# Chapter 23

# Stormwater

## Part 1
## Stormwater Management

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## Part 1

## Stormwater Management

### §23-101. Title.

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

(*Ord. 559*, 6/2/2004; as amended by A.O.

### §23-102. Purpose.

The purpose of this Part is to:

A. Promote the general health, welfare and safety of the community.

B. Regulate the modification of the natural terrain and alteration of existing drainage from land developments in order to control erosion and sedimentation of soils and the speed and flow of water runoff, to preserve stream channels, and encourage natural infiltration.

C. Provide design, construction and maintenance criteria for permanent on-site stormwater management facilities necessary to control stormwater, erosion and sedimentation.

D. Provide for proper operations and maintenance of all permanent stormwater management best management practices ("BMPs") that are implemented in the Township.

E. Provide a mechanism to identify controls necessary to meet the NPDES permit requirements.

F. Implement an illegal discharge detection and elimination program to address nonstormwater discharges into the Township's separate storm sewer system.

(*Ord. 559*, 6/2/2004)

### §23-103. Disclaimer of Liability.

1. This Part does not imply that areas within or outside any identified flood-prone area will be free from flooding or flood damages.

2. Neither the granting of any approval under the stormwater management provisions of this Part, nor the compliance with the provisions of this Part, or with any conditions imposed by a Township official hereunder, shall relieve any person from any responsibility imposed by law.

3. The granting of a permit which includes any stormwater management facilities shall not constitute a representation, guarantee, or warranty of any kind by the Township, County, or by an official, employee, or consultant thereof, of the practicability or safety of any structure, use, or other plan proposed, and shall create no liability upon or cause of action against such designated representative, official, employee, or consultant for any damage that may result pursuant thereto.

(*Ord. 559*, 6/2/2004)

**§23-104. Authority**.

1. The Pennsylvania Municipalities Planning Code ("MPC"), 53 P.S. §10101 *et seq*., as amended, authorizes the regulation of subdivisions and land developments by the Township.

2. The Pennsylvania Storm Water Management Act (the "Storm Water Management Act"), 32 P.S. §680.1 *et seq*., as amended, provides for the regulation of land development and stormwater and confers powers of enforcement to upon the Township.

3. This Part is intentionally enacted as a general ordinance rather than included in the Subdivision and Land Development Ordinance [Chapter 22], and the authority to enact this Part derives from both specific and general authority within this Part and legislative grants of authority to municipalities in general and second class townships in particular.

(*Ord. 559*, 6/2/2004)

**§23-105. Applicability**.

It shall be unlawful for any person, partnership, business or corporation to undertake any of the following activities without approval of a final stormwater management plan in accordance with the provisions of this Part:

A. Earth disturbing activity as per the Erosion and Sediment Control Ordinance [Chapter 9, Part 1].

B. Diversion, impeding, re-channeling, straightening or piping of any natural or man-made water channel (streams, creeks, rivers, etc., whether they are flowing on a permanent or intermittent basis).

C. Installation of a stormwater system or sewer, pond or appurtenances thereto.

D. Placement of fill, structures or pipes in a floodplain as designated on the Official Floodplain Map of Moon Township.

E. Land development.

F. Land subdivisions.

G. Installation of impervious cover material anywhere within the Township.

H. Commercial timbering activity or any deforestation (this does not include the removal of isolated, diseased trees or trees whose location and/or health create a public danger).

(*Ord. 559*, 6/2/2004)

**§23-106. Exemptions**.

The following activities are specifically exempt from this Part:

A. Use of land for gardening primarily for home consumption.

B. Use of land for construction of landscaping improvements, provided that such improvements do not significantly alter the runoff characteristics of the land.

C. Agricultural use of lands when operated in accordance with a farm conservation plan approved by the Allegheny County Soil Conservation District or

when it is determined by the County Conservation District that such use will not cause excessive erosion and sedimentation.

(*Ord. 559*, 6/2/2004)

**§23-107. Compliance with Other Provisions**.

1. Compliance with the requirements set forth in other applicable ordinances with respect to the submission and approval of preliminary and final subdivision plans, improvement plans, grading plans, building permits, timbering permits, inspections and compliance with applicable State statutes and regulations shall be a prerequisite to the commencement of any work regulated by this Part.

2. Attention is called to special requirements concerning stormwater management within the Flaugherty Run Watershed and Montour Run Watershed as set forth in other ordinances and the Flaugherty Run Watershed Stormwater Management Plan and the Montour Run Watershed Stormwater Management Plan as prepared by Allegheny County Planning Department.

3. Should any part of this Section be declared invalid, such decision shall not affect the validity of any other part, nor the Chapter as a whole.

4. Erosion and sedimentation controls shall be provided, both during and after construction, in accordance with the Erosion and Sediment Control Ordinance [Chapter 9, Part 1] and the Pennsylvania Department of Environmental Protection's (DEP) erosion and sediment control regulations, 25 Pa.Code §102.1 *et seq*. The proposed erosion and sedimentation controls shall be submitted with the stormwater management plan as part of the applicant's preliminary plans. Prior to any earth disturbance activities, a letter from the Allegheny County Conservation District approving the erosion and sedimentation control plan shall be submitted. [A.O.]

(*Ord. 559*, 6/2/2004, §108-7; as amended by A.O.

**§23-108. Greater Restriction to Apply**.

This Part supersedes any provisions of this Part currently in effect with respect to stormwater management. All other Township ordinances and regulations inconsistent with any of the provisions of this Part are hereby repealed to the extent of the inconsistency only.

(*Ord. 559*, 6/2/2004, §108-8)

**§23-109. Liability**.

For regulatory purposes, the degree of stormwater management sought by the provisions of this Part is considered reasonable. This Part shall not impose upon the Township any legal duty in addition to those duties otherwise imposed under the Storm Water Management Act, 32 P.S. §680.1 *et seq*., upon the Township, any appointed or elected official, employee or representative of Township. It is not the intention of the Township to guarantee the elimination of harm resulting from stream flow, floods, rain, storms, water runoff or erosion resulting therefrom. It is the intention of the Township to create reasonable stormwater management regulations which balance several competing interests in an appropriate fashion with the emphasis on public safety.

(*Ord. 559*, 6/2/2004, §108-9)

**§23-110. Definitions.**[1]

As used in this Part the following terms shall have the meanings indicated:

*Accelerated erosion*–the removal of the surface of the land through the combined action of human activities and the natural processes, at a rate greater than would occur because of the natural process alone.

*Applicant*–a landowner or developer, as defined by this Part, who has filed an application for development, including his/her heirs, successors and assigns.

*Best management practices (BMP's)*–activities, facilities, designs measures or procedures used to manage stormwater impacts from regulated earth disturbance activities, to meet State water quality requirements, to promote groundwater recharge and to otherwise meet the purposes of this Part. BMPs include, but are not limited to, infiltration, filter strips low impact design, bioretention, wet ponds, permeable paving, grassed swales, forested buffers, sand filters and detention basins.

*Board of Supervisors*–the Board of Supervisors of Moon Township, or its designee.

*Channel*–a natural stream which conveys water; a ditch or open channel excavated to convey water.

*Commission*–the Planning Commission of Moon Township.

*Conduit*–any watercourse intended for the conveyance of water, whether open or closed.

*Conservation District (ACCD)*–the Allegheny County Conservation District.

*County*–the County of Allegheny, Pennsylvania.

*Culvert*–a closed conduit for the free passage of surface drainage under a highway, railroad, canal, or other embankment.

*DEP*–the Pennsylvania Department of Environmental Protection.

*Design criteria*–engineering guidelines specifying construction details and materials, or objectives, results, or limits which must be met by a facility, structure or process in performance of its intended functions.

*Design storm*–the magnitude of precipitation from a storm event measured in probability of frequency of occurrence (e.g., 50-year storm) and duration (e.g., 24 hours) and used in computing stormwater management control systems.

*Detention basin*–a basin designed to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate. A detention basin is designed to drain completely after a storm; also called a dry basin.

*Developer*–the person, persons, corporation, partnership, association or other entity or any responsible person therein or agent therefor that undertakes the activities regulated by this Part. The term "developer" is intended to include, but not necessarily be limited to, the terms "subdivider," "owner" or "builder," even though the individuals involved in successive stages of a project may vary.

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[1]Editor's Note: See also the general definitions contained in Chapter 1, Part 1 of this Code.

