

STORMWATER MANAGEMENT ORDINANCE

Implementing the Requirements of the
Upper Yellow Breeches Watershed Stormwater Management Plan

ORDINANCE NO. 3 OF 2002

COOKE TOWNSHIP, CUMBERLAND COUNTY,
PENNSYLVANIA

Adopted at a Public Meeting Held on
November 12, 2002

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ARTICLE I - GENERAL PROVISIONS

Section 101. Statement of Findings

The governing body of the Municipality finds that:

- A. Inadequate management of accelerated stormwater runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage stormwater, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, and threatens public health and safety.
- B. A comprehensive program of stormwater management, including reasonable regulation of development and activities causing accelerated erosion, is fundamental to the public health, safety, welfare, and the protection of the people of the Municipality and all the people of the Commonwealth, their resources, and the environment.

Section 102. Purpose

The purpose of this Ordinance is to promote health, safety, and welfare within the Upper Yellow Breeches Watershed by minimizing the damages described in Section 101.A of this Ordinance through provisions designed to:

- A. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause these problems.
- B. Utilize and preserve the existing natural drainage systems.
- C. Encourage recharge of groundwater where appropriate and prevent degradation of groundwater quality.
- D. Maintain existing flows and quality of streams and watercourses in the Municipality 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 Municipality.
- G. Provide performance standards and design criteria for watershed-wide stormwater management and planning.

Section 103. Statutory Authority

The Municipality is empowered to regulate land use activities that affect runoff by the authority of the Act of October 4, 1978 32 P.S., P.L. 864 (Act 167) Section 680.1 et seq., as amended, the "Storm Water Management Act".

Section 104. Applicability

Any landowner or any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures consistent with the provisions of the Upper Yellow Breeches Watershed Stormwater Management Plan. This Ordinance shall apply to those areas of the Municipality that are located within the Upper Yellow Breeches Creek Watershed, as delineated in Appendix D which is hereby adopted as part of this Ordinance corresponding approximately to all of Cooke Township north of Ridge Road.

Section 105. Repealer

Any ordinance or ordinance provision of the Municipality inconsistent with any of the provisions of this Ordinance is hereby repealed to the extent of the inconsistency only.

Section 106. Severability

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

Section 107. Compatibility with Other Ordinance Requirements

Approvals issued pursuant to this Ordinance do not relieve the Applicant of the responsibility to comply with or to secure required permits or approvals for activities regulated by any other applicable codes, rules, statutes, or ordinances.

Section 108. Landowner Responsibility

The granting of an exemption, permit, or approval by the Municipality, does not relieve the applicant from the responsibility of preventing injury to health, safety or other property.

ARTICLE II - DEFINITIONS

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

8. 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.
9. 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.
10. The word "person" includes an individual, firm, association, organization, partnership, trust, company, corporation, or any other similar entity.
11. The words "shall" and "must" are mandatory; the words "may" and "should" are permissive.
12. The words "used or occupied" include the words "intended, designed, maintained, or arranged to be used, occupied or maintained".

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

Agricultural Activities - The work of producing crops and raising livestock including tillage, plowing, disking, harrowing, pasturing 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 Section 104 of this Ordinance.

BMP (Best Management Practice) - Stormwater structures, facilities and techniques to maintain or improve the water quality of surface runoff.

Channel Erosion - The widening, deepening, and headward cutting of small channels and waterways, due to erosion caused by moderate to large floods.

Cistern - An underground reservoir or tank for storing rainwater.

Conservation District - The Cumberland County Conservation District.

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

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.

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

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

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

Detention District - Those subareas in which some type of detention is required to meet the plan requirements and the goals of Act 167.

Developer - A person, partnership, association, corporation, or other entity, or any responsible person therein or agent thereof, that undertakes any Regulated Activity of this Ordinance.

Development Site - The specific tract of land for which a Regulated Activity is proposed.

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.

Drainage Permit - A permit issued by the Township governing body after the drainage plan has been approved. Said permit is issued prior to or with the final Township approval.

Drainage Plan - The documentation of the stormwater management system, if any, to be used for a given development site, the contents of which are established in Section 403.

Earth Disturbance - Any activity including, but not limited to, construction, mining, timber harvesting and grubbing which alters, disturbs, and exposes the existing land surface.

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 which is designed to minimize accelerated erosion and sedimentation.

Existing Conditions - The initial condition of a project site prior to the proposed construction. If the initial condition of the site is undeveloped land, the land use shall be considered as "meadow" in good condition unless the natural land cover is proven to generate lower curve numbers or Rational "C" values, such as forested lands.

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. Also included are areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania Department of Environmental Protection (PA DEP) Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by PA DEP).

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

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

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

Groundwater Recharge - Replenishment of existing natural underground water supplies.

Impervious Surface - A surface that prevents the percolation of water into the ground.

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

Infiltration Structures - A structure designed to direct runoff into the ground (e.g. french drains, seepage pits, seepage trench).

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.

Land Development - (i) 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; (ii) any subdivision of land; (iii) development in accordance with Section 503(1.1) of the PA 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.

Main Stem (Main Channel) - Any stream segment or other runoff conveyance facility used as a reach in the Upper Yellow Breeches hydrologic model.

Manning Equation in (Manning formula) - A method for calculation of velocity of flow (e.g. feet per second) and flow rate (e.g. cubic feet per second) in open channels based upon channel shape, roughness, depth of flow and slope. "Open channels" may include closed conduits so long as the flow is not under pressure.

Municipality – Cooke Township, Cumberland County, Pennsylvania.

Nonpoint Source Pollution - Pollution that enters a watery body from diffuse origins in the watershed and does not result from discernible, confined, or discrete conveyances.

NRCS - Natural Resource Conservation Service (previously SCS).

Open Channel - A drainage element in which stormwater flows with an open surface. Open channels include, but shall not be limited to, natural and man-made drainageways, swales, streams, ditches, canals, and pipes flowing partly full.

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

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

Parking Lot Storage - Involves the use of impervious parking areas as temporary impoundments with controlled release rates during rainstorms.

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

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

Planning Commission - The planning commission of Cooke Township.

PMF - Probable Maximum Flood - The flood that may be expected from the most severe combination of critical meteorologic and hydrologic conditions that are reasonably possible in any area. The PMF is derived from the probable maximum precipitation (PMP) as determined on the basis of data obtained from the National Oceanographic and Atmospheric Administration (NOAA).

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

Regulated Activities - Actions or proposed actions that have an impact on stormwater runoff and that are specified in Section 104 of this Ordinance.

Release Rate - The percentage of predevelopment peak rate of runoff from a site or subarea to which the post development peak rate of runoff must be reduced to protect downstream areas.

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.

Return Period - The average interval, in years, within which a storm event of a given magnitude can be expected to recur. For example, the 25-year return period rainfall would be expected to recur on the average once every twenty-five years.

Riser - A vertical pipe extending from the bottom of a pond that is used to control the discharge rate from the pond for a specified design storm.

