

**BERWICK TOWNSHIP
STORMWATER MANAGEMENT
ORDINANCE**

ORDINANCE NO. 83

MUNICIPALITY OF
BERWICK TOWNSHIP
ADAMS COUNTY, PENNSYLVANIA

Adopted at a Public Meeting Held on

July 23, 2012

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AN ORDINANCE ESTABLISHING REGULATIONS AND STANDARDS FOR STORMWATER MANAGEMENT WITHIN THE TOWNSHIP OF BERWICK, COUNTY OF ADAMS; ESTABLISHING PROCEDURES FOR THE APPLICATION AND ADMINISTRATION OF THESE REGULATIONS AND STANDARDS; AND PROVIDING PENALTIES FOR THE VIOLATION THEREOF.

BE IT ORDAINED by the Supervisors of the Township of Berwick, Adams County, Pennsylvania as follows:

ARTICLE I - GENERAL PROVISIONS

Section 101. Short Title

This Ordinance shall be known and may be cited as the "Berwick Township Storm water Management Ordinance."

Section 102. Statement of Findings

The governing body of Berwick Township finds that:

- A. Storm water 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.
- B. Inadequate management of accelerated runoff of storm water resulting from development throughout a watershed increases flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control storm water, 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.
- C. A comprehensive program of storm water management, including reasonable regulation of development and activities causing accelerated runoff, is fundamental to the public health, safety, and welfare and the protection of people of Berwick Township, their resources, and the environment.

Section 103. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within Berwick Township and its watersheds by minimizing the harm and maximizing the benefits described in Section 102 of this Ordinance, through provisions designed to:

- A. Meet water quality requirements under state law, including regulations at 25 Pa. Code 93, to protect, maintain, reclaim, and restore the existing and designated uses of the waters of the Commonwealth.
- B. Preserve the natural drainage systems as much as possible.
- C. Manage storm water runoff close to the source.
- D. Provide procedures and performance standards for storm water 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 stream beds.
- G. Provide proper operation and maintenance of all storm water management Best Management Practices that are implemented within the municipality.
- H. Provide standards to meet NPDES permit requirements.

Section 104. Statutory Authority

The Municipality is empowered to regulate land use activities that affect storm water impacts by the authority of the Second-Class Township Code, Section 2704, 53 P.S. Section 67704, and the Act of October 4, 1978, P.L. 864 (Act 167), 32 P.S. Section 680.1, *et seq.*, as amended, the "Storm water Management Act."

Section 105. Applicability

- A. All Regulated Activities, as defined in Article II, and all activities that may affect stomate runoff, including land development and earth disturbance activity, are subject to regulation by this Ordinance.
- B. Any submission that does not require a storm water management plan at the time of subdivision or land development will still be required to address storm water management at the time the individual lots are developed or construction commences, unless said subdivision proposes infrastructure features, such as a cul-de-sac street, for which storm water management controls are ordinarily required.
- C. Development of the individual lots is subject to storm water management as defined within the ordinance.

Section 106. Repealer

Any other ordinance provision or regulation of the Municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to give this Ordinance full force and effect to the extent of the inconsistency only.

Section 107. Severability

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

Section 108. Compatibility with Other Requirements

Approvals issued and actions taken under this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by any other code, law, regulation, or ordinance. In the event of a conflict, between this Ordinance and any other ordinance, the more restrictive ordinance shall apply.

Section 109. Interpretation

Unless otherwise expressly stated, the succeeding shall, for the purposes of this Ordinance, be interpreted in the following manner:

- A. Words used in the present tense also imply the future tense.
- B. Words used in the singular include the plural, and vice versa.
- C. Words of masculine gender include feminine gender, and vice versa.
- D. The words and abbreviation "includes," "including," "shall include," "such as," and "e.g." are not limited to the specific example(s) given but are intended to extend the words or words' meaning(s) to all other instances of like kind and character.
- E. The words "shall," "required," or "must" are mandatory; the words "may" and "should" are permissive.

Section 110. Erroneous Permit

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

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 storm water runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety, or other property. Such measures shall include actions as are required to manage the rate, volume, direction, and quality of resulting storm water runoff in a manner which adequately protects health, property and water quality.

Section 112. Municipal Liability Disclaimer

- A. Neither the granting of any approval under this Ordinance, nor the compliance with the provisions of this Ordinance, or with any condition imposed by a municipal official hereunder, shall relieve any person from any responsibility or damage to persons or property resulting there from, or as otherwise imposed by law nor impose any liability upon the Municipality for damages to persons or property.
- B. The granting of a permit which includes any storm water management facilities shall not constitute a representation, guarantee, or warranty of any kind by the Municipality, or by an official or employee thereof, of the practicability or safety of any structure, use or other plan proposed, and shall create no liability upon or cause of action against such public body, official or employee for any damage that may result pursuant thereto.

ARTICLE II — DEFINITIONS

Section 201. Specific Terms

The following words and phrases shall have the particular meaning assigned by this section of this Ordinance. Additionally, the words and phrases which are used in this Ordinance and not defined below shall have the meaning assigned by the Berwick Township Subdivision and Land Development Ordinance if defined therein.

Adams County Conservation District — As defined in Section 3(c) of the Conservation District Law (3 P.S. § 851 (c)) that has the authority under a delegation agreement executed with DEP to administer and enforce all or a portion of the regulations promulgated under 25 Pa. Code 102.

Adverse Impact - Any deleterious effect on waters or wetlands, including their quality, quantity, and surface area.

Agricultural Activity - Activities associated with agriculture such as agricultural cultivation, agricultural operation, and animal heavy use areas. This includes the work of producing crops including tillage, land clearing, plowing, disking, harrowing, planting, harvesting crops or pasturing and raising of livestock and installation of conservation

measures. Construction of new buildings or impervious area is not considered an agricultural activity.

Applicant - A landowner, developer, or other person who has filed an application to the municipality for approval to engage in any Regulated Activity at a project site in the Municipality.

Best Management Practice (BMP) - Activities, facilities, designs, measures, or procedures used to manage storm water impacts from Regulated Activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this Ordinance.

Best Management Practice, Nonstructural — Operational and/or behavior-related practices that attempt to minimize the contact of pollutants with storm water runoff.

Best Management Practice, Structural — Measures consisting of a physical device or practice that is installed to capture and treat storm water runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale retention ponds and constructed wetlands, to small-scale underground treatment systems, infiltration facilities, filter strips, low impact design, bioretention, wet ponds, permeable paving, grassed swales, riparian or forested buffers, sand filters, detention basins, and manufactured devices. Structural storm water BMPs are permanent appurtenances to the project site.

BMP Manual — Pennsylvania Storm water Best Management Practices Manual, Pennsylvania Department of Environmental Protection, December 2006 (Document #363-0300-002), as amended and updated.

Board of Supervisors - The Board of Supervisors of the Township of Berwick, Adams County, Pennsylvania.

Channel - A natural or artificial watercourse with a definite bed and banks which confine and conduct continuously or periodically flowing water.

Culvert - A structure which carries surface water through an obstruction.

Dam - An impoundment structure regulated by the Pennsylvania DEP Chapter 105 regulations.

Dedication - The deliberate appropriation of property by its owner for general public use.

DEP - The Pennsylvania Department of Environmental Protection.

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

Detention Basin - A structure designed to retard storm water runoff by temporarily storing and releasing the runoff at a predetermined rate.

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

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

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

Drainage Area - That area which contributes runoff to a point chosen as the design point, along a horizontal path, enclosed by an area of higher elevation.

Drainage Easement - A right granted by a landowner to a grantee, allowing the use of private land for storm water management purposes.

Drainage Plan (also storm water management plan) — The documentation of the storm water management system, if any, to be used for a given project site.

Earth Disturbance Activity - A construction or other human activity which disturbs the surface of the land, including land 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, and the moving, depositing, stockpiling, or storing of soil, rock or earth materials.

Erosion - The natural process by which the surface of the land is worn away by water, wind, or chemical action.

E&S Manual — The Pennsylvania DEP Erosion and Sedimentation Control Manual, as amended and updated.

Erosion and Sedimentation Control Plan (E&S 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.

Evapotranspiration - The combined process of water surface evaporation, soil moisture evaporation, and plant transpiration.

Existing Condition - The dominant land cover during the 5-year period immediately preceding a proposed Regulated Activity.

FEMA - Federal Emergency Management Agency.

Floodplain - Any land area susceptible to inundation by water from any natural source or delineated by applicable FEMA maps and studies as being a special flood hazard area.

Forest Management! Timber Operations - Planning and activities necessary for the management of forest land. These include conducting a timber inventory, preparation of a forest management plan, silvicultural treatment, developing or establishing a cutting budget, logging road design and construction, timber harvesting, site preparation, and reforestation.

Hydrologic Soil Group (HSG) - A group of soils having similar runoff potential under similar storm and cover conditions. HSGs range from A to D, with A soils being the most pervious and D soils being the least pervious.

Impervious Surface (Impervious Area) - A surface that prevents the infiltration of water into the ground. Impervious surfaces and areas include but are not limited to roofs, additional indoor living spaces, patios and decks, garages, storage sheds and similar structures, streets, driveways, access drives, parking areas, and sidewalks. Any areas designed to be covered by loose surfacing materials such as gravel, stone and/or crushed stone, and intended for storage of and/or travel by vehicles, or pedestrians shall be considered impervious. Surfaces or areas designed, constructed and maintained to permit infiltration may be considered pervious.

Infiltration - Water flowing downward through the ground surface.

Infiltration Structure - A structure designed to convey water into the ground, such as a trench, pit or french drain.

In-Kind Repair! Replacement — Repair or replacement which uses the same or similar materials in the same location.

Invasive! Exotic Plants — Plant species on the "Invasive Exotic Plants in Pennsylvania List" published by the PA Department of Conservation and Natural Resources, as amended.

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

Land Development - Shall include any of the following activities:

A. the improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving:

1. a group of two (2) or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or
2. the division or allocation of land or space, whether initially or cumulatively, between or among two (2) or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features.

B. A subdivision of land.

Limit of Disturbance — A line provided on the E&S Plan or SWM Plan that indicates the total area to be disturbed over the life of the project.

