COLLEGE TOWNSHIP
CENTRE COUNTY, PENNSYLVANIA

ORDINANCE O-24-02
AN ORDINANCE TO AMEND CHAPTER 175 - STORMWATER MANAGEMENT

AMENDING THE STORMWATER MANAGEMENT ORDINANCE TO COMPLY WITH THE DEPARTMENT OF ENVIRONMENTAL PROTECTION MINIMUM CONTROL MEASURES #3 BEST MANAGEMENT PRACTICES #5 TO BE CONSISTENT WITH THE 2022 MODEL STORMWATER MANAGEMENT ORDINANCE.

WHEREAS, the Council of the Township of College adopted Ordinance O-14-13 on September 18, 2014, as **Chapter 175 – Stormwater Management Ordinance,** and

WHEREAS, the Township of College is required to adopt an ordinance to be consistent with the Department of Environmental Protection's 2022 Model Stormwater Maintenance Ordinance, and

WHEREAS, the Council of the Township of College has given due public notice of hearings of the proposed Ordinance and has held such public meetings, and

THEREFORE, the following amendments to Chapter 175 shall replace the current ordinance with the following:

Additions
~~Deletions~~

SECTION 1. Amend Chapter 175 – Stormwater Management as follows:

§ 175-2 Statement of findings.
The governing body of College Township finds that:

~~A. Inadequate maintenance of stormwater best management practices (BMPs) causes loss of water quality, flooding, and other problems.~~

~~B. Federal and state regulations require this Township to obtain a permit for discharges from its MS4 and to implement a program of stormwater controls.~~

~~C. A comprehensive program of reasonable regulation of connections and discharges to municipal stormwater management facilities is fundamental to the public health, safety, welfare, and the protection of the people of the Township and all the people of the commonwealth, their resources, and the environment.~~

~~D. Stormwater is an important resource.~~

~~E. Federal and state regulations require this municipality to obtain a permit for discharges from its MS4 and to implement a program of stormwater controls.~~

A. **Inadequate management of accelerated runoff of stormwater resulting from development throughout a watershed increases runoff volumes, flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of streams and storm sewers, greatly increases the cost of public facilities to carry and control stormwater, undermines flood plain management and flood control efforts in downstream communities, reduces groundwater recharge, threatens public health and**

safety, and increases nonpoint source pollution of water resources.

B. **A comprehensive program of stormwater management (SWM), 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 the Commonwealth, their resources, and the environment.**

C. **Stormwater is an important water resource that provides groundwater recharge for water supplies and supports the base flow of streams.**

D. **The use of green infrastructure and low impact development (LID) are intended to address the root cause of water quality impairment by using systems and practices which use or mimic natural processes to: 1) infiltrate and recharge, 2) evapotranspire, and/or 3) harvest and use precipitation near where it falls to earth. Green infrastructure practices and LID contribute to the restoration or maintenance of pre-development hydrology.**

E. **Federal and state regulations require certain municipalities to implement a program of stormwater controls. These municipalities are required to obtain a permit for stormwater discharges from their separate storm sewer systems under the National Pollutant Discharge Elimination System (NPDES) program.**

§ 175-3 Purpose.
The purpose of this chapter is to promote health, safety, and welfare within College Township through provisions designed to:

~~A. Manage accelerated runoff, erosion, aggradation, and degradation;~~

~~B. Meet NPDES MS4 permit requirements;~~

~~C. Meet state water quality requirements;~~

~~D. Maintain existing flows and quality of streams and watercourses in the Township and the commonwealth;~~

~~E. Preserve and restore the flood-carrying capacity of streams;~~

~~F. Provide proper maintenance of all permanent stormwater management facilities that are constructed in the Township;~~

~~G. Provide procedures and standards for stormwater management and planning; and~~

~~H. Protect groundwater and surface water quality.~~

A. **Meet legal 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 this Commonwealth.**

B. **Preserve natural drainage systems.**

C. **Manage stormwater runoff close to the source, reduce runoff volumes and mimic predevelopment hydrology.**

D. **Provide procedures and performance standards for stormwater planning and management.**

E. **Maintain groundwater recharge to prevent degradation of surface and groundwater quality and to**

otherwise protect water resources.

F. **Prevent scour and erosion of stream banks and streambeds.**

G. **Provide proper operation and maintenance of all stormwater best management practices (BMPs) that are implemented within the municipality.**

H. **Provide standards to meet NPDES permit requirements**

§ 175-11 Exemptions.

A. Activities identified below are exempt from the requirement to submit a stormwater management site plan to the Township for review. Exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, and property. These measures include adequate and safe conveyance of stormwater on the site and as it leaves the site. This exemption shall not relieve the applicant from meeting the special requirements for water quality and groundwater recharge for high quality (HQ) and exceptional value (EV) watersheds (DEP Chapter 93 and antidegradation requirement), and § 175-18C and E of this chapter relative to recharge and water quality volume requirements.

(1) All development activities having impervious surface or land disturbance of less than 10% of the total site area up to a maximum impervious area of 5,000 square feet. However, adequate and safe conveyance of stormwater from the site must be provided. For developments that are to be constructed in phases, the sum of all final phases must be considered in establishing exemption eligibility. Impervious cover shall include, but not be limited to, any roof, parking or driveway areas, and any new streets and sidewalks, or bikeways.

(2) Land disturbance associated with the construction or alteration of one- and two-family dwellings, provided that the disturbance does not alter any stormwater condition beyond the boundaries of the lot or alter provisions of a previously approved stormwater management site plan for the lot or encompassing subdivision. Multiple-lot (greater than two) subdivisions cannot be exempted.

(3) Any site less than one acre in size that decreases the total site impervious area following development and:

(a) Is not located within a recognized sensitive area (as defined in Article II, Definitions, of this chapter);

(b) Is not defined as a water quality sensitive (WQS) development (as defined in Article II, Definitions, and Appendix B, Maps); or

(c) Is not located in an area where existing downstream stormwater problems are known to occur. (The Township Engineer shall make the final determination as to preexisting problems, but the Township must have supporting documentation of past problems.)

(4) In addition, the Township Engineer may waive the requirement to prepare a stormwater management site plan for sites larger than 1.0 acre for which the overall site impervious area is being decreased and which meets the other conditions identified above.

(5) Agriculture and silviculture activities, as defined in this chapter that are conducted according to requirements of 25 Pa. Code 102.

B. The diversion or piping of any natural or man-made stream channel and/or for the installation of stormwater management facilities or modifications thereto cannot be exempted. These activities always require the submission of a stormwater management site plan. Exemptions in Subsection A(2) and (3) cannot be

combined for use with small residential subdivisions.

C. In addition to the general exemptions identified above, exemptions for specific technical criteria are identified where applicable in Article III.

D. **The Municipality may deny or revoke any exemption pursuant to this Section at any time for any project that the Municipality believes may pose a threat to public health and safety or the environment.**

§175-14 Word usage; terms defined.

A. For the purposes of this chapter, certain terms and words used herein shall be interpreted as presented below. Additional definitions are provided in the Act 167 Plan definitions chapter.

(1) Words used in the present tense include the future tense; the singular number includes the plural, and the plural number includes the singular; words of masculine gender include feminine gender; and words of feminine gender include masculine gender.

(2) The word "includes" or "including" shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like, kind, and character.

(3) The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any other similar entity.

(4) The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.

(5) The words "used or occupied" include the words "intended, designed, maintained, or arranged to be used, occupied or maintained."

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

AGRICULTURAL ACTIVITIES

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.

ALTERATION

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

APPLICANT

A landowner or developer who has filed an application for approval to engage in any regulated activities as defined in § 175-5 of this chapter.

BMP (best management practice)

Activities, facilities, designs, measures, or procedures used to manage stormwater impacts from regulated activities, to meet state water quality requirements, to promote groundwater recharge, and to otherwise meet the purposes of this chapter. Stormwater BMPs are commonly grouped into one of two broad categories or measures: "structural" or "nonstructural." In this chapter, nonstructural BMPs or measures refer to operational and/or behavior-related practices that attempt to minimize the contact of pollutants with stormwater runoff; whereas, structural BMPs or measures are those that consist of a physical device or

practice that is installed to capture and treat stormwater runoff. Structural BMPs include, but are not limited to, a wide variety of practices and devices, from large-scale 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 stormwater BMPs are permanent appurtenances to the project site, stormwater structures, facilities, and techniques to maintain or improve the water quality of surface runoff.

BUFFER AREA

Area that is protected from development in order to prevent degradation of the water body or water quality.

CAPTURE DEPTH

Depth of runoff captured from a given area and either allowed to evaporate, infiltrate, or be discharged through a spillway at a negligible rate.

CARBONATE

A sediment formed by the organic or inorganic precipitation of mineral compounds characterized by the fundamental chemical ion CO3, the principal element in limestone and dolomite strata.

CHANNEL

A perceptible natural or artificial waterway that periodically or continuously contains moving water having a definite bed and banks that confine the water.

CLOSED OR UNDRAINED DEPRESSION

In a karst geologic area, a distinct bowl-shaped depression in the land surface; size and amplitude are variable; drainage is internal. It differs from a sinkhole in that the ground surface is unbroken and usually occurs in greater density per unit area.

CONSERVATION DISTRICT

The Centre County Conservation District.

CREDITS

A deduction from the required amount; in this chapter, implies reduction of required water quality volumes due to using a recommended practice.

DAM

An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill, or structure for highway, railroad or other purposes, which does or may impound water or another fluid or semifluid.

DEP

The Pennsylvania Department of Environmental Protection.

DESIGNEE

The agent of a Planning Commission and/or agent of the governing body involved with the administration, review, or enforcement of any provisions of this chapter by contract or memorandum of understanding.

DESIGN STORM

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

DETENTION BASIN
An impoundment structure designed to manage stormwater runoff by temporarily storing the runoff and releasing it 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.

DEP
The Pennsylvania Department of Environmental Protection.

DEVELOPER
A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any regulated activity of this chapter.

DEVELOPMENT SITE
The specific tract of land for which a regulated activity is proposed. **See Project Site.**

DISTURBED AREA
An unstabilized land area where an earth disturbance activity is occurring or has occurred.

DOLOMITE
(1) A mineral consisting of calcium magnesium carbonate found as compact limestone; or

(2) Limestone or marble rich in magnesium carbonate.

DOWNSLOPE PROPERTY LINE
That portion of the property line of the lot, tract, or parcels of land being developed located such that all overland or pipe flow from the site would be directed towards it.