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

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

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

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

Sedimentation - The process by which mineral or organic matter is accumulated or deposited by the movement of water.

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

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

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

Soil Group, Hydrologic - A classification of soils by the Soil Conservation Service into four runoff potential groups. The groups range from A soils, which are very permeable and produce little runoff, to D soils, which are not very permeable and produce much more runoff.

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

Storage Indication Method - A reservoir routing procedure based on solution of the continuity equation (inflow minus outflow equals the change in storage) with outflow defined as a function of storage volume and depth.

Storm Frequency - The number of times that a given storm "event" occurs or is exceeded on the average in a stated period of years. See "Return Period".

Storm Sewer - A system of pipes and/or open channels that convey intercepted runoff and stormwater from other sources, but excludes domestic sewage and industrial wastes.

Stormwater - The total amount of precipitation reaching the ground surface.

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 Upper Yellow Breeches Watershed adopted by Cumberland County as required by the Act of October 4, 1978, P.L. 864, (Act 167), and known as the "Upper Yellow Breeches Watershed Act 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 particular site of interest according to this Ordinance.

Stream Enclosure - A bridge, culvert or other structure in excess of 100 feet in length upstream to downstream which encloses a regulated water of this Commonwealth.

Subarea - The smallest drainage unit of a watershed for which stormwater management criteria have been established in the Stormwater Management Plan.

Subdivision - The division or re-division of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership, or building or lot development: Provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than ten acres, not involving any new street or easement of access or any residential dwellings, shall be exempt.

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

Timber Operations - See Forest Management.

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

Watercourse - A stream of water; river; brook; creek; or a channel or ditch for water, whether natural or manmade.

Waters of the 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.

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.

ARTICLE III - STORMWATER MANAGEMENT

Section 301. Exemptions

A. Any Regulated Activity that meets the following exception criteria shall not be required to implement stormwater controls if the developer can demonstrate no downstream harm (see Section 303.F). These criteria shall apply to the total development even if development is to take place in phases. The date of the Municipal Ordinance adoption shall be the starting point from which to consider tracts as "parent tracts" in which future subdivisions and respective impervious area computations shall be cumulatively considered. Exemption shall not relieve the applicant from implementing such measures as are necessary to protect health, safety, and property. This exemption does not relieve the landowner or developer from complying with the water quality and groundwater recharge standards under Section 304 and Section 305.

**Stormwater Management Exemption Criteria
Impervious Area Exemption**

Total Parcel size (acres)	Total Parcel size (sq. ft.)	Exemption (sq. ft.)
<0.25 acre	<10,890	1,000
0.25 - 0.5 acre	10,890 – 21,780	2,500
0.5 or greater	>21,780	5,000

B. Prior to the granting of an exemption, the applicant must provide documentation from any professional authorized to perform this work under the Engineer, Land Surveyor, and Geologist Registration Law, May 23, 1945, P.L. 913, No. 367, (63 P.S. Section 148 et. Seq, P.L. 913, as amended) that the increased flows from the site leaves the site so that there will be no adverse affects to properties along the path of flow(s), or that the increased flow(s) will reach a natural watercourse or an existing stormwater management structure before adversely affecting any property along the path of the flow(s).

Section 302. General Requirements

A. For the purposes of stormwater management, the Municipality is divided into the following Stormwater Management Districts

1. Upper Yellow Breeches Creek Watershed Stormwater Management District

All land development occurring within the Upper Yellow Breeches Creek Watershed portion of the Municipality shall implement the requirements of the Upper Yellow Breeches Watershed Stormwater Management Plan.

2. General Stormwater Management District

All land development occurring outside of the Upper Yellow Breeches Creek Watershed portion of the Municipality shall comply with the following requirements: **(INSERT EXISTING MUNICIPAL STORMWATER REQUIREMENTS OR REQUIREMENTS THAT THE MUNICIPALITY CHOOSES)**

- B. All regulated activities in the Upper Yellow Breeches Watershed that do not fall under the exemption criteria shown in Ordinance Section 301 shall submit a drainage plan consistent with the Upper Yellow Breeches Watershed Stormwater Management Plan to the Municipality for review. This criterion shall apply to the total proposed development even if development is to take place in stages.
- C. If the initial condition of a project site is undeveloped land, the land use shall be considered as "meadow" in good condition unless the land cover is proven to generate lower curve numbers or Rational "C" values, such as forested land. Impervious cover shall include, but not be limited to, any roof, parking or driveway areas and any new streets and sidewalks. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious for the purposes of comparison to the exemption criteria.
- D. For projects larger than the exemptions in Section 301.A, no waivers shall be provided from the requirements of Sections 304 and 305 of this Ordinance.
- E. Stormwater drainage systems shall be provided in order to permit unimpeded flow along natural watercourses, except as modified by stormwater management facilities or open channels consistent with this Ordinance.
- F. The existing points of concentrated drainage that discharge onto adjacent property shall not be altered without permission of the adjacent property owner(s) and shall be subject to any applicable discharge criteria specified in this Ordinance.
- G. Areas of existing diffused drainage discharge shall be subject to any applicable discharge criteria in the general direction of existing discharge, whether proposed to be concentrated or maintained as diffused drainage areas, except as otherwise provided by this Ordinance. If diffused flow is proposed to be concentrated and discharged onto adjacent property, the Developer must document that adequate downstream conveyance facilities exist to safely transport the concentrated discharge, or otherwise prove that no erosion, sedimentation, flooding or other harm will result from the concentrated discharge.
- H. Where a development site is traversed by watercourses, drainage easements shall be provided conforming to the line of such watercourses. The terms of the easement shall prohibit excavation, the placing of fill or structures, and any alterations that may adversely affect the flow of stormwater within any portion of the easement. Also, maintenance, including mowing of vegetation within the easement shall be required, except as approved by the appropriate governing authority.
- I. When it can be shown that, due to topographic conditions, natural drainageways and depressions on the site cannot adequately provide for drainage, open channels may

be constructed conforming substantially to the line and grade of such natural drainageways. Work within natural drainageways shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, through the General Permit process.

