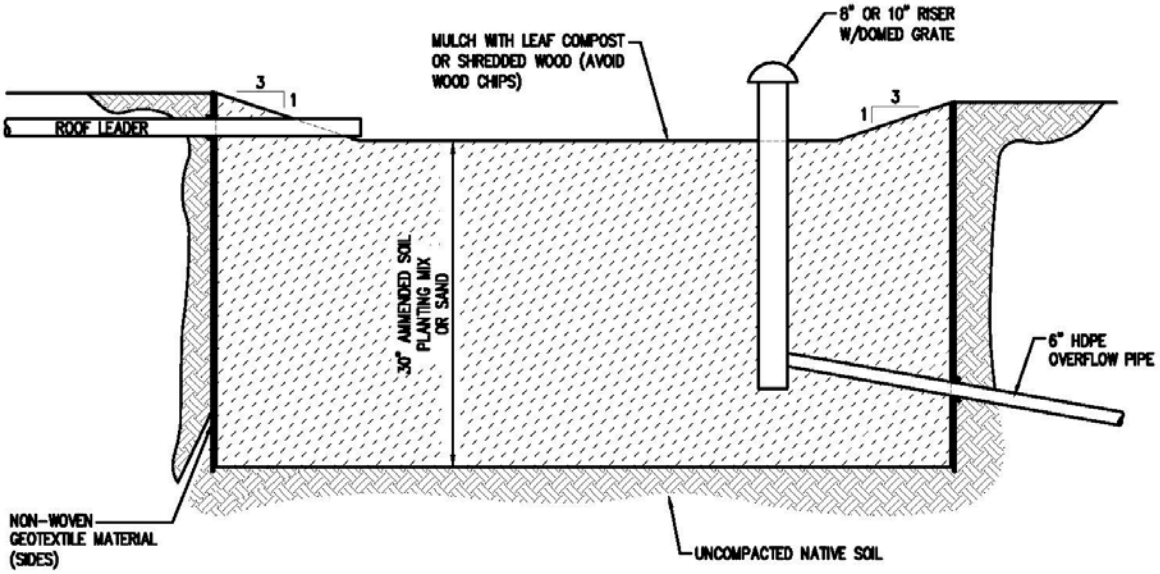

NOTES:

1. MOISTURE-TOLERANT PLANT MATERIAL SHALL BE USED AT BOTTOM EDGE. PLANT MATERIAL SHALL BE TOLERANT OF FLUCTUATING WATER CONDITIONS.
2. SOIL BENEATH RAIN GARDEN SHALL REMAIN UNCOMPACTED.
5. AS AN ALTERNATIVE, SAND OR GRAVEL CAN BE USED AS BEDDING FOR THE RAIN GARDEN.
6. IF SAND IS TO BE USED, ADDITIONAL DESIGN ELEMENTS AND VEGETATION PLANTINGS WILL NEED TO BE USED.

RAIN GARDEN

STANDARD SWM SPECIFICATIONS

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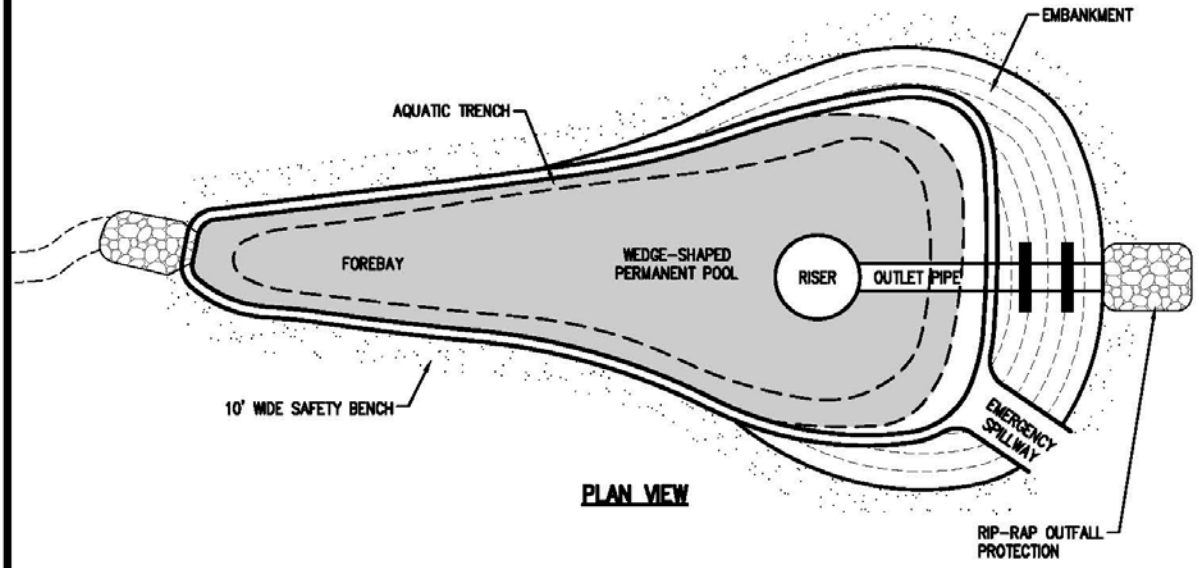