DRAINAGE CONVEYANCE FACILITY
A stormwater management facility designed to transmit stormwater runoff and shall include streams, channels, swales, pipes, conduits, culverts, storm sewers, etc.

DRAINAGE EASEMENT
A right granted by a landowner to a grantee, allowing the use of private land for stormwater management purposes.

DRAINAGEWAY
The natural or man-made path of surface water from a given area.

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

EROSION
The movement of soil particles by the action of water, wind, ice, or other natural forces.

EROSION AND SEDIMENT POLLUTION CONTROL PLAN
A plan that is designed to minimize accelerated erosion and sedimentation.

EXFILTRATION

The process by which water or moisture moves from a subsurface trench, bed, or other feature into the subsoil. Exfiltration is best measured by a soil's percolation rate.

EXISTING CONDITIONS

The initial condition of a project site prior to the proposed construction.

EXISTING IMPERVIOUS CONDITONS

The documented impervious condition as managed by the related stormwater controls required at the time the impervious area was established.
For the purposes of determining the Existing Impervious condition, any impervious added since 2006 without documented storm water management shall be considered pervious modeled as meadow in good condition. The Existing Impervious condition may be established utilizing the 2006 Centre County aerials, previously recorded Land Development Plans, or as-built stormwater management plans to establish the documented existing condition.

FEMA

Federal Emergency Management Agency.

FLOOD

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

FLOODPLAIN

Any land area susceptible to inundation by water from any natural source or delineated by applicable Department of Housing and Urban Development, Federal Insurance Administration flood hazard boundary, mapped as being a special flood hazard area.

FLOODWAY

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

FOREST MANAGEMENT/TIMBER OPERATIONS

Planning and activities necessary for the management of forestland. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, logging road design and construction, timber harvesting, site preparation, and reforestation.

FREEBOARD

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

GRASSED WATERWAY

A natural or constructed waterway, usually broad and shallow, covered with erosion-resistant grasses, used to conduct surface water from cropland.

GREEN INFRASTRUCTURE

Systems and practices that use or mimic natural processes to infiltrate, evapotranspire, or reuse

stormwater on the site where it is generated.

GROUNDWATER RECHARGE

Replenishment of existing natural underground water supplies.

HYDROLOGIC SOIL GROUP (HSG)

Infiltration rates of soils vary widely and are affected by subsurface permeability as well as surface intake rates. Soils are classified into four HSGs (A, B, C, and D) according to their minimum infiltration rate, which is obtained for bare soil after prolonged wetting. The Natural Resources Conservation Service (NRCS) defines the four groups and provides a list of most of the soils in the United States and their group classification. The soils in the area of the development site may be identified from a soil survey report that can be obtained from local NRCS offices or conservation district offices. Soils become less pervious as the HSG varies from A to D (NRCS[3,4]).

IMPERVIOUS SURFACE or AREA

A surface that prevents the infiltration of water into the ground. Impervious surfaces (or areas) shall include but not be limited to roofs; additional indoor living spaces; patios; garages; storage sheds and similar structures; and any new streets or sidewalks. Decks, parking areas, and driveway areas are not counted as impervious areas if they do not prevent infiltration.

IMPOUNDMENT

A retention or detention basin designed to retain stormwater runoff and release it at a controlled rate.

INFILTRATION RATE

The infiltration rate of a soil is related to the soil's final infiltration capacity and represents the rate at which water enters the soil/air interface at the top of the soil profile. Infiltration rates are measured in units of length/time.

INLET

A surface connection to a closed drain. A structure at the diversion end of a conduit. The upstream end of any structure through which water may flow.

INTERCEPTOR

A channel, berm, or dike constructed across a slope for the purpose of intercepting stormwater, reducing the velocity of flow, and diverting it to outlets where it may be disposed.

KARST

A type of topography that is formed over limestone, dolomite, or gypsum by bedrock solution and that is characterized by closed depressions or sinkholes, caves, and underground drainage (from AGI Glossary of Geology, 1972).

LAND DEVELOPMENT

Inclusive of any or all of the following meanings:

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

(a) A group of two or more buildings; or

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

other features;

(2) Any subdivision of land;

(3) Development in accordance with Section 503(1.1) of the Pennsylvania Municipalities Planning Code.

LAND/EARTH DISTURBANCE
Any activity involving grading, tilling, digging, or filling of ground or stripping of vegetation or any other activity that causes an alteration to the natural condition of the land.

LAND USE
The primary application employed in an area.

LIMESTONE
A rock that, by accumulation of organic remains, consists mainly of calcium carbonate.

LINEAMENTS
Straight or gently curved, lengthy features frequently expressed topographically as depressions or lines on the earth's surface. They can be more easily observed at a height of 100 meters or more and are usually found by researching aerial photographs or satellite photography

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

MAIN STEM (MAIN CHANNEL)
Any stream segment or other runoff conveyance facility used as a reach in the Spring Creek hydrologic model.

MINIMUM ALLOWABLE DISCHARGE
In relation to this Stormwater Management Ordinance, the minimum rate that can be discharged for any drainage area for design storm events up to and including the ten-year event regardless of the modeled predevelopment runoff estimate.

MUNICIPALITY
College Township, Centre County, Pennsylvania.

NATURAL CONSERVATION AREAS
A natural area protected during development for its water quality or recharge enhancing abilities.

NRCS
USDA Natural Resources Conservation Service (previously SCS).

OUTFALL
The point where water flows from a conduit, stream, or drain.

OUTLET
Points of water disposal from a stream, river, lake, tidewater, or artificial drain.

PADEP
Pennsylvania State Department of Environmental Protection.

PADOT
Pennsylvania State Department of Transportation.

PEAK DISCHARGE
The maximum rate of stormwater runoff from a specific storm event.

PERCOLATION RATE
The rate at which water moves through a soil profile. Percolation rates are measured in units of time/length.

PERVIOUS AREA
Any area not defined as impervious.

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

PLANNING COMMISSION
The Planning Commission of the Township.

POINT DISCHARGE
The discharge from a pipe or channel that concentrates runoff at a single area.

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

QUALIFIED PROFESSIONAL
An individual registered in and licensed by the Commonwealth of Pennsylvania qualified to perform stormwater analysis and design.

RECHARGE VOLUME
The volume of water that is required to be recharged from developed sites.

REGULATED ACTIVITIES
Actions or proposed actions that have an impact on stormwater runoff and that are specified in § 175-5 of this chapter.

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

RETENTION BASIN
An impoundment in which stormwater is stored and not released during the storm event. Stored water may be released from the basin at some time after the end of the storm.

RETENTION VOLUME/REMOVED RUNOFF
The volume of runoff that is captured and not released directly into the surface waters of this Commonwealth during or after a storm event.

RETURN PERIOD

The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the twenty-five-year return period rainfall has a four-percent probability of occurring in any given year.

RIPARIAN BUFFER

A permanent area of trees and shrubs located adjacent to streams, lakes, ponds and wetlands.

RUNOFF

Any part of precipitation that flows over the land surface.

SAFE PASSAGE

The routing of peak runoff events, usually the one-hundred-year design event, safely through a structure without failure of that structure.

SCOUR

Generally refers to the change in a channel configuration provoked by sediment imbalance, due to natural or man-made causes, between the supply and transport capacity of the channel.

SEDIMENT

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

SEDIMENT BASIN

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

SENSITIVE (WATER QUALITY) AREA

An area protected because development within that area could potentially cause contamination of groundwater reservoirs. These sensitive land areas are defined in Appendix B.

SHEET FLOW

Runoff that flows over the ground surface as a thin, even layer, not concentrated in a channel.

SINKHOLE

A localized, gradual or rapid sinking of the land surface to a variable depth, occurring in areas of carbonate bedrock; generally characterized by a roughly circular outline, a distant breaking of the ground surface and downward movement of soil into bedrock voids.

SPILLWAY

A depression, in the embankment of a pond or basin, that is used to pass peak discharge greater than the maximum design storm controlled by the pond.

STABILIZATION

The proper placing, grading, and/or covering of soil, rock, or earth to ensure its resistance to erosion, sliding, or other movement.

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 system of pipes and/or open channels that conveys intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

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

STORMWATER MANAGEMENT FACILITY
Any structure, natural or man-made, that, due to its condition, design, or construction, conveys, stores, or otherwise affects stormwater runoff. Typical stormwater management facilities include, but are not limited to, detention and retention basins, open channels, storm sewers, pipes, and infiltration structures.

STORMWATER MANAGEMENT PLAN
The plan for managing stormwater runoff in the Spring Creek Watershed adopted by the Centre County Commissioners, as required by the Act of October 4, 1978, P.L. 864 (Act 167), and known as the "Spring Creek Watershed Action 167 stormwater management plan."

STORMWATER MANAGEMENT SITE PLAN
The plan prepared by the developer or his representative indicating how stormwater runoff will be managed at the development site in accordance with this chapter. "Stormwater management site plan" will be designated as "SWM site plan" throughout this chapter. The contents of the SWM site plan are established in Article IV.

STRATA
Tabular or sheet-like mass, distinct layers of homogenous or gradational sedimentary material (consolidated rock or unconsolidated earth) of any thickness, visually separable from other layers above and below by a discrete change in the character of the material deposited or by a sharp physical break deposition or both.

STRATIGRAPHIC UNIT
A stratum or body of strata recognized as a unit in the classification of the rocks of the earth's crust with respect to any specific rock character, property or attribute or for any purpose such as description, mapping, and correlation.

STRUCTURAL FILL
For the purposes of this chapter, shall imply any soil mass that is compacted in lifts to some tested criteria (standard or modified proctor), such as those under foundations or adjacent to retaining walls; areas that for several years after construction respond to precipitation events similar to impervious areas.

SUBAREA
The smallest drainage unit of a watershed for which stormwater management criteria have been established in the stormwater management plan.

SUBDIVISION
As defined in The Pennsylvania Municipalities Planning Code, Act of July 31, 1968, P.L. 805, No. 247.

SWALE
A natural low-lying stretch of land or minor man-made conveyance channel, which gathers or carries surface water runoff.

SWM
Stormwater management.

TOPOGRAPHY
The general configuration of a land surface or any part of the earth's surface, including its relief and position of its natural and man-made features; the natural or physical surface features of a region, considered collectively as to its form.

TOWNSHIP
College Township, Centre County, Pennsylvania.