Loading Ratio — The ratio of impervious area draining to a storm water management facility to the area of the storm water management facility itself

Municipality — Berwick Township, Adams County, Pennsylvania.

Noxious Plant — Those species as listed in the PA Noxious Weed Control Law (3 P.S. § 255.1-255.11), as amended and/or recodified.

NPDES - National Pollution Discharge Elimination System, as authorized by the Clean Water Act (33 U.S.C. §1251 *et seq.* [1972], as amended).

NPDES Permit — A permit required for storm water discharges associated with construction activities, as required by the Clean Water Act (33 U.S.C. §1251 *et seq.* [1972], as amended).

NRCS - USDA Natural Resources Conservation Service (previously SCS).

O&M - Operation and Maintenance.

O&M Plan - Operation and Maintenance Plan.

PCSM - Post-Construction Storm Water Management.

PCSM Plan — Post Construction Storm Water Management Plan.

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

Pervious Area - Any area not defined as impervious.

Pennsylvania Municipalities Planning Code - Act of 1968, P.L.805, No. 247, as reenacted and amended.

Point Source - Any discernible, confined, or discrete conveyance, including, but not limited to: any pipe, ditch, channel, tunnel, conduit, well, discrete fissure, container, rolling stock, CAAP, CAFO, landfill leachate collection system, or vessel or other floating craft from which pollutants are or may be discharged.

Project Site (Site) - The specific area of land where any Regulated Activity in the municipality is planned for, conducted on, constructed, or maintained.

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

Reduction Factor — A form of safety factor that, when multiplied by the site tested infiltration rate, is used to help determine the design infiltration rate for a storm water management facility.

Regulated Activities - Any earth disturbance activities or any activities that involve the alteration or development of land in a manner that may affect storm water runoff.

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

Retention Basin - An impoundment in which storm water is stored and not released to surface waters of the Commonwealth.

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

Riparian Forest Buffer - A type of riparian buffer that consists of permanent vegetation that is predominantly native trees and shrubs along surface waters 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.

Road Maintenance Activities — See definition as found in Title 25, Chapter

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

Safety Factor — An adjustment applied to a site-tested infiltration rate to ensure that the designed infiltration rate for a storm water management facility is less than that shown under tested conditions.

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

Simplified Approach (SA) — A process that property owners proposing certain types of projects may utilize to prepare a storm water management plan without having to conduct the detailed technical analysis and design required for larger projects.

Special Management Areas — Those areas outlined in Chapter 7 of the BMP Manual. Special Management Areas include: brownfields, highways and roads, karst areas, mined lands, water supply well areas, surface water supplies and special protection waters.

Stabilization - The prevention of soil loss through erosion by means of a synthetic or vegetative matrix.

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

Storm Sewer - A pipe or conduit, or a system of pipes or conduits, which intercepts and carries surface storm water runoff, but excludes sewage, industrial wastes and similar discharges.

Storm water - Drainage runoff from the surface of the land resulting from precipitation, snow melt or ice melt.

Storm water Management Facility - Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects storm water runoff. Typical storm water management facilities include but are not limited to: detention and retention basins; open channels; storm sewers; pipes; and infiltration facilities.

Storm water Management Plan (The Plan) - The Adams County Storm water Management Plan of November, 2011, which incorporates the requirements of the Act of October 4, 1978, P.L. 864 (Act 167), as amended, and known as the "Storm Water Management Act."

Storm water Management Site Plan (SWM Site Plan) — A plan prepared by the developer or his representative indicating how storm water runoff will be managed at the development site in accordance with this Ordinance.

Subdivision - The division or re-division of a lot, tract or parcel of land by any means into two or more lots, tracts or parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes of an area of more than ten acres, not involving any new street or easement of access or any residential dwelling, shall not be considered a subdivision.

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

SWM - Storm water Management.

Technical Review Checklist (Optional) — A checklist of technical items to be used by the reviewing entity when reviewing a PCSM Plan.

Township — See Subdivision and Land Development Ordinance

USDA - United States Department of Agriculture.

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

Watershed - Region or area drained by a river, watercourse, or other surface water of this Commonwealth.

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

ARTICLE III - STORMWATER MANAGEMENT STANDARDS

Section 301. General SWM Site Plan Requirements

A. For all regulated activities, unless preparation of an SWM Site Plan is specifically exempted in Section 302:

1. Preparation and implementation of an approved SWM Site Plan is required.
2. No regulated activities shall commence until the Municipality issues written approval of an SWM Site Plan which demonstrates compliance with the requirements of this Ordinance.

B. All SWM Site Plans for Regulated Activities shall include such measures as necessary to:

1. Protect health, safety, and property.
2. Meet the water quality goals of this Ordinance, as stated in Section 103, by including measures that:

- a. Minimize disturbance to floodplains, wetlands, wooded areas, and existing vegetation.
 - b. Maintain or extend riparian buffers.
 - c. Avoid erosive flow conditions in natural flow pathways.
 - d. Minimize thermal impacts to waters of the Commonwealth.
 - e. Disconnect impervious surfaces by directing runoff to pervious areas.
 - f. Minimize soil disturbance and compaction.
3. Incorporate the techniques for Low Impact Development Practices described in the Pennsylvania Storm water Best Management Practices Manual (BMP Manual) which is hereby incorporated by reference.
- C. Storm water flows onto adjacent property shall not be created, increased, decreased, relocated, or otherwise altered without the written notification of the adjacent property owner(s) by the developer. Copies of all such notifications shall be included in the SWM Site Plan submission.
 - D. For all Regulated Activities where erosion and sediment control is required in accordance with Title 25 of the Pennsylvania Code and the Clean Streams Law, the SWM Site Plan shall include the required erosion and sedimentation control measures. Necessary E&S BMPs shall be designed in accordance with the Erosion and Sediment Pollution Control Program Manual (E&S Manual) 2, No. 363-2134-008 (April 15, 2000), as amended and updated which is hereby incorporated by reference. Approval of the SWM Site Plan by Berwick Township shall be conditioned on the applicant obtaining erosion and sedimentation control approval from the appropriate agency(ies), when applicable.
 - E. For all Regulated Activities where NPDES permitting is required in accordance with the Clean Water Act (33 U.S.C. §1251 *et seq.* [1972], as amended), the SWM Site Plan shall include the information required in the applicant's NPDES Permit application. Approval of the SWM Site Plan by Berwick Township shall be conditioned on the applicant obtaining NPDES Permit approval from the appropriate agency(ies), when applicable.
 - F. For all regulated activities, implementation of the volume controls in Section 304 is required.
 - G. Special Management Areas — SWM Site Plans involving Regulated Activities within Special Management Areas shall be prepared in a manner consistent with the guidance provided in Chapter 7 of the BMP Manual. The SWM Site Plan submission shall include design details for SWM BMPs within said Special Management Area.

- H. A SWM Site Plan may propose that storm water related to the proposed Regulated Activities be accommodated by existing storm water management facilities on adjoining or nearby properties provided that the SWM Site Plan documents the following.
1. The use of the storm water management facilities located on said adjoining or nearby property is approved in writing by the owner of the property.
 2. The storm water management facilities located on said adjoining or nearby property are designed in a manner that can accommodate the storm water management needs of the Regulated Activity in a manner consistent with all requirements of this Ordinance. The SWM Site Plan shall include all documentation necessary for Berwick Township to confirm such compliance.
- I. The design storm volumes to be used in the analysis of peak rates of discharge shall be obtained from the Precipitation-Frequency Atlas of the United States, Atlas 14, Volume 2, Version 3.0, as amended and updated, U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), National Weather Service, Hydro meteorological Design Studies Center, Silver Spring, Maryland. NOAA's Atlas 14 can be accessed at: <http://hdsc.nws.noaa.gov/hdsc/pfds/>.
- J. SWM Site Plans, once approved by Berwick Township, shall remain on site throughout the duration of the Regulated Activity and be available for review as may be necessary by representatives of Berwick Township.
- K. The design of all facilities over karst shall include an evaluation of measures to minimize adverse effects.
- L. Berwick 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 municipality shall maintain a record of consultations with DEP pursuant to this paragraph.

Section 302. Exemptions

- A. A property owner or developer of any Regulated Activity that meets the following exemption criteria is, upon approval from Berwick Township, exempt from the formal SWM plan submission requirements of this Ordinance as specified herein. However, the property owner or developer shall be subject to all other requirements of this Ordinance other than the formal SWM plan submission requirements for which an exemption or exemptions have been authorized. The criteria for exemption in this Section apply to the total development proposed, including instances in which the development is proposed to take place in phases. The date of enactment of this Ordinance shall be the starting point from which future development and the respective exemption criteria shall be cumulatively considered and regulated.

1. Regulated Activities that involve equal to or less than one thousand (1,000) square feet of impervious surface may be exempted from the peak rate control, volume control and the SWM Site Plan preparation and submission requirements of this Ordinance. The applicant shall complete and submit Worksheet A and a Sketch Plan as described in the Storm water Management Design Assistance Manual.
2. Regulated Activities that involve greater than one thousand (1,000) square feet and equal to or less than ten thousand (10,000) square feet of impervious area, and where the all the proposed impervious area can be entirely disconnected, may be exempted from the peak rate control, volume control, and the SWM Site Plan preparation and submission requirements of this Ordinance. The applicant in this instance shall complete and submit the Storm water Management Worksheets (A&B) from the Storm water Management Design Assistance Manual, a Minor Storm water Site Plan, and an executed Owner's Acknowledgement.
3. Regulated Activities that involve greater than one thousand (1,000) square feet and equal to or less than five thousand (5,000) square feet of impervious area may be exempted from the peak rate control and volume control preparation and submission requirements of this Ordinance. The applicant shall complete and submit the Storm water Management Worksheets (A&B) from the Storm water Management Design Assistance Manual, a Minor Storm water Site Plan showing BMP facilities, an executed Owner's Acknowledgement or Operation and Maintenance Agreement (as required).
4. Agricultural Activities shall be exempt from the rate control, volume control and SWM Site Plan preparation and submission requirements of this Ordinance provided the agricultural activities are performed in accordance with the requirements of 25 Pa. Code 102. Further, such activities shall not be subject to the exemption approval process of Section 302.B of this ordinance.
5. Forest management and timber operations are exempted from the rate control, volume control and SWM Site Plan preparation and submission requirements of this Ordinance provided the forest management and timber operations are performed in accordance with the requirements of 25 PA Code 102 which shall include preparation of an erosion control plan for submission to the Adams County Conservation District.
6. Regulated Activities involving domestic gardening for single-family consumption shall be exempted from volume control, rate control, and SWM Site Plan preparation and submission requirements of this Ordinance and shall not be subject to the exemption approval process of Section 302.B of this Ordinance.
7. In Kind Repair, In Kind Replacement, and maintenance of existing surfaces, and structures shall be exempted from volume control, rate control, and SWM Site

Plan preparation and submission requirements of this Ordinance and shall not be subject to the exemption approval process of Section 302.B of this Ordinance.