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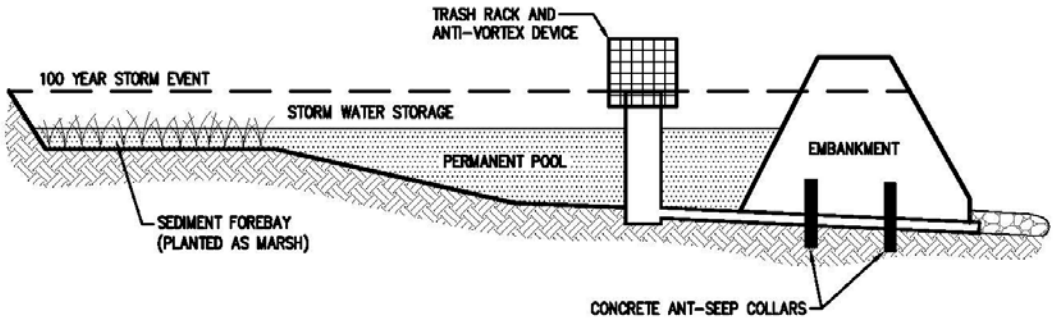

SECTION VIEW

WET POND

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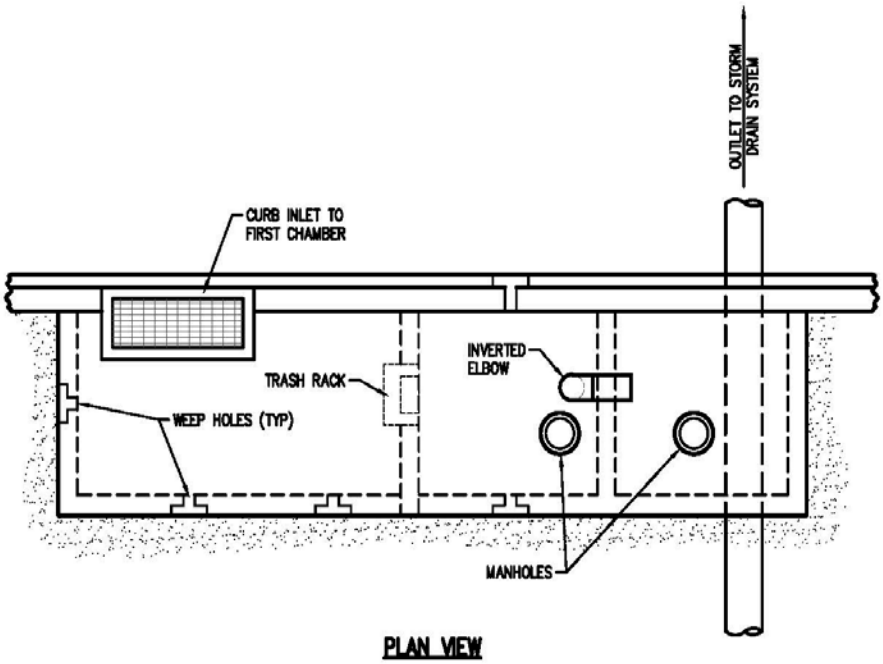

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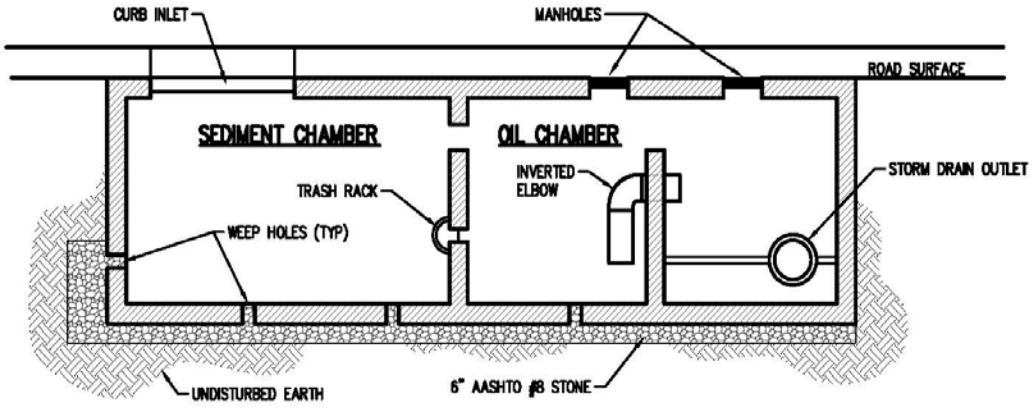