TOWNSHIP ENGINEER
A professional engineer licensed in the Commonwealth of Pennsylvania and duly appointed by the subject Township as its representative. In the event that a stormwater utility is formed, all references to the Township Engineer shall be considered to also imply the Stormwater Utility Engineer.

UNDETAINED AREA
An area of a site that cannot be routed to a stormwater management facility because of its location; generally small areas around access drives or below stormwater management facilities.

USDA
United States Department of Agriculture.

WATER QUALITY DEPTH
Depth of precipitation required to be used in computing the water quality volume based on the percentage of imperviousness of a site.

WATER-QUALITY-SENSITIVE (WQS) DEVELOPMENT
Land development projects that have a high potential to cause catastrophic loss to local water quality and could potentially threaten ground water reservoirs. See § 175-16 for additional definition.

WATER QUALITY VOLUME
Volume of runoff required to be controlled from a site in a water quality BMP.

WATERS OF THIS COMMONWEALTH
Any and all rivers, streams, creeks, rivulets, 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 this commonwealth.

WATERSHED
The entire region or area drained by a river or other body of water, whether natural or artificial, a drainage basin, or sub-basin.

WATER TABLE
Upper surface of a layer of saturated material in the soil.

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

§ 175-18 Calculation methodologies

Design criteria and calculation methodologies have been classified by functional group for presentation as follows: 1) peak runoff rate discharge requirements; 2) stormwater pond capture volumes; 3) recharge volumes; 4)

storm drain design, including conveyance, channel protection, and stability; and 5) water quality standards. These criteria and calculation methodologies have been developed to simplify stormwater management designs, unify methods, remove model parameter subjectivity, remove improperly used methods, and to ensure stormwater management decisions are based more realistically on hydrologic processes. In addition, common sense should always be used as a controlling criteria. These standards provide consistent and process-oriented design procedures for application by land development professionals. It is recognized that, in an attempt to generalize the computational procedures, assumptions have been made which, on some occasions, may be violated. If such a violation is identified, alternate standards and procedures may be applied. Both the violation and the alternate procedures to be applied must be documented by a hydrologist or hydrogeologist. Any request for use of alternate standards or procedures under this provision must be agreed to by the local Township Engineer prior to formal submission of plans for consideration by the Township.

A. Peak runoff rate control.

(1) Exemption.

(a) Any site where the increase in post-development peak runoff rates is determined to be negligible by the Township Engineer is exempt from the requirement to provide stormwater detention. In support of this exemption, it must be shown that the downstream conveyance systems have adequate capacity to convey the additional discharge without adversely affecting downstream properties. This does not exempt the requirement for implementation of designs for water quality, stormwater conveyance, and/or recharge, as required. A stormwater management site plan and a report documenting these design elements are also required. The Township Engineer shall use a five-percent increase as a general benchmark for defining "negligible." The final definition of "negligible" shall be at the Township Engineer's discretion. Prior to using this exemption (and prior to any land development plan submission), the design engineer must provide written documentation and computations as to why no peak runoff control should be required. The Township Engineer has the right to reject any plan that uses this assumption without prior approval of the Township Engineer. The intent of this exemption is to eliminate the need for multiple or piggyback detention facilities as a result of minor changes in imperviousness or land use upstream of existing stormwater control facilities.

(b) Small sites (less than one acre) located directly adjacent to the main stem of creeks or within the floodplain are not required to provide stormwater detention unless directed to do so by the Township Engineer as a result of a documented drainage problem. All other stormwater management standards must be implemented, including water quality, adequate stormwater conveyance, and/or recharge, as required. The Township Engineer has the right to reject any plan that uses this exemption without prior approval of the Township Engineer.

(2) Stormwater management analysis.

(a) Stormwater management analysis must be performed using the following models. The size criteria are based on drainage area size, including site area and all off-site area draining across the development.

[1] Up to 100 acres in size: NRCS's TR-55 or TR-20.

[2] Over 100 acres in size: NRCS's TR-20 or HEC-1 (HEC-HMS).

(b) The Modified Rational Method using the Gert Aron Curves may be used for any site less than or equal to two acres in size without prior authorization from the Township Engineer. The Modified Rational Method may also be used for sites between two and five acres in size

where the Township Engineer has approved the method's use. In this case, the design engineer must make a written request to the Township Engineer explaining why the use of the Modified Rational Method is more appropriate than the NRCS's methods for the site in question. Use of the Modified Rational methodology should be limited to the special cases identified above. In addition, since the minimum discharge criteria are based on a calibration of the NRCS runoff mode, their use is not appropriate if the Modified Rational Method is used for runoff computations.

(c) The Township Engineer has the right to reject any SWM design that uses hydrograph combinations with the Modified Rational Method where the designer has not validated that the effects of the timing differences are negligible. In addition, the Township Engineer has the right to reject any SWM design that improperly uses the method for determining runoff volumes or does not properly apply the method.

(d) More intensive physically based models may be used at the discretion of the Township Engineer, but only for sites greater than 100 acres in size.

(e) Commercial software packages that use the basic computational methods of TR-55 or TR-20 are permitted.

(f) The NRCS models and methods recommended above are based on data collected from actual watersheds. In contrast to this, stormwater management analysis for land development activities is often conducted using property lines to define drainage boundaries. Drainage areas based on property boundaries are not true watersheds and are referred to here as "hypothetical" drainage areas. It is known that these hypothetical drainage areas do not respond like natural watersheds. Peak runoff rates from hypothetical drainage areas are much smaller than comparable runoff rates from natural watersheds of the same size. Therefore, wherever possible, pre- and post-development stormwater management analysis should be conducted for watersheds that are as nearly natural as possible. Also, conducting stormwater management analysis for a lot-by-lot comparison, such as within residential developments, is not permitted. Partitioning drainage areas into different subwatersheds for the post-development scenarios is acceptable.

(g) It is noted that natural watershed boundaries should not be used where the relative size of the watershed compared to the site size would inappropriately distort the pre- to post-development runoff comparison. In these cases, a hypothetical drainage area defined by the property boundary should be used because it will allow for a better estimate of runoff changes directly downstream of the site. In addition, the designer should recognize that, within the Spring Creek Watershed, typical hypothetical drainage areas, in their predevelopment or natural condition, do not produce surface runoff during minor to moderate rainfall events. Available hydrologic models do not accurately reflect this condition. This often results in post-development nuisance flooding, since the models overestimate the predevelopment runoff magnitude.

(3) Major natural drainage divides may not be altered without the prior consent of the Township Engineer.

(4) Pre- and post-development stormwater management analysis shall be conducted using the following design storms:

(a) One-year.

(b) Two-year.

(c) Five-year.

(d) Ten-year.

(e) Twenty-five-year.

(f) Fifty-year.

(g) One-hundred-year.

(5) The twenty-four-hour precipitation depths as obtained from NOAA Atlas 14 shall be used for stormwater management analysis.

(6) The NRCS's Type II precipitation distribution is required for all stormwater management analyses.

(7) The NRCS's dimensionless unit hydrograph "k" factor shall be 484 for both pre- and post-development stormwater analyses.

(8) All undeveloped areas are to be modeled as meadow or woods in good hydrologic condition. Existing impervious areas may be modeled as being impervious for predevelopment conditions. The Township may require a maximum of 20% of the existing impervious areas be modeled as meadow in areas where there are known existing stormwater concerns downstream of the project area or where the site being developed has either deficient or nonexisting stormwater management facilities. Developers of sites with existing impervious areas are highly encouraged to set up a meeting with the Township prior to design so that any additional requirements are identified prior to plan submission.

(9) The NRCS's curve number (CN) shall be used as the rainfall to runoff transformation parameter for all stormwater management analyses.

(10) Curve numbers should be rounded to tenths for use in prepackaged hydrologic models. It should be recognized that the CN is only a design tool with a large degree of statistical variability. For large sites, CNs should realistically be rounded to the nearest whole number.

(11) The NRCS's method to determine unconnected impervious area adjustments for CN can be used for distinctly defined impervious land areas that flow onto pervious areas in a dispersed manner. The method may only be used to calculate runoff from site impervious areas that actually flow across pervious areas. The method cannot be applied to the entire site using average weighted CN values.

(12) Soils underlain by carbonate geology (limestone or dolomite) shall have a hydrologic soil group (HSG) B used for both pre- and post-development conditions regardless of the NRCS or soil survey's description, except for the following two conditions.

(a) Compacted structural fill areas shall use a minimum of HSG C for post-development conditions regardless of the NRCS or Centre County soil survey's description. For most developments, compacted structural fill areas are under impervious surfaces but may include islands within parking areas, fringe land, etc. An HSG C shall also be applied to large projects that clear and compact building pad areas for later phases of development under an initial phase. The Township Engineer shall make the final determination as to what areas of a land development site constitute compacted structural fill. The intent is to account for large compacted areas and not minor grading within lawn areas.

(b) Soils identified as "on floodplains" or "on terraces above floodplains" in the Centre County soil survey will use the HSG as designated in the soil survey. Refer to Appendix A for a list of the soils.

(13) Soils not underlain by carbonate geology shall use the HSG as specified by the NRCS or soil survey's description, except for the following two conditions:

(a) Wooded areas on HSG C and D soils shall be treated as HSG B for predevelopment conditions. Disturbed post-development wooded areas shall carry the NRCS or soil survey's defined HSG with a minimum HSG of B.

(b) Highly compacted structural fill areas shall use a minimum of HSG C for post-development conditions, regardless of the NRCS or soil survey's description. For most developments, these areas are normally covered with impervious surfaces but may include islands within parking areas, fringe land, etc. An HSG of C shall also be used for large projects that clear and grade land for later phases of development. The Township Engineer shall make the final determination as to what areas of a land development site constitute compacted structural fill. The intent is to account for large compacted areas, and not minor grading within lawn areas or small areas around buildings, etc.

(14) Areas draining to closed depressions must be modeled by removing the storage volume from the predevelopment condition. The designer may assume that infiltration in the closed depression does not occur during a design runoff event. Areas draining to closed depressions may also be used to adjust peak runoff rates to stormwater management ponds for the post-development analysis. This allowance has been developed to entice designers to intentionally design or leave in place small closed depressions that can reduce the total volume required from a stormwater management pond. The site designer is responsible to document downstream impacts if the closed depression were removed.