*Detention*–the holding, slowing, dampening or attenuating of runoff flows entering the natural drainage pattern or storm drainage system by temporarily holding water on a surface area, in a detention basin or within the drainage system itself, or delaying the movement of water into the natural or man-made drainage system.

*Detention storage*–the temporary detaining or storage of stormwater in reservoirs, on rooftops or in streets, parking lots or other areas under predetermined and controlled conditions, with the rate of drainage there from regulated by appropriately installed devices.

*Development*–see "earth disturbance activity." The term includes redevelopment.

*Development site*–the specific tract of land where any earth disturbance activities in the Township are planned, conducted or maintained.

*Discharge*–rate of flow, specifically fluid flow; a volume of fluid flowing from a conduit or channel or being released from detention storage per unit of time; commonly expressed as cubic feet per second (CFS), million gallons per day (MGD), gallons per minute (GPM) or cubic meters per second (CMS).

*Drainage*–interception and removal of excess surface water or groundwater. from land by artificial or natural means.

*Drainage area*–the contributing area to a single drainage basin, expressed in acres, square miles or other units of area; also called a "catchment area," "watershed" or "river basin"; the area served by a drainage system or by a watercourse receiving storm and surface water.

*Drainage basin*–the area from which water is carried off by a drainage system, a watershed or catchment area.

*Drainage easement*–a right granted by a landowner to a grantee allowing the use of private land for stormwater management purposes.

*Dry bottom stormwater storage area (dry bottom basin)*–a facility that is designed to be normally dry and contains water only when excess stormwater runoff occurs.

*Earth dam*–a dam constructed of compacted soil materials.

*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.

*Effluent*–the discharge of outflow of water from ground or subsurface storage.

*Embankment (fill)*–a bank of earth, rock or other material constructed above the natural ground surface.

*Erodible*–susceptible to erosion.

*Erosion*–the wearing away of the land surface by running water, wind, ice or other geological agents, including gravitational creep.

*Erosion control*–the application of measures to reduce erosion of land surfaces.

*Excavation (cut)*–any act by which soil or rock is cut into, dug, quarried, uncovered, removed, displaced or relocated and shall include the conditions

resulting therefrom.

*Flood hazard area (zone)*–that portion of a floodplain which is subject to inundation under intermediate regional flood (100-year frequency flood) conditions. Such flood would be expected statistically to occur once every 100 years. (There is a 1 percent chance of such flood occurring each year.)

*Floodplain*–the area along a natural watercourse which is periodically subjected to overflow flooding.

*Floodway*–a channel, either natural, excavated or bounded by dikes and levees, used to carry excessive flood flows to reduce flooding; sometimes considered to be the transitional area between the active channel and the floodplain.

*Ground cover*–materials covering the ground surface.

*Groundwater recharge*–replenishment of existing natural underground water supplies.

*Hydraulic characteristics*–the features of a watercourse which determine its water conveyance capacity. These include size and configuration of cross section of watercourse, alignment of watercourse, gradient of watercourse, texture of materials along the watercourse, amount and type of vegetation within the watercourse and size, configuration and other characteristics of structures within the watercourse.

*Hydraulics*–the branch of science concerned with the mechanics of fluids, especially liquids. As applied in stormwater management, the study of the characteristics of water flowing in conveyance channels, and from control facilities.

*Hydrograph*–a plot of the discharge of stream flow, discharge or runoff versus time.

*Hydrology*–the science dealing with waters of the earth and their distribution and circulation through the atmosphere.

*Impervious material*–material which resists the entrance or passing through of water or other liquids.

*Impervious surface*–a surface that prevents the infiltration of water into the ground. Impervious surface includes, but is not limited to, any roof, parking or driveway areas, and any new streets and sidewalks. Any surface areas designed to initially be gravel or crushed stone shall be assumed to be impervious surfaces.

*Infiltration*–the flow or movement of water through the interstices or pores of a soil or other porous medium, or the absorption of liquid by the soil.

*Land development*–any of the following activities:

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

(a) A group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure.

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

(2) A subdivision of land.

(3) Development in accordance with §503(1.1) of the MPC, 53 P.S. §10503(1.1).

(4) As used in this definition, the term "improvement" shall include, but not be limited to, construction, reconstruction, renovation, remediation and other similar activities:

(a) That increase or expand the building footprint and/or outside dimensions of an existing building on the subject property.

(b) The cost of which is equal to or greater than 20 percent of the fair market value of the subject property as established by the current Allegheny County property assessment records.

(c) The cost of which is $50,000 or more.

*Land disturbance*–any activity involving the changing, grading or transportation of fill from or onto land or any other activity which causes an increase in the exposure of land to the danger of erosion.

*Maintenance*–the upkeep necessary for efficient operation of physical properties.

*Mulching*–the application of plant residue or other suitable materials to the land surface to conserve moisture, to hold soil in place and to aid in establishing plant cover.

*Municipal (Township) reviewing body*–that group of Township officials, including the Township Engineer, Building Inspector and Zoning Officer and Planning Commission representatives, responsible for plan review and approval, ordinance enforcement and administrative implementation of Moon Township's Stormwater Management Plan.

*NPDES*–National Pollutant Discharge Elimination System, the Federal government's system for issuance of permits under the Clean Water Act, which is delegated to DEP in Pennsylvania.

*NRCS*–the National Resources Conservation Service (formerly the Soil Conservation Service), U. S. Department of Agriculture.

*Outfall*–the point or location at which stormwater leaves a site, which may include streams, storm sewers, swales or other well defined natural or artificial drainage features, as well as areas of dispersed overland flow.

*Outlet control structure*–a structure designed to control the volume of stormwater runoff that passes through it during a specific length of time.

*Peak flow*–maximum flow.

*Peak discharge*–the maximum rate of flow of water at a given point and time resulting from a hypothetical predetermined storm.

*PennDOT*–the Pennsylvania Department of Transportation.

*Performance standard*–a standard which establishes an end result or outcome which is to be achieved, but does not prescribe specific means for achieving it.

*Permeability*–the rate at which water will move through a saturated soil.

*Person*–an individual, partnership, public or private association or corporation,

or governmental unit, public utility or any other legal entity whatsoever which is recognized by law as the subject of rights and duties.

*Pervious materials*–material which permits the passage or entrance of water or other liquid.

*Point of interest*–a point of hydraulic concern such as a bridge, culvert, or channel section, for which the rate of runoff is computed or measured.

*Point source*–any discernible, confined and discrete conveyance, including, but not limited to, any pipe, ditch, channel, tunnel, or conduit from which stormwater is or may be discharged, as defined in State regulations at 25 Pa.Code §92.1.

*Project site*–the specific area of land where any regulated earth disturbance activities in the Township are planned, conducted or maintained.

*Rate of runoff*–the instantaneous rate of water flow, usually expressed in cubic feet per second.

*Redevelopment*–earth disturbance activities on land which has previously been disturbed or developed.

*Regulated earth disturbance activity*–earth disturbance activity 1 acre or more with a point source discharge to surface waters or the Township's storm sewer system, or 5 acres or more regardless of the planned runoff. This includes earth disturbance on any portion of, part, or during any stage of, a larger common plan of development. This only includes road maintenance activities involving 25 acres or more of earth disturbance.

*Release rate percentage*–the percentage that, when multiplied by the pre-development peak rate of runoff from a development site, defines the allowable post-development peak discharge from any development site in that subarea.

*Retention facility*–a facility which provides for storage of stormwater runoff and controlled release of this runoff during and after a storm.

*Retention pond*–a basin, usually enclosed by artificial dikes, that is used to retard stormwater runoff by temporarily storing the runoff and releasing it at a predetermined rate.

*Return period*–the average interval in years over which an event of a given magnitude can be expected to recur.

*Road maintenance*–earth disturbance activities within the existing road cross-section, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

*Runoff*–that part of precipitation that flows off the land without filtering into the soil.

*Runoff characteristics*–the hydrologic, geologic, and land cover characteristics of any watershed which affect the rate, amount, and direction of stormwater runoff. These may include, but are not limited to: vegetation, soils, slopes, and man-made landscape alterations.

*SCS*–the United States Department of Agriculture Soil Conservation Service.

*Sediment*–solid material, both mineral and organic, that is in suspension, is being transported or has been moved from its site or origin by air, water, gravity or ice and has come to rest on the earth's surface.