SECTION VIEW

WATER QUALITY INLET

STANDARD SWM SPECIFICATIONS

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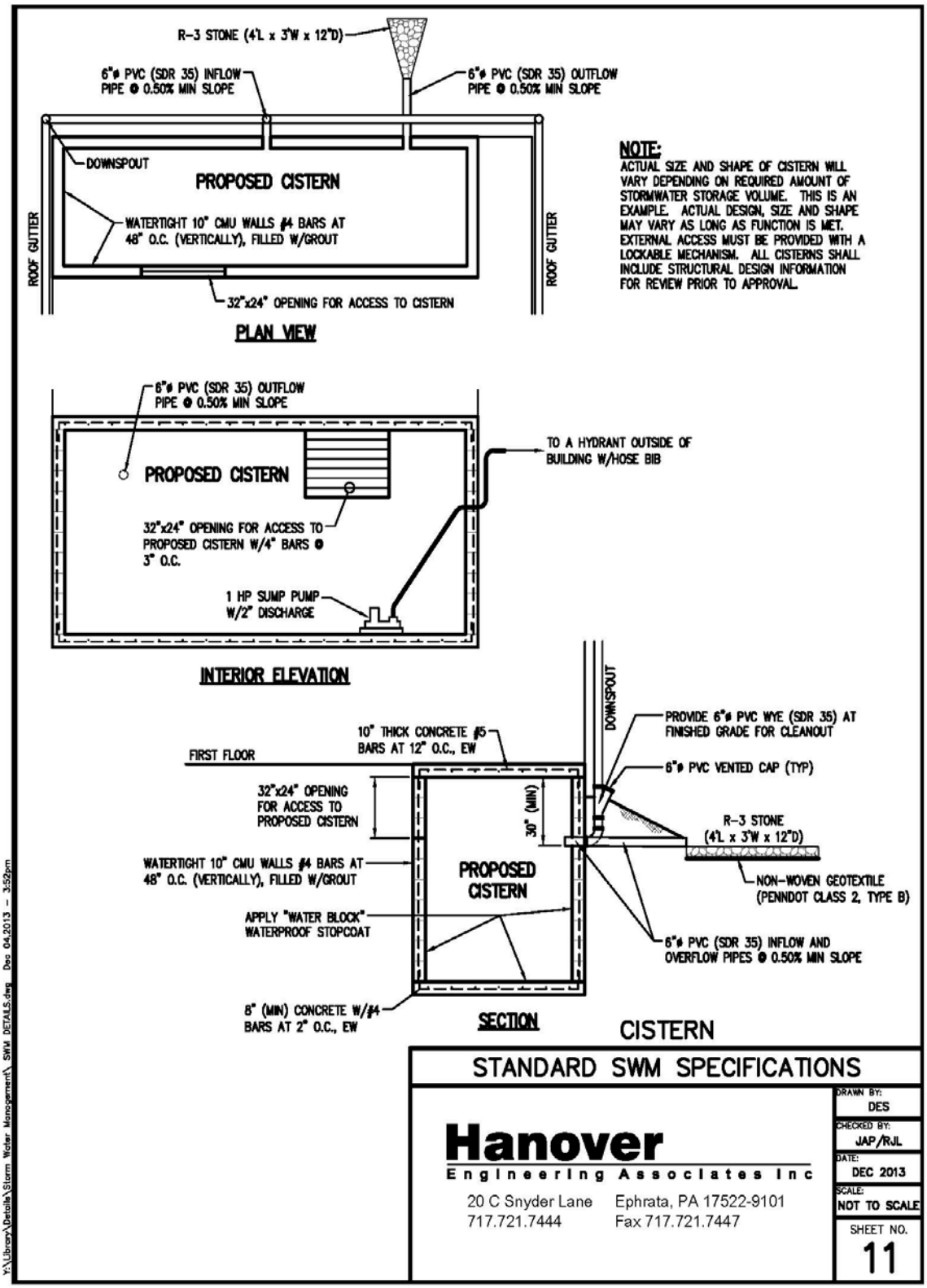
R-3 STONE (4'L x 3'W x 12"D)
6"ø PVC (SDR 35) INFLOW PIPE @ 0.50% MIN SLOPE
6"ø PVC (SDR 35) OUTFLOW PIPE @ 0.50% MIN SLOPE
DOWNSPOUT
PROPOSED CISTERN
WATERTIGHT 10" CMU WALLS #4 BARS AT 48" O.C. (VERTICALLY), FILLED W/GROUT
ROOF GUTTER
ROOF GUTTER
32"x24" OPENING FOR ACCESS TO CISTERN
PLAN VIEW
NOTE:
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. ALL CISTERNS SHALL INCLUDE STRUCTURAL DESIGN INFORMATION FOR REVIEW PRIOR TO APPROVAL.
6"ø PVC (SDR 35) OUTFLOW PIPE @ 0.50% MIN SLOPE
PROPOSED CISTERN
TO A HYDRANT OUTSIDE OF BUILDING W/HOSE BIB
32"x24" OPENING FOR ACCESS TO PROPOSED CISTERN W/4" BARS @ 3" O.C.