B. Authorization of Exemptions: Berwick Township shall determine, in accordance with the following requirements and process, whether a proposed Regulated Activity may be exempted from any of the requirements of this Ordinance.

I. The property owner or developer proposing the Regulated Activity shall submit materials as required by the Design Assistance Manual.

2. Upon receipt of said materials, the Township or its designee shall either approve or deny the exemption request. If the exemption request is denied, the Township or its designee shall direct the property owner or developer to submit the information required to demonstrate that the proposed Regulated Activity complies with the requirements of this Ordinance or meets the exemption criteria.

3. Exemption request approval shall be at the discretion of Berwick Township, and shall be subject to the following:

a. Berwick Township may deny any exemption request or suspend or revoke any approved exemption request at any time for any project where Berwick Township believes that the proposed Regulated Activity poses a threat to public health, safety, property, or the environment.

b. Approval of an exemption request does not relieve the property owner or developer from other applicable requirements of this Ordinance or of other Berwick Township ordinance or regulations.

c. Berwick Township reserves the right to deny an exemption request if a preexisting drainage problem is known or has been identified or if a drainage problem is expected to exist downstream from the proposed Regulated Activity.

Section 303. General Design Standards

A. Impervious Area.

1. The measurement of impervious areas shall include all of the impervious areas in the total proposed development, even if development is to take place in phases.

2. For development taking place in phases, the total proposed impervious area within the SWM Site Plan must be used in determining conformance with this Ordinance.

3. For projects that add impervious area to a parcel, the total impervious area on the parcel is subject to the requirements of this Ordinance; except that the volume controls in Section 304 and the peak rate controls of Section 305 do not need to be retrofitted to existing impervious areas that are not being altered by the proposed Regulated Activity.
- B. Normally dry, open-top storage facilities, designed as such, shall completely drain both the volume control and rate control capacities over a period of time not less than 24 hours and not more than 72 hours from the end of the design storm. However, any designed infiltration volume at such facilities is exempt from the minimum 24-hour standard, i.e., may infiltrate in a shorter period of time, so long as none of the storm water intended for infiltration is discharged into the surface waters of the Commonwealth.
 - C. 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.

Section 304. Volume Controls

The low impact development practices provided in the BMP Manual shall be utilized for all Regulated Activities. Water volume controls shall be implemented using the Design Storm Method (CG 1) in Section 304.A or the Simplified Method (CG 2) in Section 304.B. For Regulated Activity involving less than one (1) acre of impervious coverage that does not require hydrologic routing to design the storm water facilities, the applicant may select either methodology on the basis of economic considerations, the intrinsic limitations on applicability of the analytical procedures associated with each methodology, and/ or other factors. The Design Storm Method in Section 304.A shall be used for all Regulated Activity involving greater than one (1) acre of impervious coverage.

- A. The Design Storm Method (CG-1 in the BMP Manual) may be used for any size of Regulated Activity. This method requires detailed modeling to achieve the following standards.
 1. The post-development total runoff volume shall not increase for all storms equal to or less than the two (2)-year 24-hour duration precipitation.
 2. For modeling purposes:
 - a. Existing (pre-development), non-forested, pervious areas must be considered meadow.
 - b. Twenty percent (20%) of existing impervious area, when present, shall be considered meadow in the model for existing conditions. The Township may require a greater percentage be considered as meadow

where the Township has identified a preexisting drainage problem for a site in which storm water management was not previously incorporated.

B. The Simplified Method (CG-2 in the BMP Manual) is independent of site conditions and may be used for projects involving Regulated Activities proposing equal to or less than one (1) acre of impervious coverage and that do not require design of storm water storage facilities. When the Simplified Method is used to address storm water management needs of new impervious surfaces, the following design standards shall be achieved:

1. Storm water facilities shall capture at least the first two (2) inches of runoff from all new impervious surfaces.
2. At least the first one (1) inch of runoff from new impervious surfaces shall be permanently removed from the runoff flow and shall not be released into the surface waters of the Commonwealth. Removal options for the first one (1) inch of runoff include, but are not necessarily limited to, reuse and infiltration.
3. Infiltration facilities shall be designed to accommodate infiltration of as much of the permanently removed runoff as site conditions will allow. If the soils within the project area do not allow for infiltration of the entire first one (1) inch of runoff from new impervious surfaces, other forms of runoff volume control shall be used to achieve the required removal volume. Such measures may include, but are not limited to vegetated roofs, bioretention, and capture-and-reuse systems. In addition, the Infiltration Alternative authorized in Section 304.0 may be employed.
4. This method is exempt from the requirements of Section 305, Rate Controls.

C. Infiltration Alternative: Where infiltration is not possible due to soil characteristics or is not desirable given other characteristics, water quality control may be proposed as an alternative to strict adherence to the volume control standards of Section 304 of this Ordinance. Where water quality control is proposed, the following standards shall be achieved.

1. At a minimum, the following documentation shall be provided to justify the proposal to reduce the infiltration requirements:
 - a. Description of and justification for field infiltration/ permeability testing with respect to the type of test and test locations.
 - b. An interpretive narrative describing existing soils of the site and their structure as these relate to the interaction between soils and water characteristics of the site. In addition to providing soil and soil profile descriptions, this narrative shall identify depth to seasonal water tables and

depth to bedrock and provide a description of all subsurface elements (restrictive layers, geology, etc.) that influence the direction and rate of subsurface water movement.

c. A qualitative assessment of the site's contribution to annual aquifer recharge shall be made, along with the identification of any restrictions or limitations associated with the use of designed infiltration facilities.

d. The provided documentation must be signed and sealed by a professional engineer or geologist.

2. Water Quality BMPs shall be implemented on all permanent storm water discharges from the proposed project site to achieve pollutant removal efficiencies in accordance with the Table 304.1.

Table 304.1 Required Pollutant Removal Efficiencies for Infiltration Alternatives

Pollutant Load	Units	Required Removal Efficiency (%)
Total Suspended Solids (TSS)	Pounds	85%
Total Phosphorus (TP)	Pounds	85%
Total Nitrate (NO ₁)	Pounds	50%

3. Design guidance from the most current version of the Pennsylvania Storm water Best Management Practices Manual, or equivalent resource as pre-coordinated with Berwick Township, shall be consulted when choosing design criteria for water quality BMPs.

Section 305. Rate Controls

A. Post-development discharge rates shall not exceed the pre-development discharge rates for the 1-, 2-, 5-, 10-, 25-, 50-, and 100-year 24-hour storms. If it is shown that the peak rates of discharge indicated by the post-development analysis are less than or equal to the peak rates of discharge indicated by the pre-development analysis for 1-, 2-, 5-, 10-, 25-, 50-, and 100-year, 24-hour storms, then the requirements of this section have been met. Otherwise, the applicant shall provide additional controls as necessary to satisfy the peak rate of discharge requirement.

B. For computation of pre-development peak discharge rates, twenty percent (20%) of existing impervious areas, when present, shall be considered meadow.

Section 306. — Riparian Buffers/ Riparian Forest Buffers

Where an applicant proposes to utilize riparian buffers as the means to meet the requirements of this Ordinance, said riparian buffers shall be established and/or maintained in accordance with the BMP Manual or the publication *Riparian Forest*

Buffer Guidance, published November, 2010 by the Pennsylvania Department of Environmental Protection, and as may be amended or updated.

Section 307. Prohibited Discharges and Connections

- A. Any drain or conveyance, whether on the surface or subsurface, that allows any non-storm water discharge including sewage, process wastewater, and wash water to enter the waters of the Commonwealth is prohibited.
- B. No person shall allow, or cause to allow, discharges into surface waters of the Commonwealth which are not composed entirely of storm water, except (1) as provided in Subsection C below and (2) discharges allowed under a state or federal permit.
- C. The following discharges are authorized unless they are determined to be significant contributors to pollution to the waters of the Commonwealth:

Discharges from firefighting activities	– Flows from riparian habitats and wetlands
– Potable water sources including water line flushing	- Uncontaminated water from foundations or from footing drains
Irrigation drainage	– Lawn watering
– Air conditioning condensate	- De-chlorinated swimming pool discharges
Springs	– Uncontaminated groundwater
Water from crawl space pumps	– Water from individual residential car washing
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	– Routine external building wash-down (which does not use detergents or other compounds)
Diverted stream flows	– Water discharged in well testing for <u>potable water supplies</u>

D. In the event that the municipality or DEP determines that any of the discharges identified in Subsection C significantly contribute to pollution of the waters of the Commonwealth, the municipality or DEP will notify the responsible person(s) to cease the discharge.

Section 308. Roof Drains, Sump Pumps and Footer Drains

Roof drains, sump pumps, and footer drains should discharge to infiltration or vegetative BMPs and, to the maximum extent practicable, satisfy the criteria for DIAs. Discharges of each should be conveyed in such a manner as to not cause water problems for adjoining property owners.

Section 309. Alteration of SWM BMPs

No person shall modify, remove, fill, landscape, or alter any SWM BMPs, facilities, areas, or structures in a manner, without the written approval of Berwick Township, with the exception of necessary maintenance activities such as mowing.