(15) Drainage areas tributary to sinkholes shall be excluded from the modeled point-of-interest drainage areas defining predevelopment peak flows. Assumptions that sinkholes spill over during some storm events must be supported by acceptable documentation (as determined by the Township Engineer). In addition, the design professional must be aware that bypassing or sealing sinkholes will frequently result in downstream flooding and should not be done if existing downstream flooding already occurs. The site designer is responsible to document downstream impacts if the sinkhole were to stop taking stormwater runoff.

(16) Ponds or other permanent pools of water are to be modeled by the methods established in the NRCS's TR-55 manual (1986). However, more rigorous documented methods are acceptable (as determined by the Township Engineer).

(17) The NRCS antecedent runoff condition II (ARC II, previously AMC II) must be used for all simulations. The use of continuous simulation models that vary the ARC are not permitted for stormwater management purposes. In addition, prior to any continuous simulation model being used in the Spring Creek Basin for any other purposes, the model unit hydrograph must be modified for common events in additional to extreme events based on an in-depth analysis of historical data from the basin.

(18) Time of concentration computational methodologies.

(a) The following time of concentration (Tc) computational methodologies shall be used, unless another method is preapproved by the Township Engineer:

[1] Predevelopment: NRCS's Lag Equation;

[2] Post-development: commercial, industrial, or other areas with large impervious areas

(more than 20% impervious area): NRCS's Segmental Method;

[3] Post-development; residential, cluster, or other low-impact designs less than or equal to 20% impervious area: NCRS's Lag Equation.

(b) The time of concentration is to represent the average condition that best reflects the hydrologic response of the area. For example, large impervious areas bordered by small pervious areas may not consider the effect of the pervious areas in the Tc computation. If the designer wants to consider the effect of the pervious area, runoff from the pervious and impervious areas must be computed separately with the hydrographs being combined to determine the total runoff from the area.

(c) Under no circumstance will the post-development Tc be greater than the predevelopment Tc for any watershed or sub-watershed modeling purposes. This includes when the designer has specifically used swales to reduce flow velocities. In the event that the designer believes that the post-development Tc is greater, it will still be set by default equal to the predevelopment Tc for modeling purposes.

(d) Refer to Subsection A(28) regarding impervious area flashing (IAF).

(19) Post-development minimum discharges.

(a) The following post-development minimum discharges are permitted for use with the NRCS (CN) runoff model:

One-year return period:	Qpmin = 0.018 (DA) + 0.2
Two-year return period:	Qpmin = 0.03 (DA) + 0.4
Ten-year return period:	Qpmin = 0.09 (DA) + 1.0

Where:

DA = The drainage area in acres

Qpmin = Minimum allowable peak runoff rate in cubic feet per s

(b) For return periods greater than 10 years, the minimum discharge shall be equal to the computed predevelopment peak runoff rate.

(c) The minimum discharge criteria above are not appropriate for use with the Rational Method. This is because these values were developed based on NRCS model corrections and do not actually represent a true physical process or discharge. However, common sense should be used by both the designer and reviewer in the evaluation of acceptable minimum discharges for use with the Rational Method.

(d) The intent of the minimum discharge is to allow reasonable runoff release from a site when a hydrologic model has produced a predevelopment runoff rate close to zero. The method is not permitted for areas that previously drained completely to sinkholes in order to bypass the sinkhole after development.

(e) These minimum discharge values include the total of all stormwater management facility discharges and undetained area discharges. Peak runoff rates for undetained fringe areas (where the designer has made a realistic effort to control all new impervious areas) will be computed using the predevelopment time of concentration for the drainage areas tributary to them. Undetained areas are those portions of the site that cannot be routed to a stormwater management facility due to topography and typically include lower pond berms, or small areas around entrance drives. The site drainage areas used shall represent the predevelopment condition, even if drainage areas are altered following development.

(20) All lined stormwater management ponds in carbonate and noncarbonate areas must be considered impervious and may not be used as pervious areas for stormwater management computations. "Lined" here means lined with synthetic liners or Bentonite. All other compacted soil liners will be considered to be HSG D for hydrologic computations.

(21) Stormwater management ponds that have a capture depth for the purposes of water quality or volume capture shall assume a negligible discharge from these structures during design event routing. Only discharges from the primary principal spillway or emergency spillway need to be considered. Discharges from subsurface drains that tie into a principal spillway should not be considered during design event routing. All subsurface drains are to be equipped with a restrictor plate with a one-inch opening in order to prevent the subsurface drain from functioning as a primary orifice. A restrictor plate orifice may be increased, if necessary, to the smallest size required to drain the facility within the required 72 hours.

(22) Stormwater management ponds that have a capture pond capture, recharge, or water quality component shall assume that the basin is full to the controlling component volume at the beginning of design event routing.

(23) Stormwater management ponds must provide safe passage of the one-hundred-year return period peak runoff rate assuming that all of the principal spillway orifices are fully clogged and the principal spillway overflow is 50% clogged. A minimum of a six-inch freeboard must also be maintained above the resulting maximum water surface elevations (WSE). Any embankment emergency spillway can be assumed to be unclogged. SWM ponds with embankments completely made up of natural undisturbed soils (fully in "cut"), or where roadways act as the emergency spillway, are permitted. However, the design engineer must verify downstream stability and control.

(24) All pre- and post-development comparisons of peak flows shall be rounded to tenths of a cubic foot per second. The intent here is to recognize the accuracy and precision limitations of hydrologic modeling procedures. Again, small differences between pre- and post-development discharge rates should be permitted when no negative downstream impacts will result.

(25) The full Modified Puls routing method must be used for stormwater management pond analyses. Simplified methods of determining pond size requirements, such as those in TR-55 (1986), can only be used for preliminary pond size estimates.

(26) Prepackaged hydraulic programs are not approved for the analysis of underground stormwater management facilities, unless it can be verified that the program rounding subroutines used for the stage/storage data do not affect the results. This is because, for very small storage volumes, the program may round off the volume to a significant percentage.

(27) Full supporting documentation must be provided for all stormwater management designs.

(28) Designs must be checked for impervious area flash (IAF). This check is used to determine if flooding may occur due to poor modeling choices specifically related to the time of concentration. This analysis requires that the watershed impervious area be modeled without the pervious areas. The time of concentration should also be determined from the impervious areas only. If the IAF analysis results in a higher peak runoff rate at

a culvert or discharge from a pond, this higher rate must be used for the final design/comparison. The check will frequently yield higher values if a watershed's impervious area is located primarily near the watershed outlet or point of interest.

B. Water volume controls shall be implemented using the Design Storm Method for sites 1 acre in size and larger.

(1) The Design Storm Method (CG-1 in the BMP Manual4) shall be applied on all sites greater than 1 acre. This method requires detailed modeling based on site conditions.

(a) Do not increase the post-development total runoff volume for all storms equal to or less than the 2-year 24-hour duration precipitation.

(b) Exemptions to infiltration within the Wellhead Protection Overlay district are detailed in <<reference>>

(c) The Managed Release Concept in lieu of infiltration shall be utilized at the discretion of the Township Engineer and consistent with the requirements of this Chapter.

(d) For modeling purposes:

[1] Existing (predevelopment) non-forested pervious areas must be considered meadow in good condition.

[2] A minimum of 20% existing impervious area, when present, shall be considered meadow in good condition in the model for existing conditions.

[3] For the purposes of determining the Existing Impervious condition, any impervious added since 2006 without documented storm water management shall be modeled as meadow in good condition. The Existing Impervious condition may utilize the 2006 Centre County aerials, previously recorded Land Development Plans, or as-built stormwater management plans to establish the documented existing condition.

C. Pond capture volumes **(Cv) for sites less than 1 acre cumulative disturbance.**

(1) To minimize nuisance flooding from small precipitation events, a runoff capture volume is required for all stormwater management ponds that do not discharge directly to natural, well-defined (with bed and banks) perennial streams. In general, natural well-defined streams in the Spring Creek Basin are limited to those delineated as USGS perennial streams. This should be treated as a guideline and not a steadfast rule. The final determination is at the discretion of the Township Engineer. The pond capture volume is a volume of runoff that will be retained in a pond below the elevation of any free surface principal spillway orifice. No principal spillway orifice (except those connected to subsurface drains), regardless of how small, shall be below the pond elevation equivalent to this volume.

2) The Centre County Conservation District (CCCD) receives numerous complaints regarding ponds that are located at the downslope edge of a property that result in discharging runoff onto downstream properties in an uncontrolled manner or where no existing defined outlet channel exists. This is a very common problem in areas underlain by carbonate rock. These discharges can cause erosion and flooding downstream. While the pond capture volume is intended to minimize some of these negative effects, it cannot deter or reduce the impacts from poor design practices. Therefore, whenever possible, the CCCD recommends that the designer consider the downstream morphological changes that may occur and, when possible, consider constructing conveyance systems to a stable natural channel. In some cases, this may require cooperation between landowners.

(3) The capture volume is defined as a runoff depth of 0.25 inch from all impervious areas tributary to the stormwater management facility. This volume will be allowed to infiltrate, evaporate, or dewater from a subsurface drain system connected directly to the facility's principal spillway. Supporting computations that show that 90% of the capture volume can dewater in a maximum of 72 hours must be provided. For surface ponds, the maximum depth of ponding for the capture volume shall be three feet (a health and safety precaution). However, in areas under karst influence, a limiting maximum ponding depth of 18 inches is recommended. Designers may always increase the capture volume to a value greater than the identified standard as long as the ponding depth criteria are met.

(4) To simplify computational requirements for design event analysis, designers do not need to calculate discharges from subsurface drains related to the capture volumes if the filter media is sand or smaller than AASHTO 57 stone. The capture volume is to control runoff rates from impervious areas and is not related to water quality. However, pond designs that include a water quality volume that is greater than the required capture volume are assumed to have also met the required capture volume as long as it dewaters as required.

(5) Designs that rely on the natural infiltration of in situ soils must provide documentation supporting the infiltration rates used for analysis. Infiltration rates reported in the soil survey of Centre County or other published rates may be used at the discretion of the Township Engineer.

(6) The pond capture volume should always be used when up-slope areas are developed where the pond's design creates a point discharge that did not previously exist.

(7) Stormwater management detention facilities that connect directly to storm drain pipe networks that discharge to natural well-defined channels do not require a capture volume.