- J. Any stormwater management facilities regulated by this Ordinance that would be located in or adjacent to waters of the Commonwealth or wetlands shall be subject to approval by PA DEP through the Joint Permit Application process, or, where deemed appropriate by PA DEP, the General Permit process. When there is a question whether wetlands may be involved, it is the responsibility of the Developer or his agent to show that the land in question cannot be classified as wetlands, otherwise approval to work in the area must be obtained from PA DEP.
- K. Any stormwater management facilities regulated by this Ordinance that would be located on State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation (PENNDOT).
- L. Minimization of impervious surfaces and infiltration of runoff through seepage beds, infiltration trenches, etc. are encouraged, where soil conditions permit, to reduce the size or eliminate the need for detention facilities in accordance with Chapter VI of the Upper Yellow Breeches Watershed Stormwater Management Plan.
- M. Roof drains must not be connected to streets, sanitary or storm sewers or roadside ditches to promote overland flow and infiltration/percolation of stormwater where advantageous to do so. When it is more advantageous to connect directly to streets or storm sewers, then it shall be permitted on a case-by-case basis by the municipality.
- N. Special requirements for areas falling within defined Exceptional Value (EV) and High Quality (HQ) watersheds: The temperature and quality of water and streams that have been declared as EV or HQ are to be maintained as defined in Chapter 93, Water Quality Standards, Title 25 of Pennsylvania Department of Environmental Protection Rules and Regulations. Temperature sensitive BMP's and stormwater conveyance systems are used and designed with storage pool areas and supply outflow channels and should be shaded with trees. This will require modification of berms for permanent ponds and the relaxation of restrictions on planting vegetation within the facilities, provided that capacity for volumes and rate control is maintained. At a minimum, the southern half on pond shorelines shall be planted with shade or canopy trees within ten feet of the pond shoreline. In conjunction with this requirement, the maximum slope allowed on the berm area to be planted is 10:1. This will lessen the destabilization of berm soils due to root growth. A long-term maintenance schedule and management plan for the thermal control BMP's are to be established and recorded for all development sites.

Section 303. Stormwater Management Districts

- A. The Upper Yellow Breeches Watershed has been divided into two stormwater management districts as shown on the Watershed Map in Appendix D.

- B. District Boundaries - The boundaries of the Stormwater Management Districts are shown on an official map, which is available for inspections at the municipal office. A copy of the official map at a reduced scale is included in the Ordinance Appendix D. The exact location of the Stormwater Management District boundaries as they apply to a given development site shall be determined by mapping the boundaries using the two-foot topographic contours (or most accurate data required) provided as part of the Drainage Plan.
- C. Sites Located in More Than 1 District - for a proposed development site located within two or more stormwater management districts, the appropriate composite curve number calculations as defined in Section 310 shall apply for each subarea of the development site.
- D. Off-Site Areas - Off-site Areas that drain through a proposed development site are subject to the composite curve number adjustments as per Section 310 when determining allowable peak runoff rates. On-site drainage facilities shall be designed to safely convey off-site flows through the development site.
- E. Site Areas - Where the site area to be impacted by a proposed development activity differs significantly from the total site area, the entire area shall be subject to the curve number adjustments as per Section 310.
- F. "No Harm" Option - For any proposed development site requesting a waiver from Section 309 of this Ordinance, the developer has the option of using a less restrictive runoff control (including no detention) if the developer can prove that "no harm" would be caused by discharging at a higher runoff rate than that specified by the Plan. The "no harm" option is used when a developer can prove that the post-development hydrographs can match pre-development hydrographs, or if it can be proved that the post-development conditions will not cause increases in peaks at all points downstream. Proof of "no harm" would have to be shown based upon the following approach:
 - 1. The Upper Yellow Breeches Watershed Stormwater Runoff Model must be modified to the extent required to assess the impact of the proposed development site on the peak rates of runoff calculated for locations downstream from the proposed development site. The modification process must include the following.
 - a. The division of the subarea in which the development site is located into two or more drainage areas that will allow for the assessment of the development site's impact on the stormwater runoff hydrographs calculated for the subarea.
 - b. Use the HEC-HMS computer program to calculate stormwater runoff hydrographs from the "divided" subarea for existing land use conditions.
 - c. In place of the original subarea, insert the calculated existing condition stormwater runoff hydrographs from the "divided" subarea into the Upper Yellow Breeches Watershed Stormwater Runoff Model to determine any

changes in existing condition peak rates of runoff that may be created by the hydrographs from the "divided" subarea.

- d. Use the HEC-HMS computer program to calculate stormwater runoff hydrographs from the "divided" subarea for future land use conditions (reflecting the proposed development) and any proposed stormwater management facilities.
 - e. Insert the future condition stormwater runoff hydrographs into the Upper Yellow Breeches Stormwater Runoff Model to determine any changes in downstream peak rates of runoff that may be created by the future condition hydrographs from the "divided" subarea.
2. Developer-proposed improvements which would cause downstream conveyance facilities to not meet the requirements of Section 303.G of this Ordinance would, by definition, be precluded from successful attempts to prove "no-harm", except in conjunction with proposed capacity improvements for the problem areas consistent with Section 303.G.
 3. A financial distress shall not constitute grounds for granting a no-harm exemption.
 4. Capacity improvements may be provided as necessary to implement the "no harm" option which proposes specific capacity improvements to provide that a less stringent discharge control would not create any harm downstream.
 5. Any "no harm" justifications shall be submitted by the developer as part of the Drainage Plan submission per Article IV.
- G. Any no-harm hydraulic analysis conducted in accordance with this Ordinance shall use the following criteria for determining adequacy for accepting increased peak flow rates:
1. Natural or man-made channels or swales must be able to convey the increased runoff associated with a 10-year return period event (permanent channels) or the 5-year return period event (temporary channels) within their banks at velocities consistent with protection of the channels from erosion. Acceptable velocities shall be based upon criteria included in the DEP *Erosion and Sediment Pollution Control Program Manual*.
 2. Natural or man-made channels or swales must be able to convey the increased 25-year return period runoff without creating any hazard to persons or property.
 3. Culverts, bridges, storm sewers or any other facilities which must pass or convey flows from the tributary area must be designed in accordance with DEP, Chapter 105 regulations (if applicable) and, at a minimum, pass the increased 25-year return period runoff.
- H. Regional Detention Alternatives - For certain areas within the study area, it may be more cost-effective to provide one control facility for more than one development site

than to provide an individual control facility for each development site. The initiative and funding for any regional runoff control alternatives are the responsibility of prospective developers. The design of any regional control basins must incorporate reasonable development of the entire upstream watershed. The peak outflow of a regional basin would be determined on a case-by-case basis using the hydrologic model of the watershed consistent with protection of the downstream watershed areas. "Hydrologic model" refers to the calibrated model as developed for the Stormwater Management Plan.