*Sedimentation*–the process by which mineral or organic matter is accumulated or deposited by moving wind, water, ice or gravity.

*Sediment basin*–a barrier or dam built at a suitable location to retain rock, sand, gravel, silt or other nonliquid material.

*Separate storm sewer system*–a conveyance or system of conveyances (including roads with drainage systems, public streets, catch basins, curbs, gutters, ditches, man-made channels or storm drains) primarily used for collecting and conveying stormwater runoff.

*Slope*–degree of deviation of a surface from the horizontal, usually expressed in percent or degrees.

*Small development*–any subdivision or land development which results (or will result when fully constructed) in the creation of 5,000 or less square feet of impervious surface area.

*Soil*–the upper layer of earth which may be dug or plowed; the loose surface material of the earth in which vegetation normally grows.

*Soil cover complex method*–a method of runoff computation developed by the SCS and utilized in its publication, "Urban Hydrology of Small Watersheds," Technical Release No. 55, SCS, June, 1986, (or the most current edition).

*State water quality requirements*–as defined under State regulations, protection of designated and existing uses (see 25 Pa.Code, Chapters 93 and 96), including:

(1) Each stream segment in Pennsylvania has a "designated use," such as "cold water fishery" or "potable water supply," which are listed in Chapter 93. These uses must be protected and maintained, under State regulations.

(2) "Existing uses" are those attained as of November, 1975, regardless whether they have been designated in Chapter 93. Regulated earth disturbance activities must be designed to protect and maintain existing uses and maintain the level of water quality necessary to protect those uses in all streams, and to protect and maintain water quality in special protection streams.

(3) Water quality involves the chemical, biological and physical characteristics of surface water bodies. After regulated earth disturbance activities are complete, these characteristics can be impacted by addition of pollutants such as sediment, and changes in habitat through increased flow volumes and/or rates as a result of changes in land surface area from those activities. Therefore, permanent discharges to surface waters must be managed to protect the stream bank, streambed and structural integrity of the waterway, to prevent these impacts.

*Storm sewer*–a conduit that carries intercepted surface runoff, street water and other wash waters or drainage, but excludes domestic sewage and industrial wastes.

*Storm sewer discharge*–flow from a storm sewer that is discharged into a receiving stream.

*Stormwater collection/conveyance system*–natural or engineered structures which collect and transport stormwater through or from a drainage area to the

point of final outlet including, but not limited to, any of the following: conduits and appurtenant features, canals, channels, ditches, streams, culverts, streets, and pumping stations.

*Stormwater drainage facility*–any element in a stormwater drainage system which is made or improved by man.

*Stormwater management plan*–the plan for managing stormwater runoff from a specific development site.

*Stormwater release rate*–the rate at which stormwater runoff is released from dominant to servile land.

*Stormwater runoff*–waters resulting from snow melt or precipitation within a drainage basin, flowing over the surface of the ground, collected in channels and conduits and carried by receiving streams.

*Stormwater runoff volume*–the quantity of water resulting from a storm event, usually expressed in cubic feet, acre feet, or inches over acreage of the watershed.

*Stream*–a watercourse, whether perennial or intermittent.

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

*Subarea*–a portion of the watershed that has similar hydrological characteristics and drains to a common point.

*Subbasin*–a portion of the watershed that has similar hydrologic characteristics and drains to a common point.

*Subdivision*–the division or redivision 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, partition by the court for distribution to heirs or devisees, transfer of ownership or building or lot development; provided, however, that the subdivision by lease of land for agricultural purposes into parcels of more than 10 acres, not involving any new street or easement of access or any residential dwelling, shall be exempted.

*Surface waters of the Commonwealth*–any and all rivers, streams, creeks, rivulets, impoundments, ditches, watercourses, storm sewers, lakes, dammed water, wetlands, ponds, springs, and all other bodies or channels of conveyance of surface water, or parts thereof, whether natural or artificial, within or on the boundaries of this Commonwealth.

*Swale*–a low lying stretch of land which gathers or carries surface water runoff.

*Time of concentration*–the time period necessary for surface runoff to reach the outlet of a subarea.

*Township*–the Township of Moon, Allegheny County, Pennsylvania.

*Township Comprehensive Plan*–the community master plan created for the purposes of guiding community development and known as the Comprehensive Plan of the Township of Moon.

*Township Engineer*–an experienced, licensed engineer or engineering firm duly appointed as the Engineer for Moon Township.

*Township Manager*–the Manager of the Township of Moon, or his designee, or

the designee of the Township Board of Supervisors.

*Township Standard Details*–the Township's accepted methods, materials, designs, details, and practices for construction, repair, and replacement of certain private improvements and public improvements prepared by the Township Engineer and approved by the Board of Supervisors by resolution, as may be amended from time to time. Copies of the current Township Standard Details are on file in the office of the Township Manager. [A.O.]

*Township Stormwater Management Officer*–the designated official or an authorized representative appointed by the Board of Supervisors, from time to time, whose duty it shall be to administer this Part. Unless otherwise noted, the Township Zoning Officer and Code Official shall be designated as Township Stormwater Management Officer under this Part.

*Watercourse (waterway)*–a permanent stream, intermittent stream, river, brook, creek, channel or ditch for the conveyance of water, whether natural or man-made.

*Watershed*–the entire region or area drained by a river or other body of water, whether natural or artificial. A "designated watershed" is an area delineated by the Pennsylvania Department of Environmental Protection and approved by the Environmental Quality Board for which counties are required to develop watershed stormwater management plans.

*Watershed stormwater management plan (watershed plan)*–the plan for managing stormwater runoff throughout a designated watershed adopted by Allegheny County as required by the Pennsylvania Storm Water Management Act, (Act 167), 32 P.S. §680.1 *et seq*.

*Wet bottom stormwater storage area (wet bottom basin)*–a facility that is designed to be maintained as free water surface or pond.

(*Ord. 559*, 6/2/2004; as amended by A.O.

**§23-111. Plan Review Procedure**.

1. *Preapplication Phase*.

A. Prior to submitting a preliminary stormwater management plan, applicants are urged to consult with the Township, the Allegheny County Department of Economic Development and the County Conservation District on the requirements for safely managing stormwater runoff from the development site in a manner consistent with this Part and applicable watershed stormwater management plans. These agencies may be helpful in providing the data that is necessary for preparing the stormwater management plans.

B. Applicants are encouraged to submit a sketch plan with a narrative description of the proposed stormwater management controls for general guidance and discussion with the Township and other agencies.

C. The preapplication phase is not mandatory, and any review comments provided by the Township or other agencies are advisory only and do not constitute any legally binding action on the part of the Township or any county agency.

2. *Preliminary and Final Stormwater Plan Review*.

A. Five sets of preliminary and final stormwater management plans shall be

required for all developments listed in §23-105 except as provided for in §§23-106 and 23-116. No preliminary or final approval for any application involving land disturbance shall be granted until a stormwater management plan of the site has been approved.

B. In the case of subdivision and land development activities, as defined herein, the applicant shall be required to submit stormwater management plans with the preliminary and final subdivision or land development plan application in accordance with the submission requirements and procedures specified in the Subdivision and Land Development Ordinance [Chapter 22].

C. *Review by Township Engineer and Conservation District*. Preliminary and final stormwater management plans will be reviewed by the Township Engineer. At its discretion, the Township may also engage other specialists in hydrology and hydraulics to assist with the stormwater plan review.

D. *Preliminary Plan to County*. A copy of the preliminary stormwater management plan, along with all supporting documentation, will be forwarded to the Allegheny County Department of Economic Development for review and comment. A report will be returned to the Township within 30 days from the County. No plan shall be approved which receives a negative watershed impact review by the County.

E. In cases where the stormwater management and erosion and sedimentation control plan relates to a project fronting on an existing or proposed State highway, the Township may require that a copy of the plan and pertinent data be submitted to the Pennsylvania Department of Transportation ("PennDOT") for review.

F. *Township Engineer's Review*. The Township Engineer shall recommend approval or disapproval of the preliminary and final stormwater management plans based on the requirements of the Township ordinances, the standards and criteria of the watershed plan and good engineering practice. The Engineer shall submit a written report, along with supporting documentation, to the Board of Supervisors for its consideration as part of the overall subdivision or land development plan review.

G. *Variance*. In the event that any variance from this Part is requested by the applicant or is deemed necessary for approval, the requested variance and the reasons for its alleged necessity shall be entered into the records of the Township Board of Supervisors. The Board will consider the variance in accordance with the provisions set forth in the Uniform Construction Code [Chapter 5 Part 1].