1 HP SUMP PUMP W/2" DISCHARGE
INTERIOR ELEVATION
DOWNSPOUT
PROVIDE 6"ø PVC WYE (SDR 35) AT FINISHED GRADE FOR CLEANOUT
10" THICK CONCRETE #5 BARS AT 12" O.C., EW
FIRST FLOOR
6"ø PVC VENTED CAP (TYP)
32"x24" OPENING FOR ACCESS TO PROPOSED CISTERN
30" (MIN)
R-3 STONE (4'L x 3'W x 12"D)
WATERTIGHT 10" CMU WALLS #4 BARS AT 48" O.C. (VERTICALLY), FILLED W/GROUT
PROPOSED CISTERN
NON-WOVEN GEOTEXTILE (PENNDOT CLASS 2, TYPE B)
APPLY "WATER BLOCK" WATERPROOF STOPCOAT
6"ø PVC (SDR 35) INFLOW AND OVERFLOW PIPES @ 0.50% MIN SLOPE
8" (MIN) CONCRETE W/#4 BARS AT 2" O.C., EW
SECTION
CISTERN
STANDARD SWM SPECIFICATIONS
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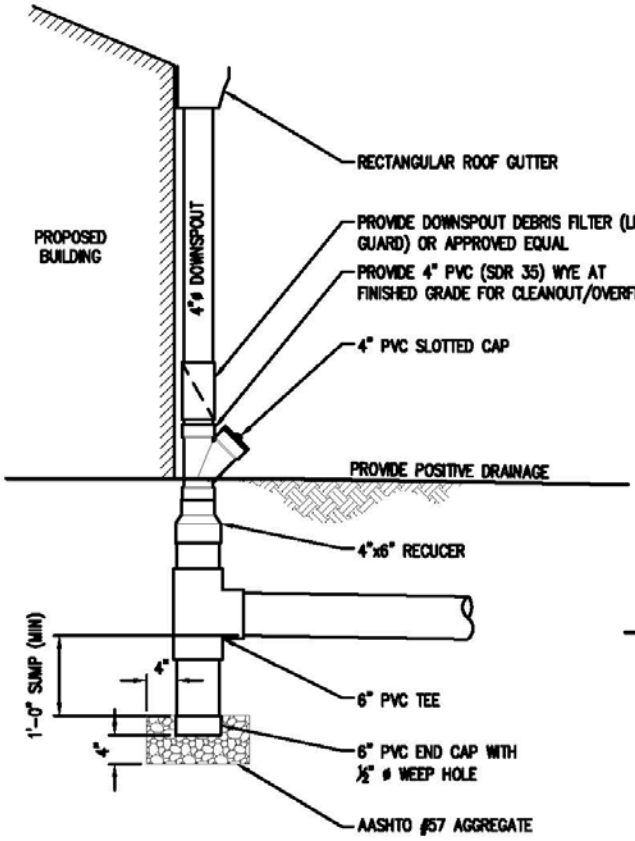
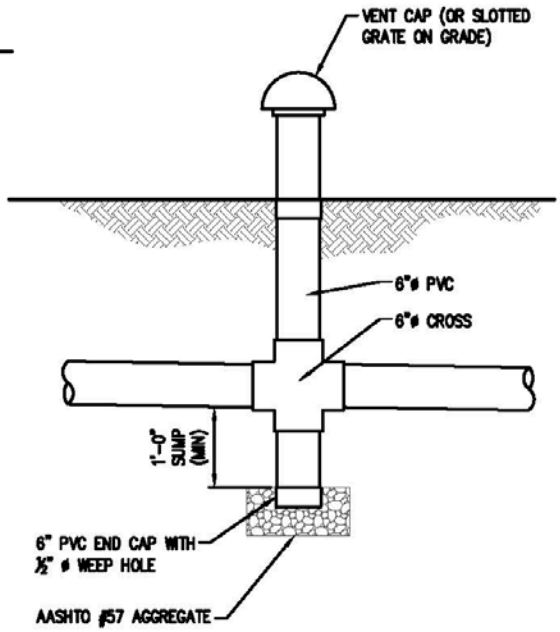