Section 310. Storm water Management Technical Standards

Section 310.1. General Requirements

- A. The plan shall show all drainage within the area affecting the subject property, all existing and proposed drainage facilities, all grading proposed for the subject property, as well as the additional plan information required in this Section.
- B. All land areas shall be graded to secure proper drainage away from buildings, on-lot sewage disposal facilities, and the like, and to prevent the collection of storm water in pools. Drainage provisions shall be of such design as to carry surface waters to the

nearest practical natural drainage channel, storm sewer system detention basin or other drainage facilities. The landowner or developer shall construct and/or install such drainage structures and/or pipes as are determined necessary by the Township to prevent soil erosion, damage, siltation and to satisfactorily carry off surface water. In the design of storm drainage facilities, special consideration must be given to preventing excess runoff onto adjacent developed or undeveloped properties. In no case may any slope exceeding the normal angle of slippage of the material involved. All slopes must be protected against erosion. In no case may a change be made in the existing topography which would:

1. Result in a slope of more than 10% within twenty (20) feet of a property line.
2. Alter the existing drainage or topography in a way so as to adversely affect adjoining properties.

C. Storm sewers, culverts, bridges, and related drainage installations shall be provided:

1. To permit unimpeded flow of natural watercourses.
2. To insure adequate drainage of all low points as may be related to streets.
3. To intercept storm water runoff along streets at intervals reasonably related to the extent and grade of the area drained to prevent flow of storm water across intersections, and to prevent the flooding of intersections during the design storm.
4. To insure adequate and impeded flow of storm water under driveways in, near, or across natural watercourses or drainage swales. Properly sized pipes or other conduits shall be provided as necessary.
5. To prevent excessive flow on or across streets, sidewalks, drives, parking areas, and any other paved surface or access way.
6. To lead storm water away from springs.
7. Provide adequate drainage away from on-site sewage disposal systems.

D. The storm water management plan for each subdivision and/or land development shall take into account and provide for upstream areas within the entire watershed in computing discharge quantities, sizing of pipes, inlets and other structures. The runoff from any proposed development shall be subject to evaluation which includes the anticipated runoff from other existing or proposed developments within the same watershed. Storm water management facilities designed to serve more than one property or development, in the same watershed are encouraged, in which case consultation with the Township is required prior to design.

- E. All-natural streams, channels, swales, drainage systems and/or areas of concentration of surfaces water shall be maintained in their existing condition unless alteration is approved by the Township. In any event, all encroachment activities shall comply with Chapter 105 of the Commonwealth of Pennsylvania Department of Environmental Protection, Dam Safety and Waterway Management Rules and Regulations.
- F. Man-made structures shall be kept to a minimum and bridges, culverts; or rip-rap shall be constructed to maintain the natural characteristics of the stream and shall meet the approval of the Township.
- G. For the purpose of this subsection, streams and intermittent streams are defined as those watercourses on the Berwick Township Zoning Map, the USGS Quadrangle maps of the area, and/or determined as such pursuant to an onsite survey by the Township.
- H. Retention/detention basins shall be designed to utilize the natural contours of the land. When such design is impracticable, the construction of the basin shall utilize slopes as shallow as possible to blend the structures into the existing terrain.
- I. Any subdivision and/or land development within a Flood Hazard area shall comply with all of the provisions of the Berwick Township Zoning Ordinance.
- J. Any water originating, from non-natural sources such as swimming pools, air conditioning units, sump pumps, roof drain or other similar flow shall not be discharged directly onto any street or other public right-of-way used for pedestrian or vehicular access. The Township may require a plan that provides for these discharges.
- K. All lots, tracts, or parcels shall be graded to provide proper drainage away from buildings and dispose of the runoff without ponding, and all land within a development shall be graded to drain and dispose of surface water without ponding, except where other arrangements are approved by the Township. Grading shall not be done in such a way so as to divert water onto the property of another landowner without the expressed consent of the Township and the affected landowner.

Section 310.2. Storm water Management Plan Requirements

In addition to the Drainage Plan Requirements in the adopted Berwick Township Subdivision and Land Development Ordinance the following requirements apply:

- A. A plan showing all pre-development and post-development storm water flow to and from basins. A plan showing all post-development flows to all inlets, headwalls, swales, channels, and the like. The drainage areas and the design flow to each inlet or structure shall be delineated on a copy of the storm water management plan where applicable.
- B. A map depicting the total watershed. A USGS Quadrangle Map is suitable as the source for such a map. However, the watershed area must be highlighted or otherwise distinguished from other areas outside the watershed.

- C. Maps and drawings showing all existing and proposed drainage facilities affecting the subject property.
- D. The following storm water related items shall be included as part of the plan submission:
 - 1. Definition of existing on or off-site drainage problems.
 - 2. Appropriate storm water management criteria such as release rate percentage, direct discharge and downstream impact elevation.
 - 3. Configuration of the storm sewer and sanitary sewer system layouts.
 - 4. Location and layout of the storm water management system with a detailed description of its proposed design and operation.
 - 5. Profiles of all proposed sewers, including elevation, sizes, slopes and materials, at a scale of no less than one (1) inch equal fifty (50) feet horizontal and one (1) inch equal five (5) feet vertical. In addition, a plan (at a smaller scale where necessary) shall be provided which shows the overlay development drainage and grading.
 - 6. Locations, dimensions and design details required for the construction of all facilities. All existing and proposed detention/retention basins shall, at a minimum, be shown in plain view and shall include but not be limited to the following information:
 - a. Emergency spillway crest elevations and widths
 - b. Embankment crest elevations and widths
 - c. Outfall structure types, sizes, lengths and elevations
 - d. Outfall orifice elevations and dimensions
 - e. Bottom of basin elevation
 - 7. Soil percolation test results. Soil testing shall be completed and reported in accordance with the criteria established by the Township Engineer. Specific alternate criteria may be submitted for review and consideration.
 - 8. Final provisions for ownership and maintenance of all storm water related

facilities. *Section 310.3. Standards and Criteria*

A. Storm water Collection System.

The design of storm water collection and conveyance facilities shall be governed by the following criteria:

- 1. Peak discharge shall be computed using the Rational Formula:

$$Q = CIA$$

Where:

Q = Peak discharge in cubic feet per second

C = Runoff coefficient expressed as the ratio of peak runoff rate to the average amount of rainfall over a period of time equal to the time of concentration

I = Average rainfall intensity in inches per hour for a time equal to the time of concentration

A = Drainage area in acres

In general, the procedure from the Pennsylvania Department of Transportation, Design Manual, Part 2 shall be followed.

2. Runoff coefficients shall be computed as a weighted average of conditions which represent maximum development potential on the property. Soil types, ground slope, and storm frequency shall all be considered in the selection of Runoff Coefficients. Reference for the coefficients applied should be provided in the report.
3. Storm intensity (I) shall be computed as a function of the time of concentration (Tc). A Tc of five (5) minutes shall be used in determining intensity unless the drainage area parameters justify the use of a greater value. Use of a Tc greater than 5 min. shall be as approved by the Township Engineer.
4. The minimum full flow velocity of any storm sewer or culvert shall be 2.5 feet per second (fps).
5. Storm Frequency

The following storm frequencies are to be used for design:

- a . Local Streets - 25 year
- b . Major Intersections of Local Streets - 25 year
- c . Collector Streets and Arterial Streets - 50 year

All structures shall be designed to convey the 100-year storm flood without roadway overtopping. The Township may also require easements to convey the 100-year frequency storm through the entire project site.

Alternate criteria may be required following recommendation of the Township Engineer. In addition, functional classification of streets, for the purpose of determining storm frequencies, shall be as interpreted by the Township Engineer.

4. For storm sewers that will be dedicated to the Township, all pipe material shall either be reinforced concrete or smooth lined corrugated polyethylene pipe to be as determined by the Township. Standards as referenced from ASTM or other source acceptable to the Township Engineer shall be specified.
5. Minimum pipe size for storm sewers shall be fifteen (15) inches in diameter unless otherwise approved by the Township Engineer.
6. Installation:
 - a. Storm sewers shall be installed a sufficient time in advance of final street paving in order to allow for settlement of the trench.
 - b. Installation shall be in accordance with manufacturers recommendations, PennDOT Publication 408 and RC standards or as specified by the Township Engineer.
 - c. Minimum cover from the top of the pipe to the top of subgrade shall be twelve (12) inches.
7. Safety features shall be incorporated into the storm sewer system as necessary.
8. Minimum thickness of any corrugated steel or metal pipe shall be sixteen (16) gage or as otherwise required by the Township for anticipated load conditions.
9. Roof and basement drains must not be connected to streets, sanitary or storm sewers or roadside ditches in order to promote overland flow and infiltration/percolation of storm water.

Section 310.4. Inlets / Manholes / Junctions

- A. In general, inlets, manholes, grates, covers, frames and the like shall conform to the Pennsylvania Department of Transportation Standard Specifications, Publication 408 and RC Standards. Design shall be performed in accordance with the Pennsylvania Department of Transportation or Federal Highway Administration Standards. Additional alternate criteria may be required following review of the Township Engineer.
 1. Inlets shall be spaced such that they are not subject to flows higher than five (5) cubic feet per second or at a distance greater than four hundred feet (400) along curbed streets and at low points on sag vertical curves with an inlet on each side of the street. Additional inlets shall be placed at the upper side of street intersections, to prevent storm water from crossing the intersection. Inlets are not allowed on the intersection radii. In no case shall inlets be placed at a location where they function at less than sixty-five (65%) percent efficiency based on criteria in the PennDOT Design Manual. Design shall be such that the maximum allowable spread of water on streets shall not exceed one-half (1/2) of the travel lane or 3-inches in the gutter line, whichever is

more restrictive. At intersections, depth of flow shall not exceed 1" for the 25-year storm event.

2. Inlets shall have weep holes placed at the appropriate elevations to drain the bottom of the inlet box and the subgrade prior to placing the base and surface courses.
3. Where structures are subject to traffic loads, the structure shall be traffic rated.
4. Inlet tops in residential developments shall be bicycle safe unless otherwise approved.
5. Manholes shall not be placed more than five hundred (500) feet apart. Additionally, manholes shall be placed at points of change in horizontal and/or vertical direction of storm sewers. Inlets may be substituted for manholes where they will serve as a means of intercepting runoff.
6. If less than a forty-eight (48) inch diameter, curves in pipes or box culverts, without junction are prohibited. Tee joints, elbows, and wyes are always prohibited.
7. In all cases inlet and catch basin tops shall be designed and installed level with the road surface.
8. Inlets over four feet in depth shall be provided with steps for access. Inlets over 8-feet in depth may require structural design subject to recommendation of the Township Engineer.
9. Inlets shall be pumped up to 2" below grade as directed by the Township Engineer.