3. *Preliminary and Final Stormwater Plan Approval*.

A. Within 90 days from the date of submittal of a preliminary or final stormwater management plan, the Board of Supervisors shall approve, approve with modifications or disapprove the plan and shall notify the applicant, in writing, thereof not later than 15 days following the decision.

B. When the application is not approved in terms as filed, the decision shall specify the defects found in the application and describe the requirements which have not been met and shall, in each case, cite the provisions of this Part.

C. Failure of the Township to render a decision and communicate it to the

applicant within the 90-day time limit and in the manner required shall be deemed to be a recommendation for approval of the application in terms as presented unless the applicant has agreed, in writing, to an extension of time or change in the prescribed manner of presentation of communication of the decision, in which case, failure to meet the extended time or change in manner of presentation of communication shall have the like effect.

(*Ord. 559*, 6/2/2004)

**§23-112. Commencement of Work**.

Upon final stormwater management plan approval and all other approvals required under Township ordinances, the applicant may commence to install or implement the approved stormwater management controls. If site development does not begin within 18 months of the date of final approval of the stormwater management plan, then before doing so, the applicant shall resubmit the stormwater management plan to verify that no condition has changed that would affect the feasibility or effectiveness of the previously approved stormwater management controls. In addition, if for any reason development activities are suspended for 18 month or more, then the same requirement for resubmission of the stormwater management plan shall apply. If site development does not begin within 1 year of the date of final approval or once started is suspended for 1 year or more and, during development hiatus, the applicant or its successor has knowledge of a changed condition likely to affect the feasibility or effectiveness of the previously approved stormwater management controls, then the applicant or its successor shall submit a properly revised or annotated stormwater management plan.

(*Ord. 559*, 6/2/2004)

**§23-113. Approved Plan Required; Modifications**.

It shall be unlawful for any person, firm or corporation to undertake any earth-disturbing activity on any property unless a stormwater management plan has been approved by the Township. It shall be unlawful to make any modifications to an approved stormwater management plan unless said modifications have been approved by the Township pursuant to §23-114.

(*Ord. 559*, 6/2/2004)

**§23-114. Plan Modifications**.

Requests for modifications in the finally approved stormwater management controls shall be submitted to the Township Engineer as follows:

A. If the request is initiated before construction begins, the stormwater plan must be resubmitted and reviewed according to the procedures in §23-111.

B. If the request is initiated after construction is underway, the Township Engineer shall have the authority to approve or disapprove the modification based on field inspection, provided that the requested changes in stormwater controls do not result in any modification to other approved land use/development requirements (e.g., required building setbacks, yards, etc.) and the performance standards in §§23-118 through 23-121 are met. Notification of the Engineer's action shall be sent to the Township Board of Supervisors. The Board of Supervisors may issue a stay of stormwater plan modification within 5 working days of receipt of notice of

the Engineer's action and may require the applicant to resubmit the plan modification for full stormwater plan review in accordance with the procedures in §23-111.

(*Ord. 559*, 6/2/2004)

**§23-115. Dedication of Facilities**.

Drainage and stormwater control facilities may be dedicated to the Township. Developers who determine to dedicate these facilities to the Township shall be responsible for the maintenance of all stormwater control improvements until the development is completed. Thereafter, the developer shall dedicate these drainage and stormwater control facilities to the Township for maintenance purposes, but only after the developer has received final approval, final inspection and a certificate of compliance from the Township Engineer.

(*Ord. 559*, 6/2/2004)

**§23-116. Small Developments**.

1. At the time of application, the Township Stormwater Management Officer shall determine if the development qualifies as a small development and, therefore, is eligible for a simplified stormwater plan submission. For the purposes of this Part, a "small development" is any development which results (or will result when fully constructed) in the creation of 5,000 or less square feet of impervious surface area.

2. A small development shall be exempt from the preparation of a stormwater management plan as specified by §23-117. However, such developments shall provide safe management of stormwater runoff in accordance with the performance standards of §23-119 and as approved by the Township Stormwater Management Officer.

3. Applications for small developments shall include a plan which describes, narratively and graphically, the type and location of proposed on-site stormwater management techniques or the proposed connection to an existing storm sewer system. The plan should show accurately site boundaries, 5-foot interval contours, for areas of greater than 25 percent slope gradient, and at 2-foot interval contours for areas of 25 percent slope gradient or less, location of watershed and/or subarea boundaries on the site (if applicable) and any watercourses, floodplains or existing drainage facilities or structures located on the site. Depending upon actual site conditions, number of lots involved and similar considerations, the Township Stormwater Management Officer shall determine if the plan must be prepared by a registered professional engineer.

4. The Township Stormwater Management Officer shall review and approve the proposed provisions for stormwater management for small developments. Where the applicant is proposing to connect to an existing storm sewer, the applicant shall provide documentation that sufficient capacity exists in the storm sewer from the point of connection to the point of outlet in the natural drainage system. The Stormwater Management Officer shall determine if the proposed development site is part of a larger parcel or tract subject to any specific stormwater management controls contained in a prior plan.

5. For a parcel or tract of land held under single ownership, only one application for a small development, as defined above, shall be permitted before requiring a stormwater management plan for the entire parcel.

(*Ord. 559*, 6/2/2004)

**§23-117. Plan Contents**.

The stormwater management plan for all developments, except for small developments as defined above, shall consist of three parts:

A. *Part I: Narrative Report*. The narrative report shall consist of a general statement of the project giving the purpose and engineering assumptions and calculations for control measures and facilities. The following information shall be included:

(1) General description of the project.

(2) General description of accelerated runoff control plan.

(3) General description of erosion and sedimentation control plan.

(4) Expected project time schedule, including anticipated start and completion dates.

(5) Project's stormwater district, location and watershed characteristics.

(6) On-site detention methods.

(7) Hydraulic and hydrologic calculations, methodology and basis of design.

(8) Brief soil description.

B. *Part II: Preliminary Plan*. The preliminary plan shall provide and be accompanied by maps or other descriptive material indicating the feasibility of the plan and showing the following:

(1) A key map showing the development site's location within the designated watershed and watershed subsheds (consult watershed stormwater plans for boundaries). On all site drawings, show the boundaries of the watershed(s) and subarea(s) as they are located on the development site and identify watershed names and/or subshed numbers.

(2) Location of the 100-year floodplain on the development site based on the Township Flood Insurance Study maps or a determination by the applicant's engineer.

(3) An overlay showing soil types and boundaries within the development site.

(4) The street, storm sewers and other storm drains to be built, the basis of their design and outfall and outlet locations and elevations, receiving stream or channel and its high-water elevation, and the functioning of the drains during high-water conditions.

(5) The parts of the proposed parking area pavements, which are planned to be depressed to provide stormwater storage or conveyance.

(6) Existing streams and watercourses to be maintained, and new channels to be constructed, their locations, cross sections and profiles.

(7) Proposed culverts and bridges to be built, their materials, elevations, waterway openings and basis of design.

(8) Existing detention ponds and basins to be maintained, enlarged or

otherwise altered and new ponds or basins to be built and the basis of their design.

(9) The approximate location and percentage of the total land area in the development which will be covered by impervious surfaces after construction is completed.

(10) The slope, type and size of all proposed and existing storm sewer and other waterways.

(11) Existing contours at intervals of 2 feet except in areas with slopes greater than 25 percent, in which case 5-foot contour intervals may be used.

(12) All natural features including bodies of water (natural and artificial), watercourses (permanent and intermittent), swales, wetlands and other natural drainage courses on the development site or those off-site which will be affected by runoff from the development.

(13) Approximate depth, shape, size and storage of any proposed retention facility.

(14) One or more typical cross sections of all existing and proposed channels or other open drainage facilities, showing the elevation of the existing land and the proposed changes thereto, together with the high-water elevations expected from the 100-year storm under the controlled conditions called for by this Part, and the relationship of structures, streets and other utilities.

(15) A site plan showing property lines, dimensions of the site and location of existing and proposed buildings, structures, sewers, waterlines, easements and rights-of-way.

(16) Certification of the registered professional engineer responsible for the preparation of the plans and report.

(17) A list of approvals/permits relative to stormwater management that will be required from other governmental agencies and anticipated dates of submission/receipt. Copies of applications may be requested by the Township where they may be helpful for the stormwater plan review.