ROOF DRAIN LATERAL/CLEANOUT DETAIL



IN-LINE CLEANOUT DETAIL

ROOF DRAIN & IN-LINE LATERAL/CLEANOUT

STANDARD SWM SPECIFICATIONS

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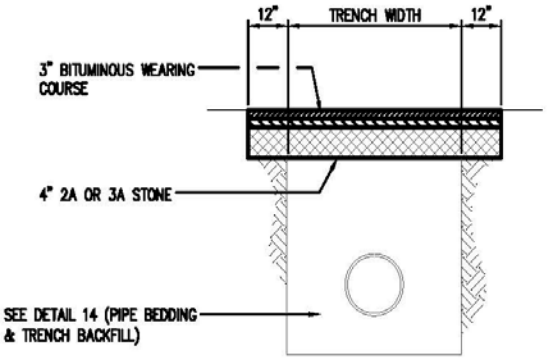
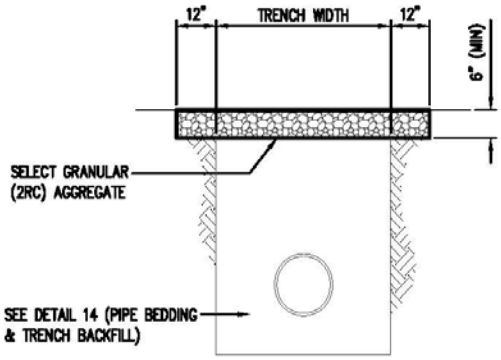


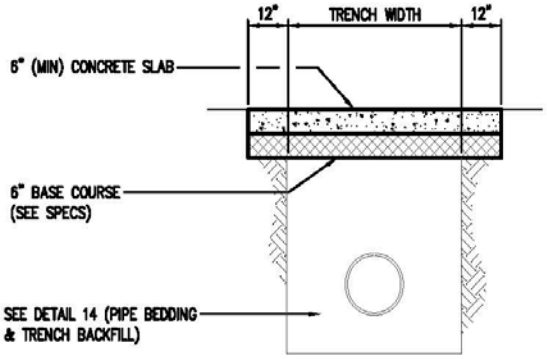
NOTE: MATCH EXISTING WIDTH OF DRIVEWAY

PAVED DRIVEWAY RESTORATION



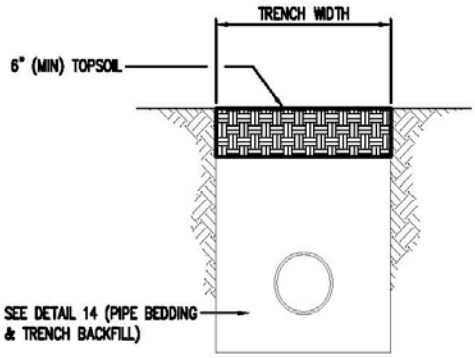
NOTE: MATCH EXISTING WIDTH OF DRIVEWAY

STONE DRIVEWAY RESTORATION



NOTE: MATCH EXISTING WIDTH OF DRIVEWAY

CONCRETE DRIVEWAY RESTORATION



NOTE: MATCH EXISTING WIDTH OF DRIVEWAY

LAWN RESTORATION

PERMANENT RESTORATION FOR AREAS OTHER THAN ROADWAYS

STANDARD SWM SPECIFICATIONS

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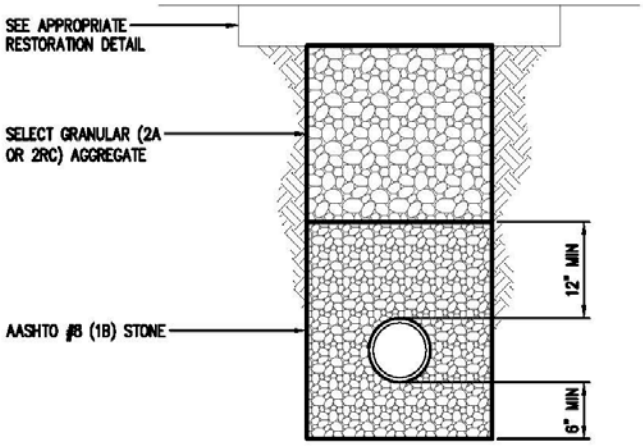
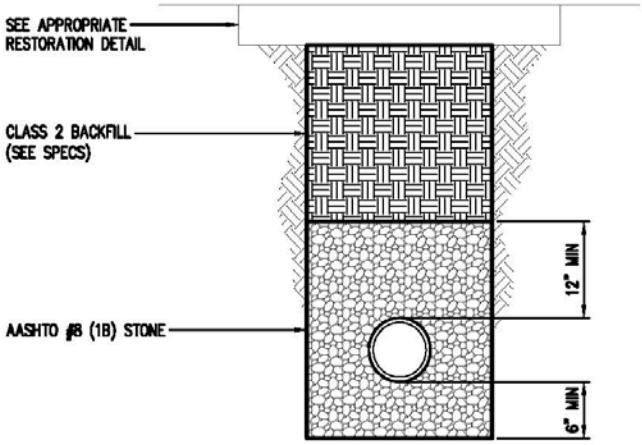