Section 310.5. Channels and Culverts

A. Culvert Design

In cases where drainage is collected by means of a headwall, and inlet or outlet conditions control, the pipe shall be designed as a culvert.

1. The minimum diameter of the culvert shall be eighteen (18) inches. Design shall be in accordance with the U.S. Federal Highway Administration design procedure.
2. The maximum HW/D ratio for inlet control shall be 1.25 or such that water surface elevation is one half (1/2) foot below the edge of street grade during a twenty-five (25) year storm event, whichever is more stringent. Roadway shall not be overtopped for a 100-year storm event.
3. Headwalls and enwalls shall be provided for all culverts unless otherwise approved by the Township Engineer. Material shall be reinforced concrete unless otherwise approved. Headwalls greater than five (5) feet in height shall be designed by a Professional Engineer.

4. Culvert pipe and material shall be the same as that required for storm sewers
5. All applicable modeling results, calculations and supporting documentation shall be submitted.

B. Channel Design

1. Manning's equation shall be used for the design of all open channels. Complete calculations shall be submitted which detail flow, depth, and velocity. For channels and swales, design for Erosion Control must be provided.
2. All channels shall be designed to prevent erosion of the channel bottom and sides. The flow velocity in all vegetated drainage channels shall not exceed the maximum permissible velocity to prevent soil erosion. Stabilization techniques such as rip-rap, sodding, geo-fabrics and/or premanufactured products shall be utilized where necessary to minimize erosion potential.
3. The design of swales and channels shall, as a minimum, conform to the design procedures as outlined by (a) The Federal Highway Administration, and (b) The Pennsylvania Department of Environmental Protection, Bureau of Soil and Water Conservation, Erosion and Sediment Pollution Control Manual.
4. Where swales are installed, and vegetative stabilization has not or will not occur between November 1 and March 1, other means of temporary stabilization shall be provided.
5. Design criteria for swales and channels shall be the same as that required for storm sewers.
6. Swales must be designed and constructed with a uniform slope to avoid ponding within the swale. Swales designed or constructed at less than 1.5% slope may be required to include an underdrain in the swale bottom.

Section 310.6. Stormwater Management Facilities

A. General Design Criteria

1. Peak discharge and runoff shall be computed using the soil-cover complex method contained in the "Urban Hydrology for Small Water Sheds", Technical Release No. 55, published by the Engineering Division, Soil Conservation Service, United States Department of Agriculture. Alternate methodology and /or computing software may be used subject to approval by the Township Engineer.
2. Stormwater shall not be re-routed or concentrated in a manner which is inconsistent with downstream conditions or where downstream properties are likely to be affected. In addition, the proposed stormwater discharge at the perimeter of the site shall not

exceed the capacity of any existing facility nor shall it alter the pre-development flow characteristics.

All new concentrated discharges of stormwater onto adjacent properties shall be within existing storm sewers or channels. The Township may require written acknowledgment or easement from adjacent property owners in the event that these conditions are not met.

3. Berwick Township has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Berwick Township Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.
4. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. Berwick Township reserves the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.
5. Berwick Township has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Berwick Township Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.
6. The design of all stormwater management facilities shall incorporate sound engineering principles and practices. Berwick Township reserves the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.

Section 310.7. Detention Basins

A. Basin Design Criteria

1. Basins shall provide control of post development peak runoff rates as specified in Section 304 of this Ordinance.
2. In locations where, known drainage or flooding problems exist and where stormwater management has not been previously provided and it is determined that the proposed development may contribute to the problem it may be recommended by the Township Engineer that the discharge of basins or other stormwater management peak flow rate controls be such that the post-development release rate from storms up to the ten (10)

year frequency be limited to the pre-development flow rate from a two (2) year frequency storm.

3. The Modified PULS Routing technique or other method approved by the Township Engineer shall be used for routing computations.

B. Basin Construction Standards

1. Basins shall not be located over any existing or proposed utility lines.
2. The maximum slope of earthen embankments shall be four (4) to one (1), with three (3) to one (1) allowed following review and recommendation from the Township Engineer. The top or toe of any slope shall be located a minimum of fifteen (15) feet from adjacent property lines, except for a downstream property line where there shall be sufficient additional distance for energy dissipation and for access of maintenance equipment but in no case shall be less than forty (40) feet unless approved otherwise by the Township. Greater slopes may be allowed with the provision of a design basis which considers fill material and stabilization where approved by the Township Engineer. In areas which are not easily accessible for maintenance, side slopes shall not exceed five (5) to one (1).
3. Where possible the side slopes and basin shape shall blend with the natural topography.
4. The minimum top width of detention basin berms shall be six (6) feet.
5. All basins shall have provisions for de-watering so as not to create unmaintainable conditions. The minimum grade of the basin floor shall be two (2%) percent to insure proper drainage towards the outlet structure. One (1%) percent may be allowed following review and recommendation of the Township Engineer or if a paved or stabilized low flow channel is provided.
6. All submitted basin plans shall indicate the construction specifications and compaction requirements to be used during construction. All earth fill dams shall be designed and certified by a registered professional engineer. Construction specifications shall be reviewed and approved by the Township Engineer.
7. A cutoff trench shall be excavated along the centerline of any dam on an earth fill embankment. The minimum depth shall be three (3) feet. The minimum bottom width shall be ten (10) feet or wide enough to permit operation of compaction equipment.
8. A minimum of six (6) inches of topsoil shall be placed on all areas affected by the basin construction (i.e. basin floor, side slopes, top of berm, and the like) to allow for the establishment of vegetation.

9. All basins shall be stabilized using methods acceptable to the USDA Soil Conservation Service.
10. The maximum water depth of a finished detention basin (measured from the lowest point in the basin floor to the crest of the emergency spillway) shall not exceed eight (8) feet unless otherwise approved by the Township Engineer.
11. Fencing: Any stormwater management facility that is designed so that it detains water on a temporary or permanent basis may be subject to the following fencing regulations:
 - a. Facilities with water depths exceeding four (4) feet or greater may require fencing, if a public safety hazard is deemed possible by the Township Supervisors. In determining the need for fencing, the Township Supervisors shall consider at a minimum, the following:
 - i. Depth of pool
 - ii. Detention or dewatering time of the facility
 - iii. Accessibility of the facility
 - iv. Proximity of the facility to existing or potential residential development or other development that would expose public to safety risks.
 - b. All gates opening through a fence enclosure shall be equipped with a self-closing and self-locking device for keeping the gate securely closed at all times.
 - c. The Berwick Township Supervisors may require the installation of a shrub barrier in lieu of a fence. The Township reserves the right to review and approve the proposed shrubbery for this application.
 - d. The fencing type, height and style shall be reviewed and approved at the discretion of the Township.
12. A minimum of one (1) foot freeboard shall be provided above the basin water surface elevation during a one hundred (100) year frequency storm.
13. Minimum floor elevations for all structures shall be two (2) feet (minimum) above the basin water surface elevation during a one hundred (100) year frequency storm. If basements will be provided; detailed calculations and water proofing design shall be provided which addresses the effects of stormwater on the structure.
14. The Township may, upon recommendation of the Township Engineer, impose additional requirements on earth fill dams for the safety and welfare of the Township.
15. For sites of geologic concern, a geotechnical analysis and design of the site as it relates to the proposed basin shall be provided.

C. Emergency Spillway Standards

1. Minimum freeboard, or the distance between the design flow elevation and the top of the settled basin embankment, shall be one (1) foot for a one hundred (100) year frequency storm.
2. Emergency spillway design should be based on a one hundred (100) year design storm when neglecting the capacity of the outlet structure and outfall culvert.
3. Emergency spillways shall be constructed on undisturbed earth, where possible. Emergency spillways shall be constructed of vegetated earth, reinforced concrete or concrete mound slabs. Emergency spillways shall NOT discharge stormwater over earthen fill or other easily erodible material without adequate protection against soil erosion. Detailed calculations and design shall be submitted. Downstream channels shall be of adequate design to convey flows from the emergency spillway to an existing stream, storm sewer or other approved discharge point.

D. Outlet Pipes and Structures

The following measures shall be incorporated into the design and construction of all outlet structures and pipes. Supporting calculations and drawings shall be submitted.

1. Antiseep collars shall be installed around all outlet pipes through embankments. The antiseep collars and their connections to the pipe barrel shall be watertight. Design calculations in accordance with the USDA Soil Conservation Service shall be submitted.
2. Temporary sedimentation controls shall be provided during construction to prevent the flow of sediment-laden runoff through the basin outlet pipe. Such measures may include temporary riser pipes, rock-filled gabions, plywood stand boxes, silt fences, skimmers and the like. Design of such measures shall comply with the requirements of the Adams County Conservation District.
3. Energy dissipation shall be provided at the outlet of detention basins, along outfall channels, and at the discharge end of all conveyance pipes.
4. Outlet control structures shall be constructed to prevent flotation.
5. Outlet control structures shall be equipped with a childproof, non-clogging, removable, trash rack for all openings larger than twelve (12) inches in diameter.
6. All pipes through earthen embankments shall be of a type, which watertight joint systems are available. Outfall pipes and culverts shall be reinforced concrete unless otherwise approved by the Township Engineer.

E. Where required by the Township an analysis shall be conducted of the conditions downstream of the discharge from the property proposed for development. Such analysis shall consider existing and proposed flow rates, velocities, potential for erosion, and

expected water surface elevations in relation to existing structures or properties. Such downstream analysis shall be submitted to the Township Engineer and where deemed necessary, to the Adams County Conservation District.