Section 304. Protection of Water Quality

- A. All developments shall be required to capture and treat 90 percent of the average annual stormwater runoff volume. This volume of stormwater runoff, the Water Quality Volume (WQ_v), is equal to the following.

$$WQ_v = [(P_{90})(R_v)(A)]/12$$

WQ_v = Water Quality Volume (in acre-feet)

P₉₀ = 90-Percent Storm (90 percent of the annual rainfall will occur in storms of equal or smaller magnitude) = 1.95 inches

R_v = 0.05 + 0.009(I), where (I) is the percent impervious cover of the development site

A = development site (in acres)

- B. The following assumptions may be made when designing stormwater management facilities for treatment of the WQ_v.
1. For residential subdivisions, the procedures presented in the Technical Appendices of the Upper Yellow Breeches Watershed Stormwater Management Plan shall be used to establish the impervious coverage for the calculation of the WQ_v.
 2. When a development site has more than one drainage area, a WQ_v shall be calculated for each drainage area.
 3. If the development site is located in a drainage area that encompasses area outside of the development site, only the proposed impervious coverage on the development site shall be used to calculate the WQ_v.
 4. The WQ_v calculated for a development site may be reduced in accordance with the use of the non-structural BMPs outlined in Chapter VI of the Upper Yellow Breeches Watershed Stormwater Management Plan.
 5. If off-line stormwater management facilities are proposed for the treatment of the WQ_v, the small storm hydrology method, presented in the Technical Appendices of the Upper Yellow Breeches Watershed Stormwater Management Plan, shall be used to design stormwater runoff bypass structures.
- C. To accomplish A and B above, the land developer may submit original and innovative designs to the Municipal Engineer for review and approval. Such designs may achieve

the water quality protection objectives through a combination of the BMPs (Best Management Practices) outlined in Chapter VI of the Upper Yellow Breeches Watershed Stormwater Management Plan.

- D. In selecting the appropriate BMPs or combinations thereof, the land developer shall consider the following:
1. Total contributing area
 2. Permeability and infiltration rate of the site soils
 3. Slope and depth to bedrock
 4. Seasonal high water table
 5. Proximity to building foundations and well heads
 6. Erodibility of soils
 7. Land availability and configuration of the topography
 8. Guidance provided in Chapter VI of the Upper Yellow Breeches Watershed Stormwater Management Plan
- E. The following additional factors should be considered when evaluating the suitability of BMPs used to control water quality at a given development site.
1. Peak discharge and required volume control
 2. Streambank erosion
 3. Efficiency of the BMPs to mitigate potential water quality problems
 4. The volume of runoff that will be effectively treated
 5. The nature of the pollutant being removed
 6. Maintenance requirements
 7. Creation/protection of aquatic and wildlife habitat
 8. Recreational value
 9. Enhancement of aesthetic and property value

Section 305. Maintaining Groundwater Recharge

- A. In order to maintain predevelopment hydrologic conditions at a development site, opportunities must be provided for the infiltration of rainfall directly into the ground and to pond runoff on the ground surface from which it is ultimately evaporated or infiltrated. The objective for the Upper Yellow Breeches Watershed will be to capture and retain 60 percent of the annual rainfall. The 60-Percent Storm (P_{60}), or the runoff capture design storm for the Upper Yellow Breeches Watershed (60 percent of the annual rainfall will occur in storms of equal or smaller magnitude) is 0.79 inches of rainfall. The Runoff Capture Volume (R_s) is the quantity of water that shall be captured and retained onsite to prevent runoff from occurring during the runoff capture design storm and is calculated as follows.

$$R_s = (A/12)(P_{60} - 0.2S)^2 / [(P_{60} - 0.2S) + S]$$

$$\text{Where } S = (1,000/CN) - 10$$

R_s = Runoff Capture Volume (in acre-feet)

A = development site (in acres)
P₆₀ = 60-Percent Storm, 0.79 inches
S = potential maximum retention after runoff begins (inches)
CN = NRCS post-development, composite runoff curve number

- B. The R_s is considered part of the WQ_v (see Ordinance Section 304) that must be treated by the stormwater management facilities designed for a development site. Both structural and non-structural practices can be used to capture and retain the R_s. If subsurface conditions on a proposed land development site do not allow for the design of viable stormwater infiltration facilities that will allow for the complete infiltration of the R_s within 48 hours after the end of the P₆₀, then stormwater treatment facilities shall be designed to treat the entire volume of stormwater runoff generated by the P₆₀.
- C. The R_s will not apply to development sites with the following land uses and any other land uses that are comparable to the listed land uses.
1. Vehicle salvage yards and recycling facilities
 2. Vehicle service and maintenance facilities
 3. Vehicle and equipment cleaning facilities
 4. Fleet storage areas (trucks, heavy equipment, buses, etc.)
 5. Industrial sites that have permit coverage under an NPDES Stormwater Discharge Permit
 6. Outdoor liquid container storage
 7. Outdoor loading/unloading facilities
 8. Public works storage areas
 9. Facilities that generate or store hazardous materials
- D. In areas that are underlain by limestone bedrock, stormwater management facilities shall be designed to minimize the concentration of stormwater runoff. A detailed geologic evaluation of the project site shall be performed to determine the suitability of recharge facilities. The evaluation shall be performed by a qualified geologist and/or soil scientist, and at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. Where pervious pavement is permitted for parking lots, recreational facilities, non-dedicated streets, or other areas, pavement construction specifications shall be noted on the plan. Stormwater management facilities for the recharge of groundwater in limestone bedrock areas must provide for infiltration opportunities distributed over a very large area. Examples include filter strips, large bioretention areas, and pervious pavement. Stormwater management facilities that create concentrated sources of infiltration, such as infiltration trenches or dry wells, shall not be used in limestone bedrock areas. Implementation of these infiltration requirements in defined HQ and EV watersheds is subject to the Department of Environmental Protection's Chapter 93 Water Quality Regulations and Antidegradation Regulations.
- E. Whenever a basin will be located in an area underlain by limestone, a geological evaluation of the proposed location shall be conducted to determine susceptibility to sinkhole formations. The design of all facilities over limestone formations shall include measures to prevent groundwater contamination and, where necessary, sinkhole

formation. Soils used for the construction of basins shall have low-erodibility factors ("K" factors). The Municipality may require the installation of an impermeable liner in detention basins.

- F. It shall be the developer's responsibility to verify if the site is underlain by limestone. The following note shall be attached to all drainage plans and signed and sealed by the developer's engineer/surveyor/landscape architect/architect: _____ certify that the proposed detention basin (circle one) is/is not underlain by limestone.

Section 306. Preservation of Natural Drainage Features and Depressions

For all land development plans, the elimination of natural drainageways or depressions shall only be accepted if the developer cannot reasonably comply with this requirement because of a property's configuration and/or topography.

Section 307. Avoiding Adverse Impacts on Downstream Properties

- A. The natural stormwater drainage features and man-made drainage facilities that convey stormwater runoff from a development site's discharge point(s) of concentrated stormwater runoff to a perennial stream must be located in a recorded drainage easement, or a public utility or road right-of-way with a minimum width of 20 feet.
- B. The quantity, velocity and direction of the stormwater runoff discharge must be evaluated in order to determine that there is no increase in the risk to the health and safety of the public and no damage to property for the 2-year through 100-year storm events following development.
- C. The following criteria shall be used for the stormwater runoff discharge evaluation.
1. The capacity in the downstream natural or man-made conveyance system between a development site's discharge point(s) of concentrated stormwater runoff to a perennial stream may be used only in proportion to the development site's area relative to the total upstream area draining to the conveyance system (i.e., if a development site represents 10 percent of the upstream area draining to a conveyance system, the development site may use 10 percent of the capacity available in the conveyance system).
 2. Open Channels must have the capacity to convey the peak rate of runoff for the 10-year storm event (permanent channels) or the 5-year storm event (temporary channels) within their banks at velocities that will not lead to erosion of the channel.
 3. Open channels, in combination with the drainage easement in which the channel is located, must have the capacity to convey the peak rate of runoff for the 25-year storm event within the drainage easement at velocities that will not lead to erosion of the channel or in the drainage easement.