ROADWAYS & SHOULDERS



OTHER THAN ROADWAYS & SHOULDERS

PIPE BEDDING AND TRENCH BACKFILL

STANDARD SWM SPECIFICATIONS

NOTES:

1. BACKFILL MATERIAL SHALL BE PLACED IN 12" (MAX) LIFTS. THOROUGHLY COMPACT EACH LIFT WITH MECHANICAL TAMPERS OR BY OTHER ACCEPTABLE METHODS FOR THE FULL TRENCH WIDTH. COMPACT TO NOT LESS THAN 100% OF THE DETERMINED DRY WEIGHT DENSITY OF THE BACKFILL MATERIAL.

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SHEET NO. 14

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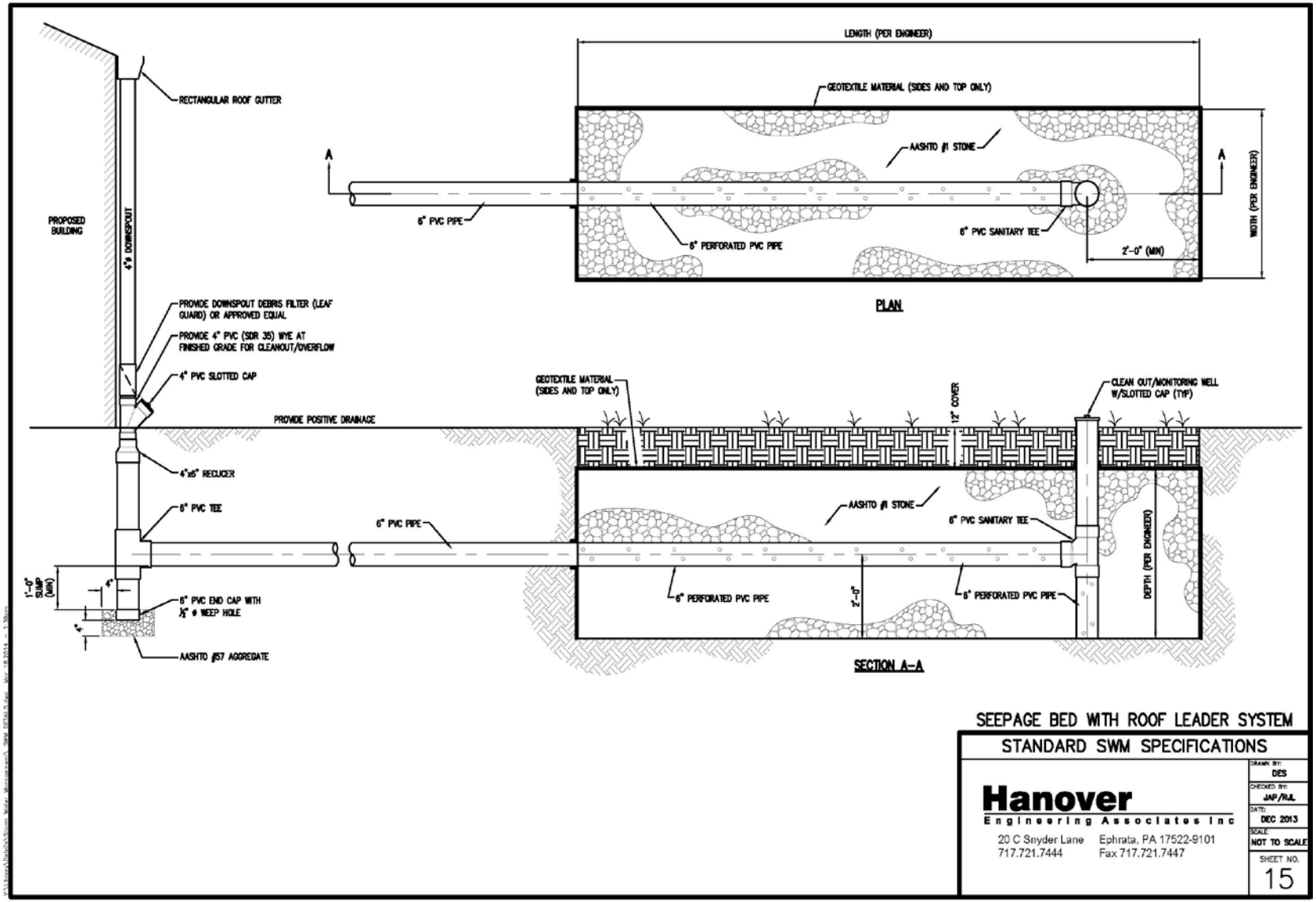
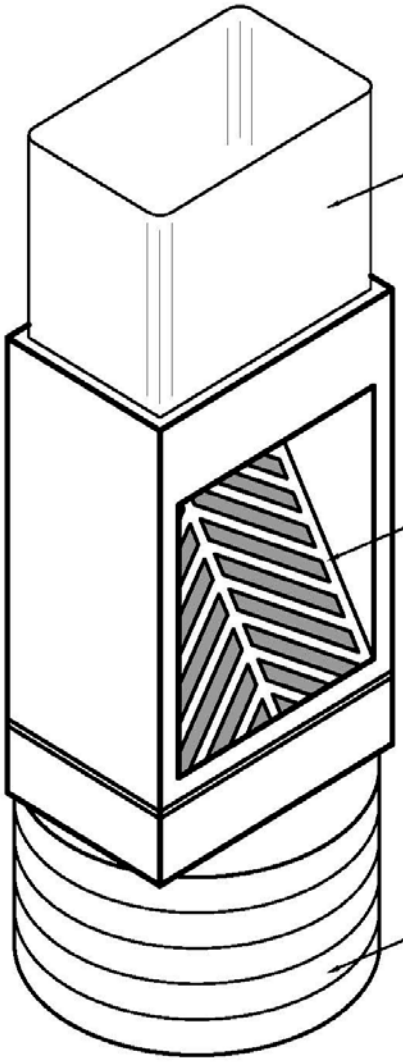