(18) *Soils*. Provide an overlay showing soil types and boundaries within the development site.

(19) *Stormwater Management Controls*. Show any existing stormwater management or drainage controls and/or structures, such as storm sewers, swales, culverts, etc., which are located on the development site, or which are located off-site but are or will be affected by runoff from the development.

(20) *Runoff Calculations*. Calculations and pertinent plans and drawings for estimating pre- and post- development discharge rates and for designing proposed stormwater control facilities shall be submitted with the stormwater management plan. All calculations shall be prepared using the methods and criteria prescribed by §23-119 hereof.

(21) *Stormwater Controls*. All proposed stormwater runoff control measures shall be shown on the plan, including methods for collecting, conveying, and storing stormwater runoff on-site which are to be used both during and after construction. Erosion and sedimentation controls shall be

shown. The preliminary plan and accompanying drawings shall provide information on the general type, location, layout, operation, and sizing of all proposed facilities and their relationship to the existing watershed drainage system.

(22) All existing and proposed easements and rights of way for drainage and/or access to stormwater control facilities shall be shown, and the proposed owner identified. Any areas subject to special deed restrictions relative to or affecting stormwater management on the development site must be shown.

(23) *Maintenance Program*.

(a) Identify the proposed owner.

(b) A maintenance program conforming to §23-124 must be provided.

(c) Identify the method of financing the continuing operation and maintenance of the facility.

C. *Part III: Final Plan*.

(1) Upon approval of the preliminary plan, the final plan shall be submitted to the Township Stormwater Management Officer. The final plan shall provide all descriptive material and maps previously submitted and required prior to the final plan, in addition to the following items:

(a) All calculations, assumptions and criteria used in the design of the storm sewer system, detention facilities and sediment and erosion control operations.

(b) All plans and profiles of proposed storm sewers and open channels, including horizontal and vertical controls, elevations, sizes, slopes and materials.

(c) Locations, dimensions and design details required for the construction of all facilities.

(d) For all detention basins, a plot or tabulation of storage volumes with corresponding water surface elevations and of the basin outflow rates for those water surface elevation.

(e) For all detention basins, design hydrographs of inflow and outflow for the peak design flows from the site under natural and developed conditions.

(f) A description of operation for all detention basins.

(g) Contours of the finished project site at intervals of 2 feet except in areas with slopes greater than 25 percent, in which case 5-foot contour intervals may be used.

(h) The staging of earthmoving activities and program of operation, including a schedule for the installation of all temporary and permanent stormwater control measures and devices.

(i) All information relative to the design and operation of emergency spillways.

(j) Emergency routing of outfall for stormwater runoff in the event of failure of off-site drainage structures.

(k) All erosion and sedimentation control measures, temporary as well as permanent, having sufficient detail in order to clearly indicate effectiveness of the plan.

(l) Project specifications relative to stormwater control, erosion and sedimentation.

(m) A maintenance program establishing ownership and maintenance responsibilities for all stormwater control facilities (identify specific person or entity) and detailing financial requirements and sources of funding. Submit any legal agreements or covenants required to implement the maintenance program.

(n) An accurate survey showing all current and proposed easements and rights of way and copies of all proposed deed restrictions.

(o) Financial guarantees, consistent with the subdivision regulations, to ensure that all stormwater controls are installed properly and functioning satisfactorily.

(p) Provide documentation of conformance with Appendix 23-G and 23-H of this Part.

(q) The developer is encouraged to consider low-impact development practices as noted in Appendix 23-I.

(2) When major control facilities, such as retention basins requiring a DEP permit, are planned, soil structures and characteristics shall be investigated. Plans and data prepared by a licensed professional engineer or geologist with experience and education in soil mechanics shall be submitted. These submissions should consider and offer design solutions for frost heave potential, shrink/swell potential, soil bearing strength, water infiltration, soil settling characteristics, fill and baffling procedures and soil treatment techniques as required to protect the improvements or structures.

(*Ord. 559*, 6/2/2004)

**§23-118. Districts**.

1. For the purposes of stormwater management, the Township is divided into the following stormwater management districts:

A. Montour Run.

B. Flaugherty Run.

C. General.

(1) Narrows Run.

(2) Thorn Run.

(3) McCabe Run.

(4) Moon Run.

(5) Shouse Run.

2. One or more of these districts may be further subdivided into subareas which have similar hydrological characteristics and drain to a common point.

3. The location and boundaries of the stormwater management districts and

subareas are adopted as overlay districts to the Township Zoning Map and are shown on the Zoning Map and Watershed Maps which are available in the Township offices. (*Ord. 559*, 6/2/2004)

**§23-119. Performance Standards**.

The following provisions shall be considered the overriding performance standards against which all proposed stormwater control measures shall be evaluated, and they shall apply in all stormwater management districts in the Township:

A. Any landowner and any person engaged in the alteration or development of land which may affect stormwater runoff characteristics shall implement such measures as are reasonably necessary to prevent injury to health, safety or other property. Such measures shall include but not be limited to such actions as are required to:

(1) Assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities including adjustments for release rates as per §23-120 of this Part.

(2) Manage the quantity, velocity and direction of resulting stormwater runoff in a manner which will not adversely impact the health on or value of any affected properties.

B. *Design Storms*.

(1) Stormwater management facilities within a development shall be designed to store and release the peak rate of runoff from the 2-, 5-, and 10- and 25- and 100-year frequency storms. Whenever the provisions of Federal and State law impose a greater design storm frequency, as for example, particularly in areas where drainage systems may cross highways, the stricter standards shall prevail. [*Ord. 606*]

(2) All stormwater retention/detention facilities shall be designed with emergency overflow facilities for the 100-year, 24-hour duration storm, unless positive measures are installed to control the inflow so as not to exceed the safe capacity of the retention/detention facility.

(3) The retention volume required for all stormwater retention/detention facilities shall be that volume necessary to handle store runoff of a 100-year storm in any development, less that volume discharged during the same storm period used to calculate the volume of rainfall, at the approved release rate. [*Ord. 606*]

(4) The SCS Type II Rainfall Distribution shall be used for all analyses. The design storm frequencies for the watershed are as follows:

| | Rainfall Depth (inches) | |
|---|---|---|
| **Design Storm** | **24 Hours** | **1 Hour** |
| 2-year | 2.6 | 1.25 |
| 5-year | 3.3 | 1.60 |
| 10-year | 3.8 | 2.00 |

| Design Storm | 24 Hours | 1 Hour |
|---|---|---|
| 25-year | 4.4 | 2.40 |
| 100-year | 5.0 | 3.10 |

C. The stormwater management plan must consider all of the stormwater runoff flowing over the project site including runoff from upland and off-site areas. Runoff calculations shall be made to ensure that runoff from the fully developed upstream watershed area (based on the Township Comprehensive Plan) can be accommodated by the pipes, drainage easements, watercourses, etc., on the site.

D. *Joint Development of Control Systems*. Stormwater control systems may be planned and constructed in coordination with two or more developments, provided that they are in compliance with the applicable provisions of this Part.

E. *Method of Computation*. All computations used in conjunction with the analysis and design of stormwater management facilities shall be based on one or more of the following methods:

(1) *TR-55*. Soil Conservation Service Technical Release No.55.

(2) *TR-20*. Soil Conservation Service Technical Release No.20.

(3) Modified Rational Method.

(4) Penn State Runoff Model.

(a) These methods for determining peak discharge shall be used to determine pre-development runoff conditions; to analyze the impact of development; and to perform calculations in the design of any detention/retention facilities used in controlling runoff. These methods of runoff computation developed and used by the Soil Conservation Service and other authorities are hereby adopted by the Township.

(b) The use of the Basic Rational Method in estimating runoff must be employed in the design of the storm sewer system within the development. The storm sewer system shall be interpreted as the conduits, channels, culverts, inlets and appurtenances featured for the conveying of stormwater to, through or from a development site to the point of final discharge or control facility. The Rational Method shall not be used in the analysis of stormwater runoff from the development in its entirety or in conjunction with the design of any retention/detention facilities or other runoff control measures.