4. Storm sewers, culverts, bridges, or any other facilities in combination with the drainage easements in which the facilities are located must have the capacity to convey the peak rate of runoff for the 25-year storm event within the drainage easement at velocities that will not lead to erosion in the drainage easement.

Section 308. Prevention of Stream Bank Erosion

In order to minimize the occurrence of critical erosive velocities in natural stream channels, stormwater runoff from new development sites must be gradually released. To attain this objective, stormwater runoff from new development sites, for the 1-year, 24-hour storm event (2.4 inches) must be released over a minimum period of 24 hours.

Section 309. Control of Over Bank Flooding and Extreme Flood Events

The post-development peak discharge of stormwater runoff from proposed land development sites, for the 2-, 5-, 10-, 25-, 50- and 100-year storm events, SHALL not exceed the pre-development peak discharge of stormwater runoff.

Section 310. Calculation Methodology

Stormwater runoff from all development sites shall be calculated using either the Rational Method or a soil-cover complex methodology.

- A. Any stormwater runoff calculations involving drainage areas greater than 200 acres, including on- and off-site areas, shall use a generally accepted calculation technique that is based on the NRCS soil-cover complex method. Table III-1 summarizes acceptable computation methods. It is assumed that all methods will be selected by the design professional based on the individual limitations and suitability of each method for a particular site. The Municipality may approve the use of the Rational Method to estimate peak discharges from drainage areas that contain less than 200 acres.
- B. All calculations consistent with this Ordinance using the soil-cover complex method shall use the appropriate design rainfall depths for the various return period storms presented in Table A-1 in Appendix A of this Ordinance. If a hydrologic computer model such as HEC-1 is used for stormwater runoff calculations, then the duration of rainfall shall be 24 hours. The NRCS 'S' curve shown in Figure A-1, Appendix A of this Ordinance, shall be used for the rainfall distribution.
- C. All calculations using the Rational Method shall use rainfall intensities consistent with appropriate times of concentration for overland flow and return periods from the Design Storm Curves from PA Department of Transportation Design Rainfall Curves (1986) (Figure A-2). Times of concentration for overland flow shall be calculated using the methodology presented in Chapter 3 of Urban Hydrology for Small Watersheds, NRCS, TR-55 (as amended or replaced from time to time by NRCS). Times of concentration for channel and pipe flow shall be computed using Manning's equation.
- D. Runoff Curve Numbers (CN) for both existing and proposed conditions to be used in the soil-cover complex method shall be obtained from Table A-2 in Appendix A of this

Ordinance and in accordance with the map in Appendix D of this Ordinance. For existing conditions, the land use shall be considered as “meadow” in good condition unless the land cover is proven to generate lower curve numbers or rational “C” values, such as forested land.

- E. Runoff coefficients (c) for both existing and proposed conditions for use in the Rational Method shall be obtained from Table A-3 in Appendix A of this Ordinance.
- F. Where uniform flow is anticipated, the Manning Equation shall be used for hydraulic computations, and to determine the capacity of open channels, pipes, and storm sewers. Values for Manning's roughness coefficient (n) shall be consistent with Table A-4 in Appendix A of this Ordinance.

Outlet structures for stormwater management facilities shall be designed to meet the performance standards of this Ordinance using any generally accepted hydraulic analysis technique or method.

- G. The design of any stormwater detention facilities intended to meet the performance standards of this Ordinance shall be verified by routing the design storm hydrograph through these facilities using the Storage-Indication Method. For drainage areas greater than 20 acres in size, the design storm hydrograph shall be computed using a calculation method that produces a full hydrograph. The Municipality may approve the use of any generally accepted full hydrograph approximation technique that shall use a total runoff volume that is consistent with the volume from a method that produces a full hydrograph.
- H. The Municipality has the authority to require that computed existing runoff rates be reconciled with field observations and conditions. If the designer can substantiate through actual physical calibration that more appropriate runoff and time-of-concentration values should be utilized at a particular site, then appropriate variations may be made upon review and recommendations of the Municipal Engineer. Calibration shall require detailed gauge and rainfall data for the particular site in question.

**TABLE III-1
ACCEPTABLE COMPUTATION METHODOLOGIES
FOR STORMWATER MANAGEMENT PLANS**

METHOD	METHOD DEVELOPED BY	APPLICABILITY
TR-20 or commercial Package Based on TR-20	USDA - NRCS	When use of full model is desirable or necessary
TR-55 OR Commercial Package Based on TR-55	USDA - NRCS	Applicable for plans within the models limitations
HEC - 1	U.S. Army Corps of Eng.	When full model is desirable or necessary
Rational Method or		For sites less than 200 acres (as

METHOD	METHOD DEVELOPED BY	APPLICABILITY
commercial package based on Rational Method	Emil Kuiching (1889)	approved by the municipal engineer)
Other Methods	Various	As approved by the municipal engineer

Section 311. Erosion and Sedimentation Requirements

- A. Whenever the vegetation and topography are to be disturbed, such activity must be in conformance with Chapter 102, Title 25, Rules and Regulations, Part I, Commonwealth of Pennsylvania, Department of Environmental Protection, Subpart C, protection of Natural Resources, Article II, Water Resources, Chapter 102, "Erosion Control," and in accordance with the Cumberland County Conservation District and the standards and specifications of the appropriate municipal government.
- B. Additional erosion and sedimentation control design standards and criteria that must be or are recommended to be applied where infiltration BMPs are proposed and include the following.
 - 1. Areas proposed for infiltration BMPs shall be protected from sedimentation and compaction during the construction phase, so as to maintain their maximum infiltration capacity.
 - 2. Infiltration BMPs shall not be constructed nor receive runoff until the entire contributory drainage area to the infiltration BMP has received final stabilization.

Section 312. Design Criteria for Stormwater Management Facilities

- A. Any stormwater facility located on State highway rights-of-way shall be subject to approval by the Pennsylvania Department of Transportation.
- B. Any stormwater management facility designed to store runoff and requiring a berm or earthen embankment required or regulated by this Ordinance shall be designed to provide an emergency spillway to handle flow up to and including the 100-year post-development conditions. The height of embankment must be set as to provide a minimum 1.0 foot of freeboard above the maximum pool elevation computed when the facility functions for the 100-year post-development inflow. Should any stormwater management facility require a dam safety permit under PA DEP Chapter 105, the facility shall be designed in accordance with Chapter 105 and meet the regulations of Chapter 105 concerning dam safety which may be required to pass storms larger than 100-year event.
- C. Any facilities that constitute water obstructions (e.g., culverts, bridges, outfalls, or stream enclosures), and any work involving wetlands as directed in PA DEP Chapter 105 regulations (as amended or replaced from time to time by PA DEP), shall be designed in accordance with Chapter 105 and will require a permit from PA DEP. Any other drainage conveyance facility that doesn't fall under Chapter 105 regulations

must be able to convey, without damage to the drainage structure or roadway, runoff from the 25-year design storm with a minimum 1.0 foot of freeboard measured below the lowest point along the top of the roadway. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm with a minimum 1.0-foot of freeboard measured below the lowest point along the top of roadway. Any facility that constitutes a dam as defined in PA DEP Chapter 105 regulations may require a permit under dam safety regulations. Any facility located within a PENNDOT right of way must meet PENNDOT minimum design standards and permit submission requirements.