Section 310.8. Subsurface Disposal /Retention Basin Systems

A. Installation Requirements

1. The following procedures and materials shall be required for all subsurface facilities:
 - a. Excavation for infiltration facility shall be performed with equipment which will not compact the bottom of the seepage bed, infiltration trench or like facility.
 - b. The bottom of the bed or trench shall be roughened prior to placement of aggregate.
 - c. Only clean, open graded aggregate, free of fines, shall be used in subsurface systems.
 - d. The top, sides, and bottom of all seepage beds, infiltration trenches, or like facilities shall be covered with a drainage filtration fabric which meets the requirements of the Pennsylvania Department of Transportation, Publication 408 for Class I Geofabrics.
 - e. All pipes leading into subsurface drainage systems shall be equipped with screening devices to prevent debris from entering the system.
 - f. The bottom of all subsurface disposal or retention basin systems shall be a minimum of twelve (12) inches above the limiting zone as established by the site-specific soil profile. Depths of less than twelve (12) inches above the limiting zone will only be allowed where the developer provides a written report certified by a registered professional engineer, geologist, or hydrogeologist, which certifies that the condition will not create an environmental hazard.
 - g. Inspection points, cleanouts and overflow facilities shall be provided for subsurface disposal systems.
 - h. All subsurface stormwater disposal systems or retention basins shall be located a minimum of one hundred (100) feet from any potable water wells.

Section 310.9. Basins with Permanent Pools (Wet Basins)

- A. Basins designed to have a permanent pool of water stored in the reservoir shall conform to the design standards of detention or retention basins. Where deemed to be necessary, after consulting with the Township Engineer, the Township may impose

additional criteria for design and construction of wet basins. Earthen embankment designs shall be sealed by a registered professional engineer experienced in such design.

- B. Embankments shall have a slope not exceeding four (4) horizontal to one (1) vertical.
- C. Adequate stabilization shall be provided to control anticipated erosion due to wave or water level fluctuation.
- D. Where necessary wet pond embankments shall be protected from rodent intrusion.

ARTICLE IV - STORMWATER MANAGEMENT (SWM) SITE PLAN

REQUIREMENTS Section 401. SWM Site Plan Submission

- A. When a property owner or developer proposes a Regulated Activity, said property owner or developer shall submit a SWM Site Plan to demonstrate compliance with the stormwater management provisions of this Ordinance. Said submission shall be required by Berwick Township unless said Regulated Activity is exempted from SWM Site Plan submission in accordance with the exemption criteria and exemption approval process established in Section 302 of this Ordinance. Where Berwick Township determines that the property owner or developer proposing the Regulated Activity is eligible to employ the process established in the Stormwater Management Design Assistance Manual (SWM Plan Appendix C) to address the stormwater management needs of a site, the submission of the required documentation from said Manual shall substitute for the SWM Site Plan requirements of this Article.
- B. Copies of the SWM Site Plan shall be distributed as follows:
 - 1. Two (2) copies to the Municipality.
 - 2. One (1) copy to the Berwick Township Engineer, when applicable.
 - 3. One (1) copy to the Adams County Conservation District (if an NPDES permit is required).
 - 4. One (1) copy to the Adams County Planning Commission (only if submitted as a component of a subdivision and land development plan in accordance with the Berwick Township Subdivision and Land Development Ordinance.
- C. Additional copies shall be submitted as requested by Berwick Township.
- D. The property owner or developer shall submit a review fee in accordance with Article VI. Payment of the required fee shall be considered a component of the SWM Site Plan submission. The SWM Site Plan submission shall not be considered to be complete until such time that any required fee is paid.

Section 402. Plan Requirements

- A. The SWM Site Plan shall include the following information. As applicable, Stormwater Management Site Plans shall also be subject to the additional requirements as outlined specifically in the Berwick Township Subdivision and Land Development Ordinance and Standard Construction Specifications which are hereby incorporated by reference. Where the Regulated Activity for which a SWM Site Plan is being submitted is also subject to subdivision and/or land development plan review in accordance with the Berwick Township Subdivision and Land Development Ordinance, the SWM Site Plan shall be submitted as a component of the subdivision or land development plan submission for the project and shall include the following information.
1. The name of the development, the name and address of the owner of the property, and the name and address of the individual or firm preparing the SWM Site Plan. Also, to be included are the name, address, signature and seal of any registered surveyor (attesting the accuracy of the boundary survey), professional engineer, landscape architect, or professional geologist (for geomorphological assessments) contributing to and/or responsible for any aspect of the SWM Site Plan.
 2. A graphic and written plan scale of one (1) inch equals no more than fifty (50) feet. For parcels of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.
 3. North point (arrow).
 4. Existing and proposed land uses within the project boundary plus twenty-five (25) feet outside the project boundary.
 5. The location of existing and proposed utilities, stormwater facilities, sanitary sewers, and water lines within the project boundary and for the entire area within the first twenty-five (25) feet beyond the project boundary.
 6. Significant physical features and associated boundary limits, including flood hazard areas, sinkholes, existing drainage courses, and areas of natural vegetation.
 7. Existing and proposed structures, buildings, streets, driveways, access drives, and parking areas.
 8. The SWM Site Plan shall show the locations of existing and proposed on-lot wastewater facilities and water supply wells.
 9. The location of the proposed Regulated Activity relative to streets, municipal boundaries, and other significant manmade features for the entire area within the first 25 feet beyond the project boundary.

10. A determination of site conditions in accordance with the BMP Manual. A detailed site evaluation shall be completed for projects proposed in areas of carbonate geology or karst topography, as well as for other environmentally sensitive areas, whether natural or manmade, including floodplains, streams, lakes, ponds, hydric soils, wetlands, brownfields, and wellhead protection zones. This must include reference to any known existing site drainage problems.
11. Stormwater runoff design computations and documentation as specified in this Ordinance, or as otherwise necessary, to demonstrate compliance with the requirements of this Ordinance.
12. The overall stormwater management concept for the project, including any additional information required for a PCSM Plan as applicable.
13. A hydrogeologic assessment of the effects of stormwater runoff on sinkholes, where present.
14. A description of permanent stormwater management techniques, including the construction specifications of the materials to be used for stormwater management facilities.
15. Plan and profile drawings of all SWM BMPs, including drainage structures, pipes, open channels, and swales.
16. Horizontal and vertical profiles of all open channels, including hydraulic capacity.
17. Proposed changes to the land surface and vegetative cover and the type and amount of existing and proposed impervious area.
18. Contour intervals of two (2) feet in moderately sloped areas, and contours at intervals of five (5) feet for slopes in excess of 15%. For plans which propose structural BMP's, storm sewers, or improvements which will ultimately be proposed for dedication to the municipality, one (1) foot contour intervals shall be provided.
19. Drainage flow pathways.
20. The effect of the project in terms of runoff volumes, water quality, and peak flows on surrounding properties and aquatic features and on any existing stormwater conveyance system that may be affected by the project.
21. The effect of the proposed Regulated Activity in terms of runoff volumes and peak flows on adjacent properties and/or any existing municipal stormwater collection system that may receive runoff from the project site. A downstream impact evaluation may be required as outlined in the additional requirements found in the Berwick Township SALDO.

22. A map showing all existing manmade features beyond the subject parcel's boundary lines that may be affected by the proposed Regulated Activities.
23. Expected project time schedule.
24. An E&S plan, where applicable, as approved by the Adams County Conservation District.
25. An NPDES Permit application, including PCSM Plan, where applicable, as administratively reviewed and approved by the Adams County Conservation District.
26. The SWM Site Plan shall include an O&M Plan for all existing and proposed physical stormwater management facilities. The plan shall address long-term ownership and maintenance responsibilities as well as schedules and estimated costs for maintenance activities. The O&M Plan shall be prepared in accordance with the requirements of Article V of this Ordinance.
27. Provisions for permanent access or maintenance easements for all physical SWM BMPs, as necessary to implement the O&M Plan
28. A note on the SWM Site Plan indicating the location, and responsibility for maintenance of, SWM facilities and/or easements that would be located on adjoining properties as a result of proposed Regulated Activities, and the location of such facilities and/or easements.
29. The following signature block shall be provided:

(Municipal official or designee), on this date *(date of signature)*, has reviewed and hereby certifies that the SWM Site Plan meets all design standards and criteria of Berwick Township Stormwater Management Ordinance.

Section 403. Plan Review and Approval Procedure

- A. Pre-Application Meeting: Prior to proceeding with SWM Site Plan preparation and submission, the applicant is encouraged to request a pre-application meeting with Berwick Township to discuss the plan concept and responsibility for submission of required documents and information. If the project requires an E&S plan or an NPDES permit, the applicant is encouraged to meet with a staff member of the Adams County Conservation District as well.
- B. SWM Site Plan Review and Approval Procedure:
 1. If a SWM Site Plan is not submitted as a component of a subdivision and/or land development plan, the review of the SWM Site Plan, recommendations, approval, approval with conditions, or disapproval shall occur within 45 calendar days of a complete submission to Berwick Township. Where the applicant submits revisions to

a previously submitted SWM Site Plan, either because the applicant has elected to revise the SWM Site Plan or as a result of a determination by Berwick Township that a revision is necessary to meet the requirements of this Ordinance, this 45-day period shall be restarted at the time of acceptance of a revised plan submission by Berwick Township. Should Berwick Township fail to render a decision on the SWM Site Plan within this 45-day time period, the application shall be deemed approved. The review process shall include the following components:

- a. All plans will undergo an initial staff review before being considered as a complete submission. During this initial review, plans will not be released to the Township designee for formal review. In the event that the application is deemed incomplete, the Township shall notify the applicant, in writing, within 10 business days of the receipt of the application.
 - b. Should the applicant fail to provide a written withdrawal of an incomplete submission, or fail to provide missing items, within 10 days, formal written disapproval of the plan will occur.
 - c. A complete submission shall consist of the specified number of copies of plans, reports and applications including the following items. The specific number of copies may be modified where authorized by the Township office.
 - 1) Completed Application form (provided by the Township) signed by the owner or owner's agent.
 - 2) Three (3) copies to Berwick Township of the plan, report calculation and/or other required documentation.
 - 3) A filing/application fee as established in the fee resolution.
2. If a SWM Site Plan is submitted as a component of a subdivision and/or land development plan, the SWM Site Plan shall be reviewed in accordance with the review process and time frame established in the Berwick Township Subdivision and Land Development Ordinance and in accordance with Section 508 of the Pennsylvania Municipalities Planning Code.
3. NPDES Permit Technical Coordination: Where the project for which a SWM Site Plan is submitted is subject to NPDES permitting, Berwick Township shall notify the Adams County Conservation District when the applicant has achieved technical compliance with the requirements of this Ordinance. Berwick Township may address this requirement through the completion of the Technical Review Checklist for NPDES Sites in Appendix C or comparable process as determined by Berwick Township. Upon receipt of this notification, the Adams County Conservation District will acknowledge a General NPDES permit. In the case of an Individual NPDES permit, the Adams County Conservation District will coordinate municipal reviews with the DEP Regional Office.