F. *Release of Detained Stormwater*. The approved peak release rate of stormwater from all retention/detention facilities for any storm event shall be that which is experienced prior to development for the same storm event up to and including the 100-year storm. Therefore, all retention/detention facilities shall provide staged release of the 2-, 5-, 10- and 25- and 100-year storms. [*Ord. 606*]

G. Design of the stormwater management facilities outlined in the plan requires that runoff calculations be made for the site and areas which contribute drainage to the site. These calculations should be based on land use, groundcover time of concentration and other standard aspects of hydrologic and hydraulic analysis. [*Ord. 606*]

(1) *Temporary Control Measures/Facilities*. Runoff calculations of the site's condition during development will be used to size temporary control measures.

(2) *Permanent Control Measures/Facilities*. In most cases, permanent control measures/facilities shall be designed to assure that the maximum rate of stormwater runoff is no greater after development than prior to development activities, utilizing the 25-year storm as a basis for calculations for collection and conveyance, utilizing the 100-year storm as a basis for detention/retention facilities and for collection and conveyance facilities where it is determined by the Township to be necessary to prevent downstream stormwater damage. [*Ord. 606*]

H. Where the existing storm sewers are reasonably accessible, proposed developments will be required to connect with the storm sewer system unless insufficient capacity or other reasons can be demonstrated to prevent the connection. If insufficient capacity is determined, the Township may require enlargement of existing sewers based upon the Township Engineer's recommendation.

I. Runoff calculations must also include complete hydrology and hydraulic analysis of all erosion control facilities including, but not limited to:

(1) Velocities of flow, slopes, capacity and roughness coefficient of conduits and grassed waterways.

(2) Capacity of sediment basins and permanent holding ponds.

J. *Single-Family Lots*.

(1) Retention facilities shall be constructed for all existing single-family lot developments or single-family lots located in land developments which for terrain reasons cannot utilize the development's retention systems. Retention facilities shall consist of gravel filled sumps, ponds, tanks or other approved facilities, sized in accordance with standard details, which are on file at the Township office. All runoff from roof areas shall be discharged into these facilities. Refer to Figure 1 for minimum storage volume size per single residence roof area, which is on file at the Township office.

(2) Storage volumes for roof areas greater than 5,000 square feet shall be calculated using the methods outlined in paragraph .E above.

(3) All stormwater retention facilities shall be located at least 5 feet from foundation walls (location to be approved by the Township Stormwater Management Officer). All pipe from roof drains to a point 5 feet from the structure shall be minimum Schedule 40 PVC pipe or an approved equal.

(*Ord. 559*, 6/2/2004; as amended by *Ord. 606*, 9/6/2006, §1)

**§23-120. Stormwater Management Act (Act 167) Watersheds**.

The stormwater performance standards contained in this Section are intended to implement the standards and criteria contained in the Flaugherty Run Watershed Stormwater Management Plans and the Montour Run Watershed Stormwater Management Plan, adopted and approved as required by the Pennsylvania Storm Water Management Act (Act 167), 32 P.S. §680.1 *et seq*., and on file at the Township office. If

there is any discrepancy between the provisions of this Part and the standards and criteria of the plan or if the plan is subsequently amended, then the standards and criteria of the current watershed plan shall govern.

A. Release rate percentage for the Flaugherty Run Watershed. Appendices 23-A and 23-E.

(1) *Application*. All subdivision and land development activities which result in an increase in the post-development peak rate of stormwater runoff from any outfall on the development site shall be subject to the release rate percentage for the watershed subarea in which the site (or outfall) is located. A listing of the release rate percentage for each subarea in the Flaugherty Run Watershed District appears in Appendix 23-A of this Part, and the subareas are delineated on the watershed subarea map in the watershed plan.

(2) *Procedure for Use*. The steps that must be followed to utilize the release rate percentage for a particular development site are as follows:

(a) Identify from the watershed subarea map the specific subarea in which the development site is located and obtain the subarea release rate percentages from Appendix 23-A.

(b) Compute the pre-development and post-development runoff hydrographs for each §23-119.E stormwater outfall for the site using one of the methods listed in of this Part for the 2-, 5-, 10-, 25- and 100-year SCS Type II 24-hour design storms, applying no on-site detention for stormwater management but including any techniques to minimize impervious surfaces and/or increase the time of concentration for stormwater runoff flowing over the development site. If the post-development peak runoff rate is less than or equal to the pre- development peak runoff rate, then additional stormwater control shall not be required at the outfall. If any of the post-development peak runoff rates are greater than the pre-development values, then stormwater detention will be required and proceed to paragraph .A(2)(c).

(c) Multiply the subshed's release rate percentage by the pre-development rate of runoff from the development site to determine the maximum allowable release rate from any detention facility for the 2-, 5-, 10-, 25- and 100-year SCS Type II 24-hour design storms.

B. Release rate percentage for the Montour Run Watershed Appendices 23-B and F.

(1) *Application*. All subdivision and land development activities which result in an increase in the post-development peak rate of stormwater runoff from any outfall on the development site shall be subject to the release rate percentage for the watershed subarea in which the site (or outfall) is located. A listing of the release rate percentage for each subarea in the Montour Run Watershed District appears in Appendix 23-B of this Part, and the subareas are delineated on the watershed subarea map in the watershed plan.

(2) *Procedure for Use*. The steps that must be followed to utilize the release rate percentage for a particular development site are as follows:

(a) Identify from the watershed subarea map the specific subarea in

which the development site is located and obtain the subarea release rate percentage from Appendix 23-B.

(b) Compute the pre-development and post-development runoff hydrographs for each stormwater outfall for the site, using one of the methods listed in §23-119.E of this Part, for the 2-, 5-, 10-, 25- and 100-year SCS Type II 24-hour design storms, applying no on-site detention for stormwater management but including any techniques to minimize impervious surfaces and/or increase the time of concentration for stormwater runoff flowing over the development site. If the post-development peak runoff rate is less than or equal to the pre-development peak runoff rate, then additional stormwater control shall not be required at the outfall. If any of the post-development peak runoff rates are greater than the pre- development values, then stormwater detention will be required and proceed to paragraph .B(2)(c).

(c) Multiply the subshed's release rate percentage by the pre-development rate of runoff from the development site to determine the maximum allowable release rate from any detention facility for the 2-, 5-, 10-, 25- and 100-year SCS Type II 24-hour design storms.

C. *No-Harm Evaluation*.

(1) An applicant may seek to exceed the otherwise applicable subarea release rate percentage by performing a no-harm evaluation which requires an independent engineering analysis to demonstrate that other reasonable options exist to protect downstream areas from harmful storm runoff impacts.

(2) The no-harm evaluation shall be prepared by a registered engineer who is experienced in hydrology and hydraulics, in accordance with the procedure contained in Appendix 23-C of this Part.

(3) The analysis for the no-harm evaluation shall be submitted to the Township Engineer and Allegheny County for review and approval.

(*Ord. 559*, 6/2/2004)

**§23-121. General Watershed Standards**.

1. The stormwater performance standards contained in §23-119 shall be implemented in the Narrows Run, Thorn Run, McCabe Run, Moon Run and Shouse Run Watershed Districts.

2. Release rate percentages at all points within these districts may be assumed to be 100 percent unless shown otherwise in a subsequent stormwater management plan.

(*Ord. 559*, 6/2/2004)

**§23-122. Construction Requirements**.

Stormwater management facilities shall be constructed in accordance with the following minimum specifications:

A. All workmanship and materials shall conform to:

(1) The Township Standard Details.

(2) The latest version of Pennsylvania Department of Transportation PennDOT Publication 408.

(3) The Allegheny Health Department Plumbing Code for materials, installation and inspection related to roof drains and subsurface drains.

[A.O.]

B. All connections to existing storm sewer pipes shall be made by construction of a suitable junction box (inlet or manhole) to provide access for clean out. No blind connections will be permitted.

C. All storm sewers constructed in roadway rights-of-way or drainage easements shall be constructed of reinforced cement concrete pipe (RCCP) Class III or of even stronger cement or material if so required by the Township Engineer.

D. All pond outlet structure pipes shall have suitable gaskets to prevent leakage and piping of water through the pond embankment.

E. All pipe outlets shall discharge onto a stone riprap blanket to prevent erosion of soil. Riprap will be sized considering pipe exit velocities.

F. Controls shall be installed at initial stages of earthmoving and otherwise as outlined in the staging of earthmoving activities section of the soil erosion and sedimentation control plan.

G. All stormwater detention basins must drain completely and provide no permanent storage.

H. Low flow channels must be provided in all stormwater detention basins. The channels must be constructed at a minimum of 2 percent slope toward the outlet structure.