SEEPAGE BED WITH ROOF LEADER SYSTEM

STANDARD SWM SPECIFICATIONS

Hanover
Engineering Associates Inc
20 C Snyder Lane Ephrata, PA 17522-9101
717.721.7444 Fax 717.721.7447

DRAWN BY:	DES
CHECKED BY:	JAP/RJL
DATE:	DEC 2013
SCALE:	NOT TO SCALE
SHEET NO.	15



NOTE:
USE DOWNSPOUT DEBRIS FILTER
OR APPROVED EQUAL.

WATERPROOF.COM LLC
1253 HALLMARK CT.
N. OAKDALE, MN 55128
(651) 644-2000

DOWNSPOUT DEBRIS FILTER

STANDARD SWM SPECIFICATIONS

Hanover
Engineering Associates Inc
20 C Snyder Lane Ephrata, PA 17522-9101
717.721.7444 Fax 717.721.7447

DRAWN BY:	RLS
CHECKED BY:	JAP/RJL
DATE:	DEC 2013
SCALE:	NOT TO SCALE
SHEET NO.	16

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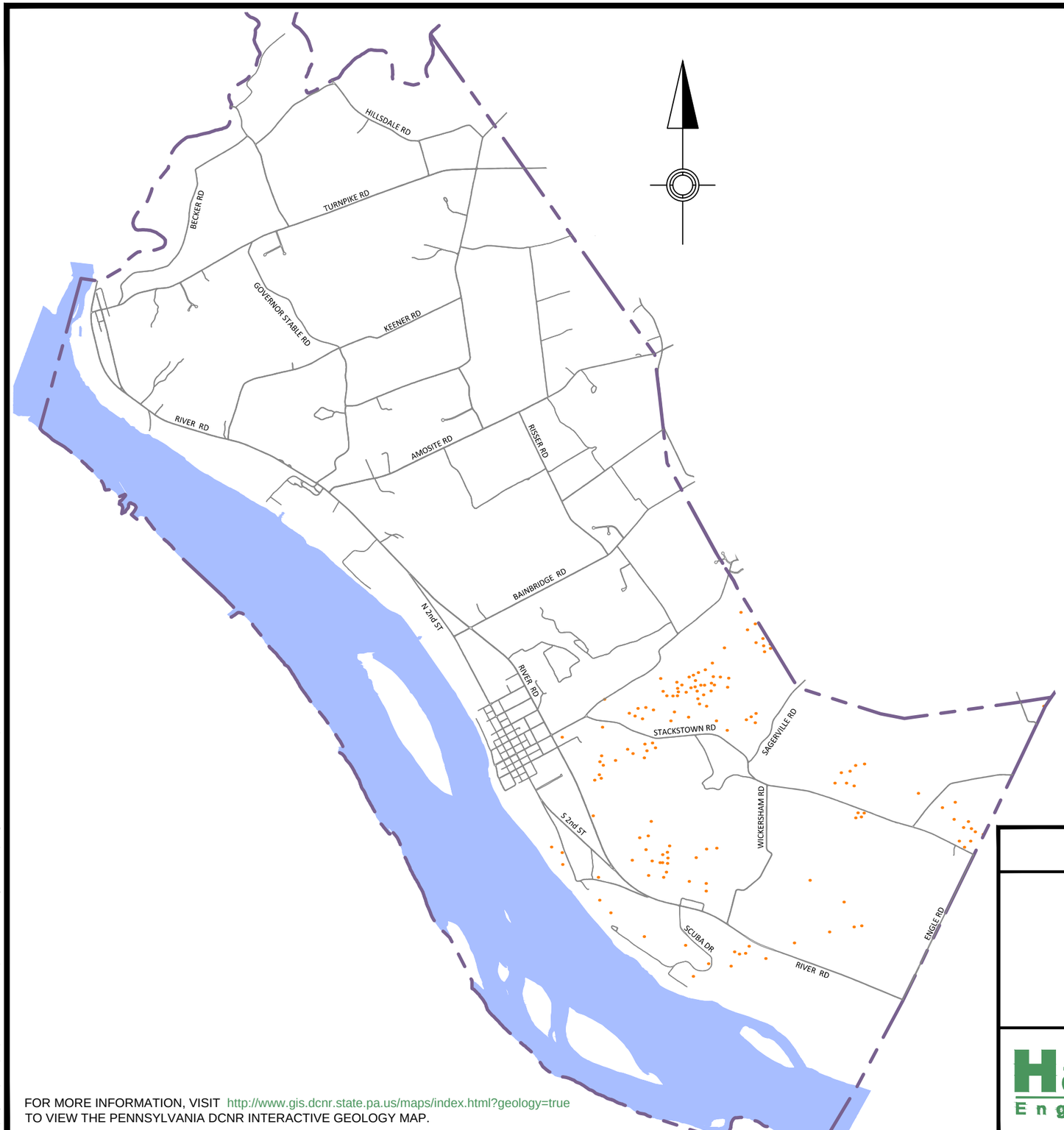
APPENDIX D.