- D. Any permanent drainage conveyance facility and/or channel that doesn't fall under Chapter 105 Regulations, must be able to convey, without damage to the drainage structure or roadway, runoff from the 10-year design storm. Conveyance facilities to or exiting from stormwater management facilities (i.e. detention basins) shall be designed to convey the design flow to or from that structure. Roadway crossings located within designated floodplain areas must be able to convey runoff from a 100-year design storm. Any facility located within a PENNDOT right-of-way must meet PENNDOT minimum design standards and permit submission requirements.
- E. Storm sewers must be able to convey post-development runoff from a 25-year design storm without surcharging inlets, where appropriate.
- F. Adequate erosion protection shall be provided along all open channels, and at all points of discharge.

The design of all stormwater management facilities shall incorporate sound engineering principles and practices. The Municipality shall reserve the right to disapprove any design that would result in the occupancy or continuation of an adverse hydrologic or hydraulic condition within the watershed.

ARTICLE IV - DRAINAGE PLAN REQUIREMENTS

Section 401. General Requirements

For any of the activities regulated by this Ordinance, the final approval of subdivision and/or land development plans, the issuance of any building or occupancy permit, or the commencement of any land disturbance activity may not proceed until the Property Owner or Developer or his/her agent has received written approval of a Drainage Plan from the Municipality.

Section 402. Drainage Plan Contents

The Drainage Plan shall consist of all applicable calculations, maps, and plans. A note on the maps shall refer to the associated computations and erosion and sedimentation control plan by title and date. The cover sheet of the computations and erosion and sedimentation control plan shall refer to the associated maps by title and date. All Drainage Plan materials shall be submitted to the municipality in a format that is clear, concise, legible, neat, and well organized; otherwise, the Drainage Plan shall be disapproved and returned to the Applicant.

The following items shall be included in the Drainage Plan:

A. General

1. General description of project.
2. General description of permanent stormwater management techniques, including construction specifications of the materials to be used for stormwater management facilities.
3. Complete hydrologic, hydraulic, and structural computations for all stormwater management facilities.

B. Map(s) of the project area shall be submitted on 24-inch x 36-inch or 30-inch x 42-inch sheets and shall be prepared in a form that meets the requirements for recording the offices of the Recorder of Deeds of Cumberland County. The contents of the maps(s) shall include, but not be limited to:

1. The location of the project relative to highways, municipalities or other identifiable landmarks.
2. Existing contours at intervals of two feet. In areas of steep slopes (greater than 15 percent), five-foot contour intervals may be used.
3. Existing streams, lakes, ponds, or other bodies of water within the project area.
4. Other physical features including flood hazard boundaries, sinkholes, streams, existing drainage courses, areas of natural vegetation to be preserved, and the total extent of the upstream area draining through the site.

5. The locations of all existing and proposed utilities, sanitary sewers, and water lines within 50 feet of property lines.
6. An overlay showing soil names and boundaries.
7. Proposed changes to the land surface and vegetative cover, including the type and amount of impervious area that would be added.
8. Proposed structures, roads, paved areas, and buildings.
9. Final contours at intervals at two feet. In areas of steep slopes (greater than 15 percent), five-foot contour intervals may be used.
10. The name of the development, the name and address of the owner of the property, and the name of the individual or firm preparing the plan.
11. The date of submission.
12. A graphic and written scale of one (1) inch equals no more than fifty (50) feet; for tracts of twenty (20) acres or more, the scale shall be one (1) inch equals no more than one hundred (100) feet.
13. A North arrow.
14. The total tract boundary and size with distances marked to the nearest foot and bearings to the nearest degree.
15. Existing and proposed land use(s).
16. A key map showing all existing man-made features beyond the property boundary that would be affected by the project.
17. Horizontal and vertical profiles of all open channels, including hydraulic capacity.
18. Overland drainage paths.
19. A fifteen-foot wide access easement around all stormwater management facilities that would provide ingress to and egress from a public right-of-way.
20. A note on the plan indicating the location and responsibility for maintenance of stormwater management facilities that would be located off-site. All off-site facilities shall meet the performance standards and design criteria specified in this Ordinance.
21. A construction detail of any improvements made to sinkholes and the location of all notes to be posted, as specified in this Ordinance.

22. A statement, signed by the landowner, acknowledging the stormwater management system to be a permanent fixture that can be altered or removed only after approval of a revised plan by the municipality.

23. The location of all erosion and sedimentation control facilities.

C. Supplemental Information

1. A written description of the following information shall be submitted.

- a) The overall stormwater management concept for the project.
- b) Stormwater runoff computations as specified in this Ordinance.
- c) Stormwater management techniques to be applied both during and after development.
- d) Expected project time schedule.

2. A soil erosion and sedimentation control plan, where applicable, including all reviews and approvals, as required by PA DEP.

3. A geologic assessment of the effects of runoff on sinkholes as specified in this Ordinance.

4. The effect of the project (in terms of runoff volumes and peak flows) on adjacent properties and on any existing municipal stormwater collection system that may receive runoff from the project site.

5. A Declaration of Adequacy and Highway Occupancy Permit from the PENNDOT District Office when utilization of a PENNDOT storm drainage system is proposed.

D. Stormwater Management Facilities

1. All stormwater management facilities must be located on a plan and described in detail.

2. When groundwater recharge methods such as seepage pits, beds or trenches are used, the locations of existing and proposed septic tank infiltration areas and wells must be shown.

3. All calculations, assumptions, and criteria used in the design of the stormwater management facilities must be shown.

Section 403. Plan Submission

For all activities regulated by this Ordinance, the steps below shall be followed for submission. For any activities that require a PA DEP Joint Permit Application and regulated under Chapter 105 (Dam Safety and Waterway Management) or Chapter 106 (Floodplain Management) of PA DEP's Rules and Regulations, require a PENNDOT Highway Occupancy Permit, or require any other permit under applicable state or federal regulations, the permit(s) shall be part of the plan.

A. The Drainage Plan shall be submitted by the Developer as part of the Preliminary Plan submission for the Regulated Activity.