I. All embankments shall be designed according to that degree of care and skill ordinarily exercised in engineering practice for such structures and shall meet the approval of the Township. All facilities shall require a supporting geotechnical report from a professional engineer experienced in the design of earth embankments and shall be constructed under the supervision of the engineer who prepared the geotechnical report. At the completion of construction, the design engineer shall submit a certification stating that the structure was constructed as shown on the approved plans and attached to the certification an “as-built” plan and supporting storm routing calculations for each design storm. The “as-built” shall show as-built conditions of the outlet structure and emergency spillway.

J. Each inlet and outlet to the facility shall be provided with erosion control measures approved by the Township.

K. Permanent outlet control structures shall be constructed of reinforced concrete (cast-in-place, or precast) and provide with debris grates approved by the Township Engineer.

L. All impoundment areas shall be adequately underdrained to prevent long-term ponding of water.

M. All detention facilities shall be provided with an access road (with a legal easement) for maintenance purposes. Such roads shall be a minimum of 10 feet wide and have a maximum grade of 15 percent.

N. Landscaping shall be provided for the facility which harmonizes with the

surrounding area. The landscaping must conform to the Zoning Ordinance [Chapter 27].

O. An as-built drawing shall be required for each stormwater detention facility constructed. The drawing shall represent an engineering certification of the volume of the facility and the depth versus storage relationship. This relationship shall be shown on the drawing in table form. The drawing shall be stamped by a registered professional engineer and submitted to the Township within 60 days of the completion of the facility. Further, an electronic version/file of this as-built drawing shall be delivered to the Township. This electronic version/file shall be in a Township compatible format consistent with the requirements of §22-215 of the Subdivision and Land Development Ordinance [Chapter 22]. No facility shall be finally approved by the Township until the requirements of this subsection have been fulfilled. [A.O.]

P. No stormwater may be discharged to unprotected areas such as hillsides without special erosion and/or energy dissipation controls being installed. Stormwater shall either be conveyed to the nearest established stream channel as approved by the Township Engineer or provided with an approved energy dissipation device. Conveyance shall be by pipe or erosion protected ditch.

Q. The design for culverts, pipes, and other stormwater conveyance structures shall be consistent with the design of the other stormwater management facilities.

R. All sites shall be graded to provide drainage away from and around structures to prevent potential flooding damage.

S. Low side lots must extend roof and french drains to a sump and then outlet to a common collector pipe system or natural watercourse in accordance with the approved stormwater management plan for the development site. No lot shall be permitted to discharge stormwater flow on or over fill slopes.

T. Collection/conveyance facilities should not be installed parallel and close to the top or bottom of major embankments to avoid the possibility of failing or causing the embankments to fail.

U. Criteria for dry sumps:

(1) All dry sumps designed for accepting surface water from roof or driveway areas shall be designed according to the Township Standard Details are on file at the Township office. [A.O.]

(2) Dry sumps should be elongated in a minimum 3:1 length to width ratio and be oriented with the long dimension parallel to the contour.

(3) Dry sumps shall be constructed in undisturbed ground only. No dry sumps shall be permitted in fill material.

(4) The minimum distance between a dry sump and the property line shall be 10 feet.

(5) Dry sumps shall not be permitted in or up-slope of areas determined by the County or Township Engineer to be susceptible to landslides.

V. Disposal of stormwater from roofs, driveways and sidewalks.

(1) Unless otherwise approved by the Township, no stormwater from roofs or driveway drains shall be discharged to the street surface or curb under-

drain.

(2) The acceptable method of disposal includes properly designed dry sumps, storm sewers, or any other method approved by the Township Engineer.

(*Ord. 559*, 6/2/2004; as amended by A.O.

**§23-123. Township Standard Details**.

The following Township Standard Details are on file in the Township offices and shall apply to all stormwater facilities: [A.O.]

A. Pond typical section.

B. Manhole riser.

C. CMP riser.

D. Headwall.

E. Emergency spillway.

F. Antiseep collars.

(*Ord. 559*, 6/2/2004; as amended by A.O.

**§23-124. Maintenance Requirements**.

Maintenance is an essential part of the successful functioning of a stormwater management system.

A. Maintenance during development of a project shall be the responsibility of the developer and/or landowner and shall usually include, but not be limited to:

(1) Removal of silt from all debris basins, traps or other structures or measures when 40 percent of capacity is filled with silt.

(2) Disposal of collected silt in a manner which will not adversely affect the environment.

(3) Periodic maintenance of temporary control facilities such as replacement of straw bale dikes, straw filters or similar measures.

(4) Establishment or reestablishment of vegetation by seeding and mulching or sodding of scoured areas or areas where vegetation has not successfully been established. A developer or landowner retains this obligation as to property it/he/she has developed or improved even if a proper season for seeding occurs initially some time after the project is otherwise completed in whole or as to a particular phase.

(5) Installation of necessary controls sufficient to protect against problems caused by storm events within design frequencies.

B. The contractor or developer will be responsible for removal of all temporary measures upon completion of the project.

C. After acceptance of the project by the Township (except in cases where agreements to the contrary have been previously executed or on private developments), maintenance shall be the responsibility of the Township and shall include, when necessary:

(1) Mowing to maintain adequate stands of grass and to control weeds.

Chemical weed control may be used if State and the Township regulations are met. Selection of seed mixtures should reflect the type of maintenance desired by Moon Township. This information can be obtained in the office of the Township Manager or from the Township Engineer.

(2) Removal of silt from all permanent structures which trap silt or sediment to keep this material from building up in grassed waterways and other permanent structures, thereby reducing their capacity.

(3) The Township shall make the final determination of the continuing maintenance responsibilities as part of the final application review based on the recommendation of the Moon Township Planning Commission. The Township reserves the right to accept or reject the ownership responsibility of any or all of the stormwater management controls.

D. It shall be the responsibility of the Township to inspect all permanent facilities to see that corrective action is taken where necessary.

E. Stormwater facilities located on private developments shall be maintained by the landowner or his agent in accordance with paragraphs .B and .C above; however, this does not relieve the landowner or his agent of the obligation to inspect their own facilities. The Township reserves the right to enter upon private property to make periodic reasonable inspections and to require the landowner to take necessary corrective actions.

F. *Maintenance Agreement*.

(1) Prior to final approval of the stormwater management plan for the site, the property owner shall sign and record a maintenance agreement covering all stormwater control facilities which are to be privately owned. The agreement shall have the following stipulations:

(a) The owner shall maintain all facilities in accordance with the approved maintenance schedule and shall keep all facilities maintained in a safe and attractive manner.

(b) The owner shall convey to the Township easements and/or rights of way to assure access for periodic inspections by the Township and maintenance if required.

(c) The owner shall keep on file with the Township the name, address and telephone number of the person or company responsible for maintenance activities. In the event of a change, new information shall be submitted to the Township within 10 days of the change.

(d) The owner shall establish any special maintenance funds or other financing sources in accordance with the approved maintenance plan.

(e) If the owner fails to maintain the stormwater control facilities, following due notice (30 days) by the Township to correct the problems, the Township shall perform the necessary maintenance or corrective work. The owner shall reimburse the Township for all costs.

(2) Other items may be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. The maintenance agreement shall be subject to the review and approval of the Township Solicitor and Township Engineer.

(*Ord. 559*, 6/2/2004)

**§23-125. Inspections of Stormwater Management Controls**.

1. The Township Engineer or a designated representative shall inspect the construction of the temporary and permanent stormwater management controls for the development site. The permittee shall notify the Township 48 hours in advance of the completion of the following key development phases:

A. At the completion of preliminary site preparation, including stripping of vegetation, stockpiling of topsoil, and construction of temporary stormwater management and erosion control facilities.

B. At the completion of rough grading, but prior to placing topsoil, permanent drainage or other site development improvements and ground covers.

C. During construction of the permanent stormwater facilities at such times as specified by the Township Engineer.

D. At the completion of permanent stormwater management facilities, including established ground covers and plantings.

E. At the completion of any final grading, vegetative control measures, or other site restoration work done in accordance with the approved plan and permit.

2. No work shall commence on any subsequent phase until the preceding one has been inspected and approved. If there are deficiencies in any phase, the Township Engineer shall issue a written description of the required corrections and stipulate the time by which they shall be made.