D. Recharge volumes (Rv) **<u>for sites less than 1 acre.</u>**

(1) The purpose of the recharge portion of this chapter is two-fold. First, the recharge requirement is to mitigate the loss of groundwater recharge associated with the creation of impervious surfaces. In addition, the recharge criteria are to mitigate the increase in runoff volume associated with the creation of impervious surfaces. This increase in runoff volume has significant impacts on downstream landowners. These impacts are most often exhibited in the form of increased nuisance flooding and channel or drainageway erosion and instability. According to local Township Engineers and representatives of the Centre County Conservation District, these problems are of significant local concern. The magnitude of these problems increases with the percentage of impervious coverage created on a site.

(2) Recharge mitigation shall be provided for runoff from all proposed impervious areas. The required recharge volume shall be computed as 0.5 inch of runoff from all proposed impervious areas. It is noted that lined detention ponds and compacted fill areas are considered to be impervious when calculating site impervious area for recharge considerations. In addition, land areas covered by paver blocks, pervious pavement, and other structural surface treatments that permit surface infiltration can be treated as pervious areas when calculating the site impervious area for recharge considerations, as long as the structural infiltration practice is supported by sound design and appropriate construction specifications. The Township Engineer may require submission of supporting documentation prior to approving structural infiltration areas as pervious areas.

(3) The following design practices can be used as credits to reduce the recharge volume requirement:

(a) Residential roof areas (detached, duplex, and townhome dwellings) and commercial/industrial buildings with roof areas less than 5,000 square feet can be removed from the computed impervious area when these roof areas are sumped to dry wells designed in accordance with the

following minimum standard:

[1] Sump design criteria: To meet the recharge criteria, sump storage or voids volume shall be equal to 0.04 cubic foot per square foot of roof area (0.5 inch rainfall depth). If sump stone has a voids ratio of 40%, the total sump volume will be 0.10 cubic foot per square foot of roof area. When designed only to meet this recharge criteria, the maximum size for a single sump is 100 cubic feet, and the minimum sump surface area (A) to depth (D) ratio (A/D) must be a minimum of 4/1. The sump depth less any freeboard should not exceed 24 inches.

[2] This roof sump standard shall apply, unless the Township has a separate roof sump standard for water quantity or peak control.

(b) All or portions of driveways, roadways, and parking areas can be removed from the impervious area calculation when sheet flow from these areas is directed to undisturbed natural buffer/filter areas or constructed filter strips. This flow must be dispersed as sheet flow as it crosses the buffer/filter area. Sheet flow velocities should be nonerosive, as they cross the impervious area/filter interface.

[1] To ensure proper infiltration characteristics, the natural soil profile within natural buffer/filter areas cannot be disturbed during construction. Completely undisturbed natural recharge areas serve this function best. However, minor surface scaring, seeding, and landscaping are permitted in these areas as long as natural grades are not altered. In special cases, when approved by the Township Engineer, minor grading, combined with soil profile reconstruction, may be permitted in natural buffer/filter areas. In addition, the following standards apply to natural filter/buffer areas.

[a] Natural filter/buffer areas must have a minimum width of five feet or 1/2 of the impervious area drainage length immediately tributary to the buffer area, whichever is greater. This width is measured parallel to the direction of sheet flow.

[b] To qualify for a recharge volume credit, the surface slope of natural filter/buffer areas must be conducive to recharge and not result in flow concentration or erosion. To meet this intent, the surface slope of the area tributary to the natural buffer/filter area and the surface slope of the natural buffer/filter area itself may not exceed 5%. In special cases, steeper slopes may be used, if specifically authorized by the Township Engineer.

[c] The total impervious area tributary to a natural buffer/filter area cannot exceed twice the buffer/filter area.

[2] To qualify for a recharge volume credit, constructed filter strips shall be designed to the following standards.

[a] The minimum filter strip width shall be five feet or 1/2 of the impervious area drainage length immediately tributary to the constructed filter strip, whichever is greater. This width is measured parallel to the direction of sheet flow.

[b] The total impervious area tributary to a constructed filter strip area cannot exceed twice the constructed filter strip area.

[c] The surface slope of the area tributary to the constructed filter strip area, and the surface slope of the constructed filter strip area, itself, may not exceed 5% and 3%,

respectively. In special cases, steeper slopes may be used, if specifically authorized by the Township Engineer.

[d] The filter strip surface shall consist of a minimum of six inches of natural or reconstructed topsoil with a stable grass surface treatment. Reconstructed topsoil designs must be approved by the Township Engineer prior to application. Reconstructed topsoil consists of soils augmented by tillage and the addition of soil amendments, such as compost, lime, animal manures, crop residues, etc.

[e] To minimize erosion of the topsoil layer during construction, it is recommended that these areas be sodded. However, the Township Engineer may permit the use of an acceptable erosion control seeding application. In this later case, any loss of topsoil and seed must be replaced until a permanent vegetative stand is achieved.

(c) Sidewalks separated from roadways and/or other impervious surfaces by a grass strip of equal or greater width than the sidewalk itself can be removed from the impervious area calculation when the sidewalks are graded so that sheet flow from the walk is directed to the grass strip. Sidewalks with steep longitudinal slopes that themselves would act as channels during runoff events cannot take advantage of this credit. A five-percent longitudinal sidewalk slope shall be used as the benchmark defining steep slopes.

(d) Impervious areas tributary to natural closed depressions can be subtracted from the total site impervious area used in the recharge volume calculation as long as a qualified geotechnical engineer or soil scientist certifies to the soundness of these site specific applications. Water quality pre-treatment may be necessary prior to the direct discharge of runoff to existing closed depressions or sinkholes.

(e) Impervious areas tributary to man-made closed depressions can be subtracted from the total site impervious area as long as a qualified geotechnical engineer or soil scientist certifies to the soundness of these site-specific applications. Man-made closed depressions can be created through the use of low head berms one foot or less in height.

(f) Additional credits may apply for undisturbed land areas that are known to have high infiltration capacity and that are maintained or enhanced. These areas must be defined and quantified from actual site data collection.

(4) After credits, the remaining recharge volume shall be directed to a recharge BMP, such as infiltration trenches, beds, etc. These facilities can be located in open areas or under pavement structures. The appropriateness of the particular infiltration practice proposed, as well as the design parameters used, shall be supported by a geotechnical report certified by a qualified professional (soil scientist, geologist, hydrogeologist, geotechnical engineer, etc.).

(5) Stormwater recharge requirements or credits affect stormwater management design requirements. For stormwater management computations, the reduction of site CNs based only on a weighting type analysis, as is sometimes done for cluster type developments, is not permitted. However, for stormwater management purposes, the CN for recharged areas can be computed using the NRCS method for disconnected impervious areas. The actual hydrologic process that occurs within the basin must be stressed in all recharge situations.

(6) These recharge requirements must be met on all sites unless it can be demonstrated that recharge would be inappropriate. Any request for such a waiver from these recharge requirements must be accompanied by a supporting report certified by a qualified professional (soil scientist, geologist, hydrogeologist, geotechnical engineer, etc.).

(7) Developers and site design professionals are encouraged to use a higher standard for recharge volume on sites where local site conditions do not restrict a higher standard.

(8) Water-quality-sensitive (WQS) developments must use an acceptable pretreatment BMP prior to recharge. Acceptable pretreated BMPs for these developments include BMPs that are based on filtering, settling, or chemical reaction processes such as chemical coagulation.

(9) Accounting for recharge within lined stormwater management ponds is not permitted. However, if unlined, uncompacted ponds and/or depressed lawn areas are used to satisfy water quality or capture volume criteria, these areas and volumes can also be used to meet recharge requirements as previously defined. Additional recharge volume may be credited to these areas as long as it is demonstrated by a qualified professional that recharge processes can naturally occur in these areas.

(10) Finally, because this analysis is concerned with trying to adequately represent real processes that occur within the watershed, there will be areas that cannot physically recharge stormwater. These areas include exfiltration areas that are commonly found at the base of wooded hillsides where clay pans exist and saturation areas near major streams or floodplains. These areas may not accept recharge during most runoff events. These areas are exempt from recharge requirements when these conditions are documented and certified by a qualified professional (soil scientist, geologist, hydrogeologist, or geotechnical engineer). In addition, stormwater management techniques relying on infiltration techniques are not permitted in these areas.

(11) The Township Engineer may waive the recharge requirement in the following situations:

(a) The Township Engineer may waive the recharge requirement in highly developed areas or areas undergoing redevelopment where the Township Engineer has determined that forced recharge could have adverse impacts on adjacent landowner structures, property, or Township infrastructure. These waivers should be limited to small land areas (generally less than five acres in size), where the ability to place recharge beds may be limited or may hinder redevelopment.

(b) The Township Engineer may waive the recharge requirement in areas where a qualified soils scientist or geologist has determined that none of the site soils are suitable for recharge, or that the location of the suitable soils is such that harm to adjoining properties could occur as stated under Subsection C(11)(a) above.

(c) The Township Engineer may waive the recharge requirement in areas where recharge cannot physically occur as documented by a qualified soil scientist, geologist, or hydrologist. These areas include:

[1] Exfiltration areas commonly found at the base of wooded hillsides where clay pans or fragipans exist; and

[2] Saturation areas near major streams or floodplains.

(12) As identified above, recharge analysis and/or waiver requests must be supported by a geotechnical report sealed by a qualified professional (soil scientist, geologist, hydrogeologist, or geotechnical engineer). The intent of this report will be to establish the suitability of a particular parcel of land or area for recharge and to identify areas on a development site appropriate for recharge. It is recommended that the geotechnical/soils consultant discuss the extent and approach to the analysis with the Township Engineer prior to initiating the field investigation. At a minimum, this report should include the following information:

(a) A description of the geotechnical site investigation performed, including the methods and

procedures used;

(b) Data presentation;

(c) Analysis results, including the following minimum information:

[1] A map identifying site areas inappropriate for recharge along with supporting justification. In addition to illustrating topographic features, significant geologic and hydrologic features should be identified (rock outcrops, sinkholes, closed depressions, etc.);

[2] Determination of the permeability coefficient for potential recharge areas;

[3] Determination of the infiltration capacity of natural site soils;

[4] Location, depth, and permeability coefficient for any restrictive layers identified;

[5] Soil uniformity;

[6] Depth to bedrock in potential recharge areas, and a statement reflecting the uniformity of the depth to bedrock across the site;

[7] A statement relating to the site's proximity to fracture zones within the bedrock; and

[8] Additional information deemed pertinent by the geotechnical engineer.

(d) Recommendations for any special design considerations necessary for the design of recharge systems on the site; for example, required soil depth over bedrock, appropriate surface grades over recharge areas, appropriate hydraulic head over recharge areas, etc.