- B. Four (4) copies of the Drainage Plan shall be submitted.
- C. Distribution of the Drainage Plan will be as follows:
 - 1. Two (2) copies to the Municipality accompanied by the requisite Municipal Review Fee, as specified in this Ordinance.
 - 2. One (1) copy to the Municipal Engineer.
 - 3. One (1) copy to the County Planning Commission/Department

Section 404. Drainage Plan Review

- A. The Municipal Engineer shall review the Drainage Plan for consistency with the adopted Upper Yellow Breeches Watershed Act 167 Stormwater Management Plan. The Municipality shall require receipt of a complete plan, as specified in this Ordinance.
- B. The Municipal Engineer shall review the Drainage Plan for any submission or land development against the municipal subdivision and land development ordinance provisions not superseded by this Ordinance.
- C. For activities regulated by this Ordinance, the Municipal Engineer shall notify the Municipality in writing, within 90 calendar days, whether the Drainage Plan is consistent with the Stormwater Management Plan. Should the Drainage Plan be determined to be consistent with the Stormwater Management Plan, the Municipal Engineer will forward an approval letter to the Developer with a copy to the Municipal Secretary.
- D. Should the Drainage Plan be determined to be inconsistent with the Stormwater Management Plan, the Municipal Engineer will forward a disapproval letter to the Developer with a copy to the Municipal Secretary citing the reason(s) for the disapproval. Any disapproved Drainage Plans may be revised by the Developer and resubmitted consistent with this Ordinance.
- E. For Regulated Activities specified in Sections 104.C and 104.D of this Ordinance, the Municipal Engineer shall notify the Municipal Building Permit Officer in writing, within a time frame consistent with the Municipal Building Code and/or Municipal Subdivision Ordinance, whether the Drainage Plan is consistent with the Stormwater Management Plan and forward a copy of the approval/disapproval letter to the Developer. Any disapproved drainage plan may be revised by the Developer and resubmitted consistent with this Ordinance.
- F. For Regulated Activities requiring a PA DEP Joint Permit Application, the Municipal Engineer shall notify PA DEP whether the Drainage Plan is consistent with the Stormwater Management Plan and forward a copy of the review letter to the Municipality and the Developer. PA DEP may consider the Municipal Engineer's review comments in determining whether to issue a permit.
- G. The Municipality shall not approve any subdivision or land development for Regulated Activities specified in Sections 104.A and 104.B of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal Engineer.

- H. The Municipal Building Permit Office shall not issue a building permit for any Regulated Activity specified in Section 104 of this Ordinance if the Drainage Plan has been found to be inconsistent with the Stormwater Management Plan, as determined by the Municipal Engineer, or without considering the comments of the Municipal Engineer.
- I. The Developer shall be responsible for completing an "As-Built Survey" of all stormwater management facilities included in the approved Drainage Plan. The As-Built Survey and an explanation of any discrepancies with the design plans shall be submitted to the Municipal Engineer for final approval. In no case shall the Municipality approve the As-Built Survey until the Municipality receives a copy of an approved Declaration of Adequacy, Highway Occupancy Permit from the PENNDOT District Office, and any applicable permits from PA DEP.
- J. The Municipality's approval of a Drainage Plan shall be valid for a period not to exceed five (5) years. This five-year time period shall commence on the date that the Municipality signs the approved Drainage Plan. If stormwater management facilities included in the approved Drainage plan have not been constructed, or if an As-Built Survey of these facilities has not been approved within this five-year time period, then the Municipality may consider the Drainage plan disapproved and may revoke any and all permits. Drainage Plans that are considered disapproved by the Municipality shall be resubmitted in accordance with Section 407 of this Ordinance.

Section 405. Modification of Plans

A modification to a submitted Drainage Plan for a development site that involves a change in stormwater management facilities or techniques, or that involves the relocation or re-design of stormwater management facilities, or that is necessary because soil or other conditions are not as stated on the Drainage Plan as determined by the Municipal Engineer, shall require a resubmission of the modified Drainage Plan consistent with Section 404 of this Ordinance and be subject to review as specified in Section 405 of this Ordinance.

A modification to an already approved or disapproved Drainage Plan shall be submitted to the Municipality, accompanied by the applicable review. A modification to a Drainage Plan for which a formal action has not been taken by the Municipality shall be submitted to the Municipality, accompanied by the applicable Municipality Review Fee.

Section 406. Resubmission of Disapproved Drainage Plans

A disapproved Drainage Plan may be resubmitted, with the revisions addressing the Municipal Engineer's concerns documented in writing, to the Municipal Engineer in accordance with Section 404 of this Ordinance and be subject to review as specified in Section 405 of this Ordinance. The applicable Municipality Review Fee must accompany a resubmission of a disapproved Drainage Plan.

ARTICLE V - FEES AND EXPENSES

Section 501. General

The fee required by this Ordinance is the Municipal Review Fee. The Municipal Review Fee shall be established by the Municipality to defray review costs incurred by the Municipality and the Municipal Engineer. All fees shall be paid by the Applicant.

Section 502. Municipality Drainage Plan Review Fee

The Municipality shall establish a Review Fee Schedule by resolution of the municipal governing body based on the size of the Regulated Activity and based on the Municipality's costs for reviewing Drainage Plans. The Municipality shall periodically update the Review Fee Schedule to ensure that review costs are adequately reimbursed.

Section 503. Expenses Covered by Fees

The fees required by this Ordinance shall at a minimum cover:

- A. Administrative Costs.
- B. The review of the Drainage Plan by the Municipality and the Municipal Engineer.
- C. The site inspections.
- D. The inspection of stormwater management facilities and drainage improvements during construction.
- E. The final inspection upon completion of the stormwater management facilities and drainage improvements presented in the Drainage Plan.
- F. Any additional work required to enforce any permit provisions regulated by this Ordinance, correct violations, and assure proper completion of stipulated remedial actions.

ARTICLE VI - MAINTENANCE RESPONSIBILITIES

Section 601. Performance Guarantee

The applicant should provide a financial guarantee to the Municipality for the timely installation and proper construction of all stormwater management controls as required by the approved stormwater plan and this ordinance equal to the full construction cost of the required controls.

Section 602. Maintenance Responsibilities

- A. The Drainage Plan for the development site shall contain an operation and maintenance plan prepared by the developer and approved by the municipal engineer. The operation and maintenance plan shall outline required routine maintenance actions and schedules necessary to insure proper operation of the facility(ies).
- B. The Drainage Plan for the development site shall establish responsibilities for the continuing operating and maintenance of all proposed stormwater control facilities, consistent with the following principals:
 - 1. If a development consists of structures or lots that are to be separately owned and in which streets, sewers and other public improvements are to be dedicated to the municipality, stormwater control facilities may also be dedicated to and maintained by the municipality.
 - 2. If a development site is to be maintained in a single ownership or if sewers and other public improvements are to be privately owned and maintained, then the ownership and maintenance of stormwater control facilities shall be the responsibility of the owner or private management entity.
- C. The governing body, upon recommendation of the municipal engineer, shall make the final determination on the continuing maintenance responsibilities prior to final approval of the stormwater management plan. The governing body reserves the right to accept the ownership and operating responsibility for any or all of the stormwater management controls.