4. NPDES Permits and E&S Plans: Where the project for which a SWM Site Plan is submitted is subject to NPDES permitting or the submission of an E&S Plan, or both, any final approval of the SWM Site Plan by Berwick Township shall be conditioned on the applicant's receipt of the required NPDES Permit or E&S Plan approval, as appropriate.
5. Decision Notification Procedure: In all cases, the decision of Berwick Township to approve, approve with conditions, or disapprove the SWM Site Plan shall be in writing and shall be delivered to the applicant no later than fifteen (15) calendar days following the decision. If the SWM Site Plan is disapproved, the written decision by Berwick Township shall specify the defects in the application, describe the requirements which were not met, and shall cite the provisions of the Ordinance relied upon. If the SWM Site Plan is approved with conditions, the notification to the applicant shall state the acceptable conditions for approval and the time limit for satisfying such conditions. Should Berwick Township fail to notify the applicant of the decision within this fifteen (15) calendar day period, the application shall be deemed approved.

C. Waiver Requests:

1. If a SWM Site Plan is not submitted as a component of a subdivision and/or land development plan, Berwick Township may accept a request for waiver of one or more of the requirements of this Ordinance. Any such waiver requests shall comply with the following requirements.
 - a. Berwick Township may accept a request for waiver of the requirements of one or more provisions of this Ordinance if the literal enforcement will enact undue hardship because of peculiar conditions pertaining to the land in question, provided that Berwick Township determines that such waiver will not be contrary to the public interest and that the purpose and intent of the Ordinance is observed. In review of the request Berwick Township may consider the recommendations of the Township Engineer.
 - b. All requests for waivers from an applicant shall be in writing and shall accompany and be a part of the application for approval of a SWM Site Plan. The request shall state in full the grounds and facts of unreasonableness or hardship on which the request is based, the provision or provisions of the Ordinance involved, and the minimum waiver necessary to afford relief.
2. Berwick Township shall act to accept or reject requests for waivers within the context of its SWM Site Plan decision-making process established in Section 403.B.1 of this Ordinance. The decision of Berwick Township regarding acceptance of each request for waiver shall be incorporated into the written decision of Berwick Township for the overall SWM Site Plan as required in Section 403.B.3 of this Ordinance. Berwick Township shall keep a written record of all action on requests for waivers.

3. If a SWM Site Plan is submitted as a component of a subdivision and land development plan, requests for waiver to obtain relief from one or more of the requirements of this Ordinance shall be handled in accordance with the modification process established in the Berwick Township Subdivision and Land Development Ordinance and Section 512.1 of the Pennsylvania Municipalities Planning Code.
4. The final decision to approve or disapprove all accepted requests for waiver shall be made in accordance with Section 301.L.

Section 404. Revision of Plans

- A. SWM Site Plan not Submitted as a Component of a Subdivision and/or Land Development Plan: Revisions to a previously approved SWM Site Plan to incorporate a change in SWM BMPs or techniques, or the relocation or redesign of SWM BMPs, or different information about soil or other conditions from what was stated in the SWM Site Plan, shall be submitted by the applicant to Berwick Township. Berwick Township, at its sole discretion may require a re-submission of the revised SWM Site Plan in accordance with this Ordinance, including applicable review fee. For NPDES permitted sites, any revised SWM Site Plan shall be re-submitted to the Adams County Conservation District for its review. In the case of a SWM Site Plan which contains minor deficiencies (such as a missing label, omission of a required note or minor construction detail). At its sole discretion, Berwick Township may accept a re-submission of such SWM Site Plan without the requirement of a full review fee, or a lesser fee, as determined by Berwick Township.
- B. SWM Site Plan Submitted as a Component of a Subdivision and/or Land Development Plan: A revision of an SWM Site Plan approved as a component of a subdivision and/or land development plan shall be treated as a revision of the subdivision and/or land development plan and shall be subject to the review process established in the Berwick Township Subdivision and Land Development Ordinance.

Section 405. Re-submission of Disapproved SWM Site Plans

- A. SWM Site Plan not Submitted as a Component of a Subdivision and/or Land Development Plan. A previously disapproved SWM Site Plan may be resubmitted with the revisions addressing the defects of the original submission as listed in Berwick Township Decision Notification provided in accordance with Section 403.B.5. The re-submitted SWM Site Plan shall be reviewed and acted upon in accordance with Section 403.B.1 of this Ordinance. The applicable review fee must accompany the submission of a revised SWM Site Plan unless such fee is waived by Berwick Township.
- B. SWM Site Plan Submitted as a Component of a Subdivision and/or Land Development Plan: The resubmission of the SWM Site Plan originally submitted as a component of a subdivision and/or land development plan shall be treated as resubmission of said subdivision and/or land development plan and shall be subject to the

review process established in the Berwick Township Subdivision and Land Development Ordinance.

Section 406. Authorization to Construct and Term of Validity

- A. SWM Site Plans not Submitted as a Component of a Subdivision and/or Land Development Plan — Berwick Township approval of a SWM Site Plan, when such Plan is not submitted as a component of a subdivision and/or land development plan, authorizes the Regulated Activities contained in the SWM Site Plan for a maximum term of validity of five (5) years following the date of approval. Berwick Township may specify a term of validity shorter than five (5) years in the Decision Notification for any specific SWIv1 Site Plan, particularly if the nature of the proposed SWM facilities requires more frequent maintenance and/or short-term replacement of certain components. Terms of validity shall commence on the date Berwick Township signs the Decision Notification for an SWM Site Plan. If an approved SWM Site Plan is not completed according to Section 407 within the term of validity, Berwick Township, and if a request to extend the permit has not been submitted to Berwick Township by the applicant, the permit terminates and Berwick Township may revoke any and all permits applicable to the project. SWM Site Plans for projects with expired permits may be resubmitted in accordance with Section 405 of this Ordinance.
- B. SWM Site Plans Submitted as a Component of a Subdivision and/or Land Development Plan — Berwick Township approval of a SWM Site Plan as a component of a subdivision and/or land development plan is subject to the term of validity as specified in the Berwick Township Subdivision and Land Development Ordinance.

Section 407. Final Inspection, Completion Certificate, and As-Built Plans

- A. The stormwater management facilities constructed in accordance with a SWM Site Plan not submitted as a component of a subdivision and/or land development plan (including any time a structural BMP is proposed) shall be subject to the following process upon the completion of construction of said facilities.
1. The property owner or developer shall contact the Berwick Township Engineer 48 hours prior to the beginning SWM site work to schedule necessary inspections. The Final Inspection shall be conducted by a Berwick Township designee.
 2. Berwick Township may inspect the completed improvements to confirm consistency with the approved SWM Site Plan. Following the inspection, Berwick Township may take one of the following two actions.
 - a. Issue a Completion Certificate: The Township Engineer may issue a Completion Certificate when it is a pre-requisite of receipt of a Use and Occupancy Permit provided the stormwater management facilities have been constructed in conformance with the approved SWM Site Plan.

ARTICLE V - OPERATION AND MAINTENANCE Section

501. Determination of Ownership and Maintenance Responsibility

- A. Berwick Township shall make the final determination on the continuing operation and maintenance responsibilities prior to final approval of the SWM Site Plan. Berwick Township may require a dedication of such facilities as part of the requirements for approval of the SWM Site Plan. Berwick Township shall not be obligated to accept the facilities if offered for dedication. Berwick Township reserves the right to accept or reject the ownership, maintenance, and operating responsibility for any portion of the stormwater management facilities and controls.
- B. If Berwick Township accepts dedication of any or all stormwater management facilities associated with a project, Berwick Township shall operate and maintain said facilities in accordance with the approved O&M Plan.
- C. If Berwick Township does not accept dedication of some or all of the stormwater management facilities associated with a project, the property owner shall execute and record an O&M Agreement in accordance with Section 502 of this Ordinance. The Township will not approve the SWM Site Plan before the owner signs executed the O&M Agreement.

Section 502. Operation and Maintenance Agreements

- A. Prior to final approval of the SWM Site Plan, or for any projects which propose or are required to construct structural BMP's, the property owner shall sign, have notarized and record an O&M Agreement binding the property owner to conduct all maintenance activities identified in the approved O&M Plan for all stormwater control facilities which are to be privately owned.
 - 1. The property owner, heirs, successors and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Plan.
 - 2. The property owner shall provide to Berwick Township easements to ensure access for periodic inspections and maintenance by Berwick Township, as necessary.
 - 3. The property owner shall keep on file with Berwick 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 by the property owner to Berwick Township within ten (10) working days of the change.
 - 4. The O&M Plan shall be notarized then recorded with the Adams County Recorder of Deeds

- B. The owner is responsible for operation and maintenance of the SWM BMPs. If the owner fails to adhere to the O&M Agreement or the O&M Plan, Berwick Township may perform the services required and charge the owner appropriate fees. Nonpayment of fees, costs and other expenses incurred in the performance of services required may result in a municipal lien against the property.

Section 503. Performance Guarantee

For SWM Site Plans submitted as a component of a subdivision and/or land development plan, the property owner or developer shall provide a financial guarantee to Berwick Township for the timely installation and proper construction of all stormwater management controls as required by the approved SWM Site Plan and this Ordinance in accordance with the completion of improvements requirements of the Berwick Township Subdivision and Land Development Ordinance and the provisions of Sections 509 through 511 of the Pennsylvania Municipalities Planning Code.