(e) Justification as to why the site should be developed to a high impervious density if the site has adverse soil and geotechnical limitations, which prohibit the ability to induce natural recharge. Explain how these limitations will not create the potential for undue harm to the environment and the Spring Creek Watershed when the site is developed.

(f) Where it has been shown that recharge cannot be performed and a waiver of the recharge requirements is being requested, the Township shall require that the first one inch of runoff from all new impervious areas be treated through underdrained facilities. These facilities may include underdrained basins, rain gardens, and infiltration trenches. Treatment is to include use of an amended topsoil to provide filtration of the stormwater. All underdrain outlets are to include a restrictor plate to prevent the underdrain system from functioning as a primary outlet.

(13) The following guidelines are provided relative to the use of subsurface exfiltration BMPs (often incorrectly referred to as engineered infiltration BMPs).

(a) Soils should have a minimum percolation rate of 50 min/cm for effective operation of subsurface exfiltration BMPs. If no site soils have percolation rates of 50 min/cm, subsurface exfiltration BMPs should not be used.

(b) A minimum of 30 inches of soil must be maintained between the bottom of a subsurface exfiltration BMP and the top of bedrock or seasonally high groundwater table. This statement is subject to the recommendation of a qualified geotechnical engineer.

(c) If the minimum percolation rate is not met and/or the minimum soil depth cannot be maintained on a site, recharge should be accommodated by directing shallow sheet flow from impervious areas across surface filter strips and/or undisturbed natural areas, or some other innovative surface infiltration feature should be used. Limiting subsurface percolation rates and/or depth to bedrock shall not by themselves warrant a recharge waiver.

(14) In addition, since recharge is intended as a volume control, innovative or new methods that address the significant increase in the volume of runoff from sites having large impervious areas are encouraged. These volume control alternatives can be used only if they can be shown to function with the original intent through sound engineering and science. The final determination of original intent shall always be the right of the Township Engineer.

E. Storm drain conveyance system design. Storm drainage conveyance systems consist of storm sewer pipes, swales, and open channels. Computational methods for design of storm drain conveyance systems shall be as follows:

(1) Recommended computational methods (models) for storm drain design are based on site or watershed drainage area as follows:

(a) Up to 200 acres in size: Rational Method.

(b) Between 200 acres and 1.5 square miles in size: HEC-1; PSRM; TR-20.

(c) Over 1.5 square miles in size: PSU-IV with the carbonate adjustment factor at the discretion of the Township Engineer.

(d) Other methods as approved by the Township Engineer, such as SWMM, SWIRM-ROUTE, etc.

(2) Rational coefficients.

(a) Rational coefficients used are to be from Rawls et al. (1981), PADOT Design Manual 2-10 or using the Aron curves to convert CNs to C. If the Aron curves are used, all CNs must be applicable to the HSG, as identified by the NRCS.

(b) The design engineer may choose to use the following Rational C coefficients without regard to soil HSG for small sites. However, it is recommended that they be used only for storm drains up to 24 inches in diameter. The use of these conservative values shall fully be the choice of the design engineer.

[1] All impervious areas: C = 0.95.

[2] All pervious areas: C = 0.30.

(3) Storm drains shall be designed at a minimum using a ten-year runoff event without surcharging inlets. Storm drains tributary to a multiple site SWM facility across Township roads or crossing other properties must convey, at a minimum, a twenty-five-year runoff event without surcharging inlets. Runoff events in excess of the indicated design event must be conveyed safely downstream.

(4) Inlets on grade cannot assume a sumped condition for hydraulic modeling (i.e., top of inlet casting set below pavement surface in parking areas).

(5) The Township Engineer may require the analysis of the one-hundred-year peak runoff rates for conveyance purposes in some instances where regional SWM facilities are employed.

(6) Any storm drain within state or federal rights-of-way or that falls under the design criteria of any higher authority must meet the requirements of that agency in addition to the minimum requirements of this chapter.

(7) The time of concentration (Tc) can be computed by any method which best represents the subject watershed. However, the NRCS's segmental method is not recommended for use with drainage areas that are predominately undeveloped and are greater than 100 acres in size. The NRCS Lag Equation or another more appropriate method should be used under these conditions.

(8) For any drainage area smaller than five acres in size, a Tc of five minutes may always be assumed at the discretion of the design engineer (for the post-development condition) without needing to provide supporting documentation.

(9) Precipitation values applicable to the entire Spring Creek Drainage Basin are those reflected in the PADOT's IDF curves for Region 2, regardless of whether the area was formerly considered in Region 3.

(10) Storm drain conveyance system stability (swales, open channels, and pipe discharge aprons) shall be computed using a ten-year return period peak runoff rate.

(11) Storm sewers, where required by zoning and land use densities, shall be placed under or immediately adjacent to the roadway side of the curb, or as directed by the Township, when parallel to the street within the right-of-way.

(12) When located in undedicated land, storm sewers shall be placed within a drainage easement not less than 20 feet wide, as approved by the Township Engineer.

(13) The use of properly designed, graded, and turfed drainage swales is encouraged in lieu of storm sewers in commercial and industrial areas and, where approved by the Township Engineer, in residential areas. Such swales shall be designed not only to carry the required discharge without excessive erosion but also to increase the time of concentration, reduce the peak discharge and velocity, and permit the water to percolate into the soil, where appropriate.

(14) Inlet types and inlet assemblies.

(a) Inlet types and inlet assemblies shall conform to the Pennsylvania Department of Transportation Standards for Roadway Construction as approved by the Township Engineer.

[1] Inlets shall, at a minimum, be located at the lowest point of street intersections to intercept the stormwater before it reaches a pedestrian crossing, or at sag points of vertical curves in the street alignment that provide a natural point of ponding of surface stormwater.

[2] Where the Township deems it necessary because of special land requirements, special inlets may be approved.

[3] The interval between inlets collecting stormwater runoff shall be determined in accordance with DM-2, Chapter 10, Section 3, "Capacity of Roadway Hydraulic Facilities."

(b) In curbed sections, the maximum encroachment of water on the roadway pavement shall not exceed half of a through traffic lane or one inch less than the depth of curb during the ten-year design storm of five-minute duration. Inlets shall be provided to control the encroachment of

water on the pavement. When inlets are used in a storm system within the right-of-way limits of a street in lieu of manholes, the spacing of such inlets shall not exceed the maximum distance of 450 feet.

(15) Accessible drainage structures shall be located on a continuous storm sewer system at all vertical dislocations, at all locations where a transition in storm sewer pipe sizing is required, at all vertical and horizontal angle points exceeding five degrees, and at all points of convergence of two or more influent storm sewer mains. The construction locations of accessible drainage structures shall be as indicated on the land development SWM site plan or area SWM site plan approved by the Township.

(16) When evidence available to the Township indicates that existing storm sewers have sufficient capacity, as determined by hydrograph summation, and are accessible, the subdivider may connect his stormwater facilities to the existing storm sewers so long as the peak rate of discharge does not exceed the amount permitted by this chapter.

(17) All other storm drain design methods are to be the same as specified in existing local ordinances.

(18) Computational procedures other than those indicated here should follow the methods of the Federal Highway Administration's Urban Drainage Design Manual [Hydraulic Engineering Circular No 22. (HEC-22)].

F. Water quality standards.

(1) Water quality performance standards. To minimize adverse impacts to stream health resulting from stormwater nonpoint source (NPS) pollution, standards are provided for the implementation of water quality best management practices (BMPs) to reduce NPS pollutant loadings resulting from land development activities. The following performance standards and guidelines shall be addressed at all sites where stormwater management is required:

(a) Site designs shall minimize the generation of stormwater runoff through the use of low-impact design techniques.

(b) Stormwater runoff from all land development activities should be treated through the use of nonstructural and structural BMPs to effectively treat the adverse impacts of stormwater runoff, including NPS pollutants.

(c) Water quality BMPs shall be incorporated into site designs to treat the required water quality volume as defined below.

(d) The use of nonstructural BMPs shall always take priority over the use of structural BMPs. The use of innovative BMPs and low-impact site planning is encouraged to reduce the generation of stormwater runoff and effectively treat pollutants transported in stormwater from the site.

(e) The use of multiple nonstructural water quality techniques along with new, emerging, and innovative techniques is encouraged to improve the quality of stormwater runoff to receiving areas and reduce and/or eliminate the need for structural BMPs. The Township Engineer should be consulted to clarify the design concept for meeting or exceeding the intent of this section.

(f) Where nonstructural BMPs are unable to effectively treat all of the stormwater runoff generated from land development activities, structural BMPs shall be designed to capture and treat the computed water quality volume (WQv).

(g) The priority pollutant source areas to be treated with BMPs are streets, parking lots, driveways, and roof areas.

(h) Due to the karst nature of the watershed, stormwater discharges from water quality sensitive developments and discharges to sensitive wellhead protection areas (defined in Appendix B) will require special consideration. In these instances, the applicant shall provide water quality pre-treatment (use of a filtering BMP and/or special structural design features) to prevent the discharge of stormwater contaminants to groundwater resources. In addition, hydrogeologic studies may be required to document potential karst-related impacts.

(i) Prior to stormwater management and water quality design, applicants should consult with the Township Engineer to verify stormwater quality criteria and present proposed features and concepts for the treatment of stormwater runoff. Following this meeting, the Township Engineer shall define any needed support studies or documentation.

(2) Water quality volume (WQv).

(a) The required water quality volume that must be treated for nonsensitive areas underlain by carbonate rock (see Appendix B) within the Spring Creek Basin shall be computed as:

$$WQdepth = 0.25+(0.012)2.9^{(0.044(SIA))}$$

$$WQv = WQdepth(A)/12$$

Where:

WQv = Water quality volume in acre-feet

WQdepth = Depth in inches that must be captured for impervious areas

SIA = Percent of site impervious area (all paved areas and roof with asphalt-based roofs)

A = Total of all paved areas and asphalt-based roofs on site in acres.

(b) The required water quality volume that must be treated for any WQS development, on sites in sensitive areas underlain by carbonate rock, and all areas not underlain by carbonate rock, is to be computed within the entire Spring Creek Basin as:

$$WQdepth = \text{The larger of } 0.5 \text{ inch or } 0.25+(0.012)2.9^{(0.044(SIA))}$$

$$WQv = WQdepth(A)/12$$

Where:

WQv = Water quality volume in acre-feet

WQdepth = Depth in inches that must be captured for impervious areas

SIA = Percent of site impervious area (all paved areas and roof with asphalt-based roofs)

A = Total of all paved areas and asphalt-based roofs on site in acres.