Section 603. Maintenance Agreement for Privately Owned Stormwater Facilities

Prior to final subdivision plan approval or the issuance of any building permit and prior to the final approval of the site's stormwater management plan, the property owner shall sign and record the maintenance agreement contained in Appendix C of this Ordinance. The agreement shall be recorded among the land records of Cumberland County, Pennsylvania and on the final (approved) subdivision plan.

- A. Other items may be included in the agreement by the Municipality where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the municipal solicitor, municipal engineer and the municipality's governing body.

Section 604. Municipal Stormwater Maintenance Fund

- A. If stormwater facilities are accepted by the municipality for dedication, persons installing stormwater storage facilities shall be required to pay a specified amount to the Municipal Stormwater Maintenance Fund to help defray costs of periodic inspections and maintenance expenses. The amount of the deposit shall be determined as follows:
 - 1. If the storage facility is to be owned and maintained by the municipality, the deposit shall cover the estimated costs for maintenance and inspections for ten (10) years. The municipal engineer will establish the estimated costs utilizing information submitted by the applicant.
 - 2. The amount of the deposit to the fund shall be converted to present worth of the annual series values. The municipal engineer shall determine the present worth equivalents, which shall be subject to the approval of the municipal governing body.
- B. If a storage facility is proposed that also serves as a recreation facility (e.g. ball field, lake), the municipality may reduce or waive the amount of the maintenance fund deposit based upon the value of the land for public recreation purpose.
- C. If at some future time a storage facility (whether publicly or privately owned) is eliminated due to the installation of storm sewers or other storage facility, the unused portion of the maintenance fund deposit will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the costs of abandonment are paid will be retained by the Municipality.

Section 605. Post-Construction Maintenance Inspections

- A. Basins should be inspected by the land owner/developer or responsible entity on the following basis:
 - 1. Annually for the first 5 years.
 - 2. Once every 3 years thereafter,
 - 3. During or immediately after the cessation of a 100-year or greater storm event.
- B. The entity conducting the inspection shall be required to submit a report to the municipality regarding the condition of the facility and recommending necessary repairs, if needed.

ARTICLE VII - ENFORCEMENT AND PENALTIES

Section 701. Right-of-Entry

Upon presentation of proper credentials, duly authorized representatives of the municipality may enter at reasonable times upon any property within the municipality to inspect the condition of the stormwater structures and facilities in regard to any aspect regulated by this Ordinance.

Section 702. Notification

In the event that a person fails to comply with the requirements of this Ordinance, or fails to conform to the requirements of any permit issued hereunder, the municipality shall provide timely written notification of the violation. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of these violations(s). Failure to comply within the time specified shall subject such person to the penalty provision of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the municipality from pursuing any and all other remedies.

It shall be the responsibility of the owner of the real property on which any Regulated Activity is proposed to occur, is occurring, or has occurred, to comply with the terms and conditions of this Ordinance and the Standard Stormwater Monitoring and Maintenance Agreement.

Section 703. Enforcement

The municipal governing body, designated municipal employees and the municipality's solicitor are hereby authorized and directed to enforce all of the provisions of this ordinance. All inspections regarding compliance with the drainage plan shall be the responsibility of the municipal engineer or other qualified persons designated by the municipality.

A. A set of design plans approved by the municipality shall be on file at the site throughout the duration of the construction activity. Periodic inspections may be made by the municipality or designee during construction.

B. Adherence to Approved Plan

It shall be unlawful for any person, firm or corporation to undertake any regulated activity under Section 104 on any property except as provided for in the approved drainage plan and pursuant to the requirements of this ordinance. It shall be unlawful to alter or remove any control structure required by the drainage plan pursuant to this ordinance or to allow the property to remain in a condition which does not conform to the approved drainage plan.

C. At the completion of the project, and as a prerequisite for the release of the performance guarantee, the owner or his representatives shall:

1. Provide a certification of completion from an engineer, verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto.

2. Provide a set of as built drawings when applicable.

D. After receipt of the certification by the municipality, a final inspection shall be conducted by the governing body or its designee to certify compliance with this ordinance.

E. Prior to revocation or suspension of a permit, the governing body will schedule a hearing to discuss the non-compliance if there is no immediate danger to life, public health or property.

F. Suspension and Revocation of Permits

1. Any permit issued under this ordinance may be suspended or revoked by the governing body for:

- a) Non-compliance with or failure to implement any provision of the permit.
- b) A violation of any provision of this ordinance or any other applicable law, ordinance, rule or regulation relating to the project.
- c) The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, pollution or which endangers the life or property of others, or as outlined in Article IX of this ordinance.

2. A suspended permit shall be reinstated by the governing body when:

- a) The municipal engineer or his designee has inspected and approved the corrections to the stormwater management and erosion and sediment pollution control measure(s), or the elimination of the hazard or nuisance, and/or
- b) The governing body is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.
- c) A permit that has been revoked by the governing body cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

G. Occupancy Permit

If required by the Municipality, an occupancy permit shall not be issued unless a certification of compliance has been secured. The occupancy permit shall be required for each lot owner and/or developer for all subdivisions and land development in the municipality.

Section 704. Public Nuisance

A. The violation of any provision of this ordinance is hereby deemed a Public Nuisance.

B. Each day that a violation continues shall constitute a separate violation.

Section 705. Penalties

A. Anyone violating the provisions of this ordinance shall be subject to a fine of not more than \$500.00 for each violation, plus court costs and attorney fees. Each day that the violation continues shall be a separate offense.

B. In addition, the Municipality, through its solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding at law or in equity for the enforcement of this Ordinance.

Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

Section 706. Appeals

- A. Any person aggrieved by any action of the Municipality or its designated representatives, relevant to the provisions of this Ordinance or the Standard Stormwater Monitoring and Maintenance Agreement, may appeal to the Municipal Governing Body within thirty (30) days of that action.

- B. Any person aggrieved by any decision of the Municipal Governing Body, relevant to the provisions of this Ordinance of the Standard Stormwater Monitoring and Maintenance Agreement, may appeal to the County Court of Common Pleas in the county where the activity has taken place within thirty (30) days of the Municipal Governing Body's decision.

ENACTED and ORDAINED at a regular meeting of the [Name of the municipal governing body] on the 12th day of November, 2002. This Ordinance shall take effect immediately.

SAM SANGIALOSI, CHAIRMAN

RICHARD S. MOWERY, SUPERVISOR

CARL W. JONES, III, SUPERVISOR

ATTEST:

Janet Frantz:

I hereby certify that the foregoing Ordinance was advertised in the [The Sentinel of Carlisle, PA] on [date], a newspaper of general circulation in the municipality and was duly enacted and approved as set forth at a regular meeting of the [name of municipal governing body] held on [date].

JANET FRANTZ, SECRETARY