For Stormwater Management Site Plans that are not submitted as part of a Subdivision and Land Development Plan, the work and installation of BMP's must be completed and inspected by the Township prior to receipt of a Use and Occupancy Permit. In the instance where the work does not involve any improvements which will require a Use and Occupancy Permit the Township may require financial security in accordance with the procedure outlined above in this section.

ARTICLE VI - FEES AND EXPENSES

Section 601. General

- A. Fees associated with the administration, enforcement, review of plans and inspection of improvements of this Ordinance shall be based upon a schedule established by the Township and adopted by resolution.
- B. The applicant shall be responsible for the payment of all fees, costs, and other expenses incurred in the submission, review, decision and inspections on SWM Site Plans and/ or other submissions pursuant to this ordinance.

Section 602. Expenses Covered by Fees

The fee(s) may include, but are not limited to, costs for the following:

- A. Administrative, clerical, and legal costs.
- B. Engineer and technical review of the SWM Site Plan and reports by Berwick Township and representatives or counselors of the Township.
- C. Attendance at meetings by Berwick Township and representatives and counselors of the Township, as may be necessary.

1. Various Inspections (such as during construction and after construction) by Berwick Township or its representatives.

2. Review of As-built plans.

F. Any additional work required to enforce any provision(s) regulated by this Ordinance, correct violations, and ensure proper completion of stipulated remedial actions.

ARTICLE VII - ENFORCEMENT AND PENALTIES

Section 701. Municipal Inspection

- A. Upon presentation of proper credentials, Berwick Township officials or their designee may enter at reasonable times upon any property within Berwick Township to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.
- B. Inspections regarding compliance with the SWM Site Plan may be conducted by the Municipality at any time when there may be a question of compliance with the approved SWM Site Plan, the approved O&M Plan, or when any condition exists that may threaten public health, safety, or welfare.

Section 702. Owner Inspection

- A. SWM BMPs shall be inspected by the landowner, or landowner's designee (which shall include Berwick Township where such facilities have been dedicated to Berwick Township), or the owner's designee, according to the following list of minimum frequencies:
 - 1. Annually for the first five (5) years.
 - 2. Once every three (3) years thereafter.
 - 3. During or immediately after the cessation of a ten (10)-year or greater storm, i.e., a storm of an estimated frequency of recurrence of ten (10) years or greater (a rainfall total of 4.5 inches in a 24-hour period) interval of time.
 - 4. At any other interval as may be specified in the approved O&M Agreement as may be required by the Township.
 - 5. Owners shall maintain reasonable records of inspections including where maintenance is required. Those records should be available for review upon request of the Township.

Section 703. Suspension or Revocation of SWM Site Plan Approval

- A. Any SWM Site Plan approval issued by Berwick Township pursuant to this Ordinance may be suspended or revoked for any of the following reasons.
 - 1. Non-compliance with or failure to implement any provision of the approved SWM Site Plan or O&M Plan.
 - 2. A violation of any provision 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 conduct of any Regulated Activity which constitutes or creates a hazard, nuisance, pollution, or endangers life or property.
- B. A suspended SWM Site Plan approval may be reinstated by Berwick Township when the following conditions are met.
 - 1. Berwick Township officials or their designee(s) have inspected and approved the corrections to the violations that caused the suspension.
 - 2. Berwick Township is satisfied that the violation has been corrected.
- C. An SWM Site Plan approval that has been revoked by Berwick Township shall not be reinstated. The applicant may apply for a new SWM Site Plan approval under the provisions of this Ordinance.
- D. If a violation causes no immediate danger to life, public health, or property, Berwick Township may, at its sole discretion, provide a limited time period for the owner to correct the violation. In these cases, Berwick Township will provide the owner, or the owner's designee, with a written notice of the violation and the time period allowed for the owner to correct the violation. If the owner does not correct the violation within the allowed time period, the municipality may revoke or suspend any, or all, applicable approvals and permits pertaining to any provision of this Ordinance.

Section 704. Enforcement

Berwick Township may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance when Berwick Township determines that a property owner or developer has initiated a Regulated Activity without receiving SWM Site Plan approval, that a property owner or developer has failed to comply with an approved SWM Site Plan or approved O&M Plan, or that a property owner or developer has violated any other provision of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Section 705. Penalties

- A. Anyone violating the provisions of this Ordinance shall be guilty of a summary offense, and upon conviction, shall be subject to a fine of not more than \$1000.00 for each violation, recoverable with costs. Each day that the violation continues shall be a separate offense and penalties shall be cumulative.
- B. In addition, the municipality may institute injunctive, mandamus, or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus, or other appropriate forms of remedy or relief.

Section 706. Appeals

- A. Any person aggrieved by any action of Berwick Township or its designee, relevant to the enforcement of the provisions of this Ordinance, may appeal said action to the Township within thirty (30) days of that action.
- B. Any person aggrieved by any decision of the Township regarding the appeal of any action of Berwick Township or its designee, may appeal the decision to the Adams County Court of Common Pleas within thirty (30) days of the decision of the Township.

ARTICLE VIII: ENACTMENT

The Berwick Township Stormwater Management Ordinance

ENACTED and ORDAINED at a regular meeting of the Berwick Township Board of Supervisors

On this 23rd day of July, 2012.

This Ordinance shall take effect immediately.

APPENDIX B

OPERATIONS AND MAINTENANCE (O&M) AGREEMENT

STORMWATER MANAGEMENT BEST MANAGEMENT

PRACTICES (SWM BMPs)

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

WITNESSETH

WHEREAS, the Landowner is the legal or equitable owner of certain real property as recorded by deed in the land records of Adams County, Pennsylvania, Deed Book _____

at page, (hereinafter "Property").

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

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

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

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

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

1. The Landowner shall construct, or cause the construction of, the BMPs in accordance with the plans and specifications identified in the SWM Site Plan.
2. The Landowner shall operate and maintain the BMPs 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 shall inspect the system at intervals outlined on the approved plans or as described in Article VII Section 702 of the Stormwater Management Ordinance.
4. The Landowner hereby grants permission to the Municipality, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper credentials, to inspect the BMPs whenever the Municipality deems it appropriate. Whenever possible, the Municipality shall notify the Landowner prior to entering the property.
5. The Township may inspect the BMPs at reasonable intervals or following major storm events to ensure their continued functioning.
6. In the event the Landowner fails to operate and maintain the BMPs as provided in the O&M Plan, the Municipality or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). It is expressly understood and agreed that the Municipality is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Municipality.
7. In the event the Municipality, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Municipality for all expenses (direct and indirect) incurred within ten (10) days of receipt of invoice from the Municipality.
8. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create or affect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
9. The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Municipality from all damages, accidents, casualties, occurrences, or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Municipality.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL) For the Municipality:

For the Landowner:

ATTEST:

(City, Borough, Township)

County of Adams, Pennsylvania

, a Notary Public in and for the county and state aforesaid, whose commission expires on the _____ day of _____, 20____, do hereby certify that

whose name(s) is/are signed to the foregoing Agreement bearing date of the day of

_____, 20 _____ has acknowledged the same before me in my said county and state.

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

NOTARY PUBLIC

(SEAL)

APPENDIX C

TECHNICAL REVIEW CHECKLIST

CHECKLISTS TO BE UTILIZED BY CONSERVATION DISTRICTS FOR NPDES SITES

*

Technical Review

Project Name: _____

Applicant: _____

Document#: _____

Written Narrative

- Calculations for permanent stormwater BMPs are consistent with the E&S Report
- Curve numbers are consistent with Stormwater BMP Manual or stormwater methodology used

Infiltration:

- Infiltration/Geotechnical Report has addressed the following
 - Water Re-use
 - Infiltration
 - If unable to infiltrate, explanation of site-specific constraints
- Elevation of each infiltration test provided
- Elevation of bottom of each infiltration BMP is provided (in report or on drawings)
- Summary of pervious and impervious areas for each infiltration BMP provided
- Summary of pre-development and post-development runoff volume for each infiltration BMP provided
- Infiltration period provided (not to exceed 72 hours from the end of the design storm)
- Infiltration rates including the safety factor and reduction factor are not less than 0.05 and inches per hour

Worksheets:

Stormwater calculation volume control credits and criteria — worksheets from Chapter 8.8 of the BMP manual must be provided as applicable.

0 Worksheet 1— General Site information, provided and appears to be completed properly

 Worksheet 2, appears to be completed properly

 Worksheet 3, appears to be completed properly

* The Township may utilize this checklist in review of plans which also require NPDES permits

- Directions for sediment disposal are provided

Technical Review

Project Name: _____

Applicant: _____

Document#: _____

Written Narrative

- Routing analysis to demonstrate peak control for the 2-year through 100-year storm events appears to be adequate to control peak flows. (*Routing should consider the benefits of BMPs*)
- Special Conditions stated in report as required may be conditions of the permit. (*Items used by the consultant may need to be added as a special condition to the permit. It should be at the discretion of the DEP regional office.*)

Infiltration:

- Infiltration calculations include a safety factor

Thermal Impact Analysis:

0 Applicant has adequately addressed thermal impacts of stormwater runoff from the project's impervious surfaces in order to manage, avoid, and minimize or mitigate thermal impacts to surface waters.

Worksheets:

Volume Control Guideline 1— Flow Chart B

0 5.4.1 — Protect Sensitive/ Special Value Features has been addressed] 5.4.2 —

Protect/Conserve/enhance Riparian Areas has been addressed

- 5.4.3 — Protect/Utilize Natural Flow pathways in Overall Stormwater Planning Design has been addressed
- 5.6.1 — Minimize Total Disturbed Area-Grading has been addressed
- 5.6.2 — Minimize Soil Compaction in Disturbed Areas has been addressed
- 5.6.3 — Re-vegetate and Re-Forest Disturbed Areas, using native Species has been addressed
- 5.8.1 — Rooftop Disconnection has been addressed
- 5.8.2 — Disconnect from Storm Sewers has been addressed

Water Quality Calculations — Flow Chart D (if needed)

- Worksheet 11, appears to be completed properly
- Worksheet 12, appears to be completed properly

Worksheet 13, appears to be completed properly