(c) For designs in which the final roof material is unknown, the design engineer must assume an asphalt-based roof.

(d) The water quality volume must be captured and treated through a water quality BMP over an extended period of time, as per the specific requirements of each structure. Credits to reduce the effective impervious area are applicable as presented in Chapter 4 of the stormwater management plan.

(3) Water quality credits. Due to the karst nature of the Spring Creek Basin, the nonstructural water quality credits and techniques identified below may be limited for suitability and use based on development type and location. These limitations for use are specified in the restrictions section for each credit. The Township Engineer may require additional documentation or investigation prior to use of each specific credit to reduce the risks of sinkhole development or groundwater contamination for sensitive areas and development types. No area may be double-counted for use with credits. The combined credits of natural area conservation and vegetated filter strips are limited to 50% of the site's impervious area. The drainageway credit is limited to 50% of the site's impervious area. The drainageway protection credit is limited to 50% of the site's impervious area. The maximum total water quality credit for any site may, therefore, be 100% of the site's impervious area.

Nonstructural Technique	**Water Quality Credit**
Drainageway protection (DWP)	Subtract Drainageway protection areas from impervious site area in WQv computation
Natural area conservation (NAC)	Subtract conserved natural areas from impervious site area in WQv computation
Filter/buffer area	Subtract impervious areas discharged over pervious areas from impervious site area in WQv computation

(4) Drainageway protection.

(a) A water quality credit is given for the protection of natural drainageways on a development site. Natural karst drainageways within the Spring Creek Watershed often do not exhibit a defined channel bed and banks. More often, these drainageways appear as wide, shallow parabolic swales. These drainageways are an integral part of the natural drainage system and often exhibit significant infiltration capacity. Protection of these drainageways is critically important to the health of the watershed.

(b) The drainageway protection (DWP) area is defined as an area centered on the drainageway and having a minimum width of 300 feet. The Township Engineer may modify the defined minimum width in cases where natural land forms define an appropriate alternate width.

(c) The impervious area used in the WQv equation for the development site may be reduced by

twice the area of the preserved drainageway (two to one ratio).

[1] Restrictions on the credit:

[a] Drainageway protection areas must remain in an undisturbed condition during and after construction activities. There can be no construction activity within these areas, including temporary access roads or storage of equipment or materials. Temporary access for the construction of utilities crossing this protection area may be permitted at the Township Engineer's discretion. However, the alignment of any such crossing must be perpendicular to the drainageway.

[b] These areas should be placed in a conservation easement or be permanently preserved through a similarly enforceable agreement with the Township.

[c] The limits of the undisturbed DWP area and conservation easement must be shown on all construction plans.

[d] The DWP area must be located on the development site.

[e] The maximum total DWPA credit is 100% of the site impervious area.

[f] Water quality credits are not permitted for water-quality-sensitive (WQS) developments.

[2] Sensitive area and development restrictions:

[a] Drainageway protection areas may not be counted as a credit in sensitive areas unless the impervious area actually flows across the area as sheet flow.

[b] Untreated urban runoff from sensitive development types may not be directed to DWP areas without pretreatment.

(5) Natural area conservation. A water quality credit is given for natural areas that are conserved at the development site, thereby maintaining predevelopment water quality characteristics. The impervious area used in the WQv equation for the development site may be reduced by the natural area conserved in the water quality volume computations. Natural area conservation is different from vegetated filter strip/recharge area and drainageway protection in that, in some cases, surface runoff may never be directed over the natural area (i.e., if upslope wooded areas are conserved).

(a) Restrictions on the credit:

[1] Natural areas must remain in an undisturbed condition during and after construction activities. Temporary incidental land disturbance activities associated with utility construction may be permitted within the conservation area.

[2] These areas should be placed in a conservation easement or similarly enforceable agreement with the Township.

[3] The limits of the undisturbed area and conservation easement must be shown on all construction plans.

[4] The area must be located on the development site.

[5] Water quality credits are not permitted for water-quality-sensitive (WQS) developments.

[6] The maximum total NAC credit is 50% of the site impervious area. However, the combination of NAC VFRS is also 50%.

(b) Sensitive area and development restrictions:

[1] Natural area conservation areas may not be counted as a credit in sensitive areas unless the impervious area actually flows across the area as sheet flow.

[2] Untreated urban runoff from sensitive development types may not be directed to natural areas without pretreatment.

(6) Filter/buffer area.

(a) A water quality credit is given when stormwater runoff is effectively treated via a filter/buffer area or strip. A filter/buffer area is a vegetated boundary characterized by uniform mild slopes. Filter strips may be forested or vegetated with turf grass. Effective treatment is achieved when impervious area runoff is directed as sheet flow across vegetative filter or buffer areas (i.e., concentrated flow discharged to a filter strip does not meet water quality reduction criteria).

(b) The area draining via overland sheet flow to an undisturbed, natural, vegetated filter strip (natural unmaintained meadow or forested area) can be subtracted from the site impervious area (IA) on a 1:1 area ratio in the water quality volume computation. Impervious areas draining across constructed (disturbed or regarded) pervious areas can be subtracted from the site impervious area (IA) on a 1:1/2 area ratio in the water quality volume computation.

[1] Restrictions on the credit:

[a] The maximum impervious area that can be included in this credit, shall be computed as follows:

IAc = WIA LIA

Where:

IAc = Impervious area recharge credit (L^2)

LIA = Length of impervious area measured perpendicular to the sheet flow direction (L)

WIA = Width of impervious area (L). Maximum width permitted for credit is the smaller of 100 feet or twice the width of the vegetated filter strip.

[b] To qualify for a water quality credit, natural and constructed filter areas or strips must meet the same restrictions identified for natural or constructed recharge areas with regard to width, length, slope, tributary drainage length, and construction.

[c] Runoff shall enter the filter/buffer strip as overland sheet flow.

[d] Filter/buffer areas shall remain undisturbed/unmanaged other than to remove accumulated trash and debris.

[e] Water quality credits are not permitted for Water Quality Sensitive (WQS) developments.

[f] The maximum total water quality credit for vegetative filter/buffer areas is 50% of the site impervious area. However, the combination of NAC and filter/buffer areas is also 50%.

[2] Sensitive area and development restrictions:

[a] Untreated urban runoff from WQS developments may not be directed to filter/buffer areas without pretreatment.

(7) Comments related to water quality credits.

(a) Concurrence of the Township Engineer is required prior to the use of all water quality credits for the reduction of the water quality treatment volume. The Township Engineer may approve the use of additional credits based upon sufficient documentation regarding suitability for sensitive development types and areas, pollutant removal effectiveness, and maintenance criteria. Multiple water quality credits cannot be claimed for the identical area of the site (i.e., a stream buffer credit and disconnecting roof recharge area cannot both be claimed for the same area).

(b) Additional impervious coverage reduction using low-impact development techniques (development practices which reduce the impact of urban runoff, such as narrower residential road sections, smaller culs-de-sac, smaller parking stalls, smaller building setbacks to reduce driveway lengths, etc.) will also reduce the required water quality treatment volume. Many of these techniques require prior approval by the Township before implementation into land development design.

§ 175-23 Prohibited discharges and connections

Nonstormwater discharges are to be regulated as noted below. In general, nonstormwater discharges are prohibited from entering any portion of the municipal separate storm sewer system or any waters of the commonwealth, except as noted below.

A. Prohibited discharges.

(1) No person in the Township shall allow, or cause to allow, stormwater discharges into the Township's storm sewer system that are not composed entirely of stormwater, except as provided in Subsection B below and discharges allowed under a state or federal permit.

(2) Discharges that may be allowed, based on a finding by the Township, as determined by the Township Engineer, that the discharge(s) do not significantly contribute to pollution of surface waters of the commonwealth, are:

~~(a) Discharges from firefighting activities;~~

~~(b) Potable water sources, including dechlorinated water line and fire hydrant flushings;~~

~~(c) Irrigation drainage;~~

~~(d) Routine external building washdown (which does not use detergents or other compounds);~~

~~(e) Air-conditioning condensate;~~

~~(f) Water from individual residential car washing;~~

~~(g) Springs;~~

~~(h) Water from crawl space pumps;~~

~~(i) Uncontaminated water from foundation or from footing drains;~~

~~(j) Flows from riparian habitats and wetlands;~~

~~(k) Lawn watering;~~

~~(l) Pavement washwaters 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;~~

~~(m) Dechlorinated swimming pool discharges;~~

~~(n) Uncontaminated groundwater;~~

~~(o) Diverted stream flow;~~

~~(p) Uncontaminated pumped groundwater.~~

(a) Discharges from firefighting activities;

(b) Discharges from potable water sources including water line flushing and fire hydrant flushing, if such discharges do not contain detectable concentrations of Total Residual Chlorine (TRC).

(c) Non-contaminated irrigation water, water from lawn maintenance, landscape drainage and flows from riparian habitats and wetlands.

(d) Routine external building washdown (which does not use detergents or other compounds);

(e) Non-contaminated HVAC condensation and water from geothermal systems.

(f) Residential (i.e., not commercial) vehicle wash water where cleaning agents are not utilized.

(g) Diverted stream flows and springs.

(h) Non-contaminated pumped ground water and water from foundation and footing drains and crawl space pumps. Roof drains and sump pumps shall discharge to infiltration or vegetative BMPs wherever feasible.

(i) Non-contaminated hydrostatic test water discharges, if such discharges do not contain detectable concentrations of TRC.

(j) Flows from riparian habitats and wetlands;

(k) Pavement washwaters 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;

(l) Dechlorinated residential swimming pool discharges;

(m) Diverted stream flow.

(3) In the event that the Township determines that any of the discharges identified in Subsection A(2) above significantly contribute to pollution of waters of the commonwealth, or is so notified by the Pennsylvania Department of Environmental Protection (PADEP), the Township will notify the responsible person to cease the discharge.

(4) Upon notice provided by the Township under Subsection A(3) above, the discharger will have a reasonable time, as determined by the Township, to cease the discharge consistent with the degree of pollution caused by the discharge.

(5) Nothing in this section shall affect a discharger's responsibilities under state law.