CONOY TOWNSHIP KNOWN KARST FEATURES MAP



FOR MORE INFORMATION, VISIT http://www.gis.dcnr.state.pa.us/maps/index.html?geology=true
TO VIEW THE PENNSYLVANIA DCNR INTERACTIVE GEOLOGY MAP.

GRAPHIC SCALE

3500 0 1750 3500 7000 14000

(IN FEET)

1 INCH = 3500 FT

KNOWN KARST FEATURES LEGEND

SURFACE DEPRESSIONS OR SINKHOLES PER DCNR

KARST FEATURES MAP

STORMWATER MANAGEMENT ORDINANCE

CONOY TOWNSHIP

LANCASTER COUNTY

PENNSYLVANIA

DRAWN BY: RLS	PROJECT NO. CON13-14
CHECKED BY: JAP	
DATE: 12 JUN 14	SHEET NO. 1 OF 1
SCALE: 1" = 3500'	

Hanover Engineering Associates Inc

20 C Snyder Lane
Ephrata, PA 17522-9101
717.721.7444
Fax 717.721.7447

APPENDIX E.

STORMWATER MANAGEMENT AGREEMENT AND DECLARATION OF EASEMENT

Prepared by Bernadette M. Hohenadel
and Return to Same: Nikolaus & Hohenadel, LLP
212 North Queen Street
Lancaster, PA 17603
717-299-3726

Parcel ID #:
Conoy Township

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 _____, _____ County, Pennsylvania, (hereinafter "Conoy Township");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Lancaster County, Pennsylvania, at _____ , (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 Conoy Township (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 Conoy Township, provides for management of stormwater within the confines of the Property through the use of Stormwater Management Best Management Practices (BMPs); and

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

WHEREAS, Conoy Township requires, through the implementation of the SWM Site Plan, that SWM Facilities as required by said SWM Site Plan and the Conoy Township 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 Conoy Township, 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, Conoy Township 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, Conoy Township 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 Township 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 Conoy Township.

5. In the event Conoy Township, 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 Conoy Township for all expenses (direct and indirect) incurred, plus a 10% penalty, within 10 days of receipt of invoice from Conoy Township.

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 Conoy Township 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 the Township.

8. Conoy Township 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.

For Conoy Township:

ATTEST: _____ _____

Township Secretary (Vice) Chair, Board of Supervisors

(SEAL)

For the Landowner:

WITNESS or ATTEST if corporate entity

_____ _____

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF LANCASTER :

On this, the _____ day of _____, 2017, before me, the undersigned officer, personally appeared _____, who acknowledge himself/herself to be the _____ of the Township of Conoy, a municipal corporation, and that he/she as such officer, being authorized to do so, executed the foregoing instrument for the purposes therein contained by signing the name of the corporation by himself/herself as such officer.

IN WITNESS WHEREOF, I hereunder set my hand and official seal.

_____
Notary Public

COMMONWEALTH OF PENNSYLVANIA :
: SS
COUNTY OF LANCASTER :

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)**

If there is mortgage on property, may need Joinder from Mortgagee (financial institution)