B. Prohibited connections. The following connections are prohibited, except as provided in Subsection A(2) above:

(1) Any drain or conveyance, whether on the surface or subsurface, that allows any nonstormwater discharge, including sewage, process wastewater, and wash water, to enter the storm sewer system, and any connections to the storm drain system from indoor drains and sinks.

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

§ 175-24 General requirements.

A. From and after the date of enactment of this chapter, a stormwater management site plan and other information specified herein shall be submitted to the Township for all lands subdivided or for which land development plans are prepared after the enactment of this chapter. A stormwater management site plan and other information specified herein shall be submitted at the same time and together with submission of a preliminary subdivision or land development plan, along with a completed checklist supplied by the Township indicating the items contained within the submission.

B. Such plans and information shall be considered part of said zoning and subdivision documents and shall be reviewed in accordance with procedures established thereunder. Preliminary approval or final approval of a subdivision or land development plan, or the issuance of a zoning permit, shall be contingent upon submission of a stormwater management site plan and other materials specified herein and approval of the stormwater management site plan in accordance with provisions of this chapter.

C. All stormwater management site plans shall be submitted to the Township Engineer for review and comment. Such review shall include a statement by the Township Engineer specifying the provisions of this chapter that have not been met by the plan as submitted.

D. Once a stormwater management site plan has been approved together with a subdivision or land development plan approval, or together with the issuance of a zoning permit, said stormwater management site plan shall be valid only for the subdivision, land development, or zoning permit approved. Any further development on the lot or lots requiring a revision of the approved plan or other construction or activities as defined by Township Zoning Regulations shall require the submission of a new, amended, or revised stormwater management site plan and other information specified herein.

E. The Municipality's approval of an SWM Site Plan authorizes the regulated activities contained in the SWM Site Plan for a maximum term of validity of 5 years following the date of approval unless otherwise extended in writing or by statute. The Municipality may specify a term of validity shorter than 5 years in the approval for any specific SWM Site Plan. Terms of validity shall commence on the date the Municipality signs the approval for an SWM Site Plan. If an approved SWM Site Plan is not completed within the term of validity, then the Municipality may consider the SWM Site Plan disapproved and may revoke any and all permits. SWM Site Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with this Chapter.

§ 175-37 Declaration of stormwater access and maintenance easement for privately owned stormwater facilities.

A. Prior to final approval of the stormwater management site plan, the property owner shall sign and record a declaration of stormwater access and maintenance easement (DSAME) covering all stormwater control facilities that are to be privately owned. **The DSAME shall include an Operation and Maintenance Agreement.**

B. The DSAME shall contain the following elements:

(1) Name and address of the property owner;

(2) Name of land development for which the DSAME is required;

(3) Statement noting that as a condition of approval that a DSAME is required;

(4) Statement noting that the DSAME shall run in perpetuity with the land;

(5) Statement that the property owner creates an easement for the purpose of access to the stormwater facilities for ingress, egress, and regress;

(6) Metes and bounds description of the stormwater access and maintenance easement;

(7) Statement that heirs and assigns of the owner, by accepting a deed from the owner, agree to be subject to the conditions of the DSAME;

(8) Statement that the stormwater easement shall be a permanent easement and that the stormwater management facilities located within the easement will be maintained by the owner, his heirs and assigns and shall be responsible for repairs as may be required in accordance with the approved stormwater easement maintenance plan;

(9) The creation of the stormwater easement shall be deemed an agreement by the owner to maintain the stormwater management facilities, with all costs of maintenance to be the responsibility of the owner. The agreement shall also state that no alteration of the facilities is permitted without formal plan approval by DEP, the Centre County Conservation District, and the Township;

(10) Statement noting that no structures are permitted within the easement and that no grading that will adversely impact the function of stormwater facilities within the easement;

(11) A statement noting that no barriers, fences or other obstructions that may impede stormwater flow are permitted;

(12) A statement noting that the owner will be responsible for maintenance of the easement, including mowing and annual upkeep;

(13) Statement noting that, in case any provisions contained in this DSAME are for any reason declared invalid, such invalidity shall not affect any other provision hereof;

(14) Statement that the owner, his heirs, successors, and assigns agree to indemnify and hold harmless the Township, Centre County, and the Township Engineer from any and all claims, costs, damages, and expenses legally and reasonably incurred as a result of this DSAME and the easements hereby created;

(15) Statement noting the following: "The owner hereby acknowledges the Township's right to access the stormwater easements to inspect the stormwater management facilities. The owner also acknowledges the Township's right, upon notice to the owner, to repair and or maintain the stormwater facilities in accordance with the stormwater access and maintenance plan. All costs, including materials, labor, engineering, and legal costs of such repair or maintenance activities shall be the sole responsibility of the owner." In the event of nonpayment by the owner, the Township shall seek legal options for receipt of payment, including placement of a municipal lien on the property.

C. Operation and Maintenance Agreements

(1) Prior to final approval of the SWM Site Plan, the property owner shall sign and record an Operation and Maintenance (O&M) Agreement (see Appendix YYY) covering all stormwater control facilities which are to be privately owned.

(2) The owner, successor and assigns shall maintain all facilities in accordance with the approved maintenance schedule in the O&M Agreement.

(3) The owner shall keep on file with the Municipality the name, address, and telephone number of the person or company responsible for maintenance activities; in the event of a change, new information shall be submitted by the owner to the Municipality within ten (10) working days of the change.

SECTION 2. Replace and Replace Appendix C – DSAME/O&M Agreement.

Attachment 3 - Appendix C – DSAME / O&M Agreement

SECTION 3. SEVERABILITY

If any sentence or clause, section, or part of this ordinance is found to be unconstitutional, illegal or invalid, such findings shall not affect or impair any of the remaining parts of this ordinance. It is hereby declared to be the intent that this ordinance would have been adopted had such part not been included.

SECTION 4. EFFECTIVE DATE

This ordinance shall take effect five (5) days after enactment.

ENACTED AND ORDAINED, this 5th day of September 2024 by the College Township Council, Centre County, Pennsylvania.

ATTEST:

Adam T. Brumbaugh

COLLEGE TOWNSHIP COUNCIL:

Dustin Best, Chair

APPENDIX C

<<PROJECT / DEVELOPMENT>>
IN
COLLEGE TOWNSHIP, CENTRE COUNTY, PENNSYLVANIA

DECLARATION OF STORMWATER ACCESS AND MAINTENANCE EASEMENT AND OPERATION AND MAINTENANCE (O&M) AGREEMENT FOR PRIVATELY OWNED STORMWATER FACILITIES

THIS AGREEMENT, made and entered into this _____day of _____ 20___, by and between <<Owner Name>>, (hereinafter the "Landowner"), and College Township, Centre County, Pennsylvania, (hereinafter "Township");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Centre County, Pennsylvania, Record Book __#__ at Page __#__ (hereinafter "Property").

WHEREAS, the Landowner is proceeding to build and develop the Property, located at Property Address (Tax Parcel 19- -), Pennsylvania; and

WHEREAS, the Stormwater Management Site Plan approved by the Township (hereinafter referred to as the "Plan") for the property identified herein, **which is attached hereto as Appendix A and made part hereof**, as approved by the Township, provides for management of stormwater within the confines of the Property through the use of BMPs; and

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

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

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

1. The Landowner shall create an easement for the purpose of access to the stormwater facilities for ingress, egress, and regress.
2. As a condition of approval, a Declaration of Stormwater Access and Maintenance Easement and Operation and Maintenance Agreement (DSAME) is required.
3. Heirs and assigns of the Landowner, by accepting a deed from the Landowner, agree to be subject to the conditions of the DSAME.
4. The creation of the stormwater easement shall be deemed an agreement by the Landowner to maintain the stormwater management facilities with all costs of maintenance to be the responsibility of the Landowner.

5. The DSAME shall run in perpetuity with the land.
6. The stormwater easement shall be a permanent easement and the stormwater management facilities located within the easement will be maintained by the Landowner, their heirs, and assigns and shall be responsible for repairs as may be required in accordance with the approved Stormwater Management Site Plan.
7. The Landowner shall operate and maintain the BMPs as shown on the SWM Site Plan in good working order in accordance with the specific operation and maintenance requirements noted on the approved Plan.
8. No alterations of the stormwater facility is permitted without formal plan approval by DEP, the Centre County Conservation District, and the Township.
9. No structures and no grading that will adversely impact the function of stormwater facilities are permitted within the easement.
10. No barriers, fences, or other obstructions that may impede stormwater flow are permitted within the easement.
11. The Landowner will is responsible for maintenance of the easement including mowing and annual upkeep.
12. In the case that any provisions contained in the DSAME are for any reason declared invalid, such invalidity shall not affect any other provisions hereof.
13. The Landowner, their heirs, successors, and assigns agree to indemnify and hold harmless the Township, Centre County, and the Township Engineer from any and all claims, costs, damages, and expenses legally and reasonably incurred as a result of the DSAME and the easements herby created.
14. 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 necessary.
15. In the event the Landowner fails to operate and maintain the BMPs per this Agreement, 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.
16. 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 10 days of receipt of invoice from the Municipality.
17. In the event a Landowner fails to reimburse the Municipality, Municipality shall retain all rights to recover expenses including, but not limited to, municipal lien.
18. The intent and purpose of this Agreement is to ensure the proper maintenance of the on-site BMPs by the Landowner; provided, however, that this Agreement shall not be deemed to create any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.
19. 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.
20. The Municipality intends to inspect the BMPs at regular intervals as may be required by the Pennsylvania Department of Environmental Protection to ensure their continued functioning.

IN WITNESS WHEREOF, the undersigned have caused this Agreement and Declaration of Stormwater Access and Maintenance Easement for Privately Owned Stormwater Facilities to be executed on the day and year first above written.

Commonwealth of Pennsylvania)

)SS:

County of Centre)

Owner:

_____ _____

Name (Print) Title

_____ _____

Signature Date

On this, the _____ day of _____ 20___, before me a notary public, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.
In witness hereof, I hereunto set my hand and official seal.

_____

Notary Public (signature)

Commonwealth of Pennsylvania)

)SS:

County of Centre)

College Township:

_____ _____

Name (Print) Title

_____ _____

Signature Date

On this, the _____ day of _____ 20___, before me a notary public, the undersigned officer, personally appeared _____, known to me (or satisfactorily proven) to be the person whose name is subscribed to the within instrument, and acknowledged that he/she executed the same for the purposes therein contained.
In witness hereof, I hereunto set my hand and official seal.

_____

Notary Public (signature)