3. If, during construction, the contractor or permittee identifies any site conditions, such as subsurface soil conditions, alterations in surface or subsurface drainage, which could affect the feasibility of the approved stormwater facilities, he shall notify the Township Engineer within 24 hours of the discovery of such conditions and request a field inspection. The Township Engineer shall determine if the condition requires a stormwater plan modification.

4. In cases where stormwater facilities are to be installed in areas of landslide-prone soils, or where other special site conditions exist, the Township may require special precautions, such as soil tests and core borings, full-time resident inspectors and/or similar measures. All costs of any such measures shall be borne by the permittee.

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

6. In the event that the applicant, developer, owner or his/her agent fails to comply with the requirements of this Part or fails to conform to the requirements of any permit, a written notice of violation shall be issued. Such notification shall set forth the nature of the violation(s) and establish a time limit for correction of the violation(s). Upon failure to comply within 30 days, unless otherwise extended by the Township, the applicant, developer, owner or his/her agent shall be subject to the enforcement Section of this Part (§23-132).

7. All inspection costs incurred by the Township or Township Engineer shall be borne by the property owner/developer.

(*Ord. 559*, 6/2/2004, §23-125)

**§23-126. Permits**.

1. *Building Permit*. No structure as defined by and regulated by this Part should hereafter be erected or structurally altered until a building permit shall have been issued by the Township. Such permit shall state that the proposed structure shall comply with all laws of the Township relating thereto.

2. *Land Disturbance Permit*. No land disturbance activity as defined by and regulated by this Part shall commence until a land disturbance permit shall have been issued by the Township. Such permit shall state that the proposed activity shall comply with laws of the Township relating thereto.

3. *Expiration of Permits*. All such building and land disturbance permits shall expire 6 months from the date of issuance unless construction thereunder is commenced prior to such expiration.

4. *Issuance of Permits*. No permit required by this Part shall be issued until all stormwater management plans shall have been approved by the Township.

5. *Application for Permit*. All applications for permits required by this Part shall be made on printed forms as approved by the Moon Township Board of Supervisors. Such applications shall describe the stormwater control structure and/or land disturbance activity. Such application shall be presented to the Township along with duly approved plans and such fees and bonds as required by §§23-127 and 23-128.

6. Where the application requires an obstruction or erosion/and sedimentation control permit from DEP, then final plan approval shall be contingent upon receipt of such permits. However, no building permit shall be issued or construction started until the permits are received and copies filed with the Township.

(*Ord. 559*, 6/2/2004)

**§23-127. Fees**.

1. *Filing Fees*. All applications for permits under this Part shall be accompanied by an application, deposit and permit fees in an amount as set from time to time by resolution of the Township Board of Supervisors. No application shall be accepted by the Township or acted upon unless the appropriate fees are paid to the Township.

2. *Inspection and Engineering Deposit Fee*. The applicants and permit holders shall be responsible for reimbursing the Township for any and all costs incurred by the Township in relation to any application, permit, review, and/or inspection required by this Part and/or other Township regulations.

A. An inspection and engineering deposit fee shall accompany the application for permits required by this Part. The amount of this deposit fee shall be set from time to time by resolution of the Township Board of Supervisors and shall be sufficient to cover the costs incurred by the Township including, but not limited to:

(1) Reviewing the plan's engineering details.

(2) Site inspection.

(3) Inspecting required improvements during construction.

(4) Final inspection of completion of installation of the required

improvements.

B. Should additional fees be required for inspection and engineering review, the developer shall pay promptly to the Township such fees upon invoice.

(*Ord. 559*, 6/2/2004)

**§23-128. Bonds**.

The developer, landowner, subdivider, etc., shall provide bonds in accordance with the provisions of the Erosion and Sediment Control Ordinance [Chapter 9, Part 1], and the Subdivision and Land Development Ordinance [Chapter 22].

(*Ord. 559*, 6/2/2004)

**§23-129. Administrator**.

1. The Township Stormwater Management Officer or his designee is hereby designated to be the administrator of this Part and as such will be responsible for the enforcement of this Part.

2. *Inspection of Facilities*. The Township Stormwater Management Officer shall inspect or require adequate inspection of all facilities required by this Part in order to ensure that such facilities are completed according to approved plans. If the Township Stormwater Management Officer determines that a violation of this Part exists, then enforcement actions under §23-132 shall be undertaken.

(*Ord. 559*, 6/2/2004)

**§23-130. Adherence to Plan**.

After approval of the required plans as set forth herein, the developer shall be required to adhere strictly to the plans as approved and shall be required to construct and properly maintain any control measures contained on said approved plan. If the developer adheres to said plan, including continued maintenance of any control measures during the clearing and development operations as approved, he shall not be deemed in violation of this Part; however, it is not intended that this shall relieve such person of any civil liability, including injunctive relief, to any property owner who believes he has been wronged by some action or inaction of the developer.

(*Ord. 559*, 6/2/2004)

**§23-131. Prohibition Against Nonstormwater Discharges**.

1. *Prohibited Discharges*.

A. No person in the Township shall allow, or cause to allow, stormwater discharges into the Township's separate storm sewer system which are not composed entirely of stormwater, except (1) as provided in paragraph .B below, and (2) discharges allowed under a State or Federal permit.

B. Discharges which may be allowed, based on a finding by the Township that the discharges do not significantly contribute to pollution to surface waters of the Commonwealth, are:

(1) Discharges from firefighting activities.

(2) Uncontaminated water from foundation or from footing drains.

(3) Potable water sources including dechlorinated water line and fire hydrant flushings.

(4) Flows from riparian habitats and wetlands.

(5) Lawn watering.

(6) Irrigation drainage.

(7) 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.

(8) Routine external building washdown (which does not use detergents or other compounds).

(9) Air conditioning condensate.

(10) Water from individual residential car washing.

(11) Dechlorinated swimming pool discharges.

(12) Springs.

(13) Uncontaminated groundwater.

(14) Water from crawl space pumps.

C. In the event that the Township determines that any of the discharges identified in paragraph .B above significantly contribute to pollution of waters of the Commonwealth, or is so notified by DEP, the Township will notify the responsible person to cease the discharge.

D. Upon notice provided by the Township under paragraph .C 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.

E. Nothing in this Section shall affect a discharger's responsibilities under State law.

2. *Prohibited Connections*. The following connections are prohibited, except as provided in subsection .1.B above:

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

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

(*Ord. 559*, 6/2/2004)

**§23-132. Enforcement**.

1. Whenever the Township Stormwater Management Officer determines that there has been a violation of this Part and/or has grounds to believe that a violation has occurred and/or an approved plan is not being complied with, notice shall be given in the manner prescribed by this Section to the developer or other person or entity responsible for such violation.

2. The notice and/or stop-work order prescribed in paragraph .1 above shall be in

accordance with all of the following:

A. Be in writing.

B. Include a description of the property involved sufficient for identification.

C. Include a statement of the violation or violations and why the notice is being issued.

D. Include a correction order allowing a reasonable time to accomplish all necessary remedial actions, repairs and improvements to bring the subject property, development and appurtenances into compliance with this Part. The time period for remedial action may not be less than 7 days nor more than 90 days from the date of the written notice.

E. Include the name or names of the persons and/or entities upon whom the notice is served.

F. Inform the property owner, developer or other responsible person of the right to appeal.

3. The written notice prescribed in this Section may require, without limitation, the following remedial activities:

A. The performance of monitoring, analyses, and reporting.

B. The elimination of prohibited discharges.

C. Cessation of any violating discharges, practices, or operations.

D. The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property.

E. Payment of a fine to cover administrative and remediation costs.

F. The implementation of stormwater BMPs.

G. Operation and maintenance of stormwater BMPs.

4. Service of written notice and/or stop-work order required by this Part shall be deemed complete if a copy thereof is:

A. Delivered personally.

B. Sent by certified mail, return receipt requested, to the last known address.

C. If the notice is returned showing the letter was not delivered, a copy thereof shall be posted in a conspicuous location in or about the property affected by such notice.

5. If such written notice and/or stop-work order is not complied with in the time specified, then the Township Stormwater Management Officer shall use all available means of enforcement provided herein in order to secure compliance with the provisions of this Part, including the punishment for its violation.

6. *Cancellation of Notice*. Upon completion of remedial steps required by a notice under this Section, the Township Stormwater Management Officer shall forthwith issue a notice of compliance and cancellation of said notice of noncompliance or stop-work order.

(*Ord. 559*, 6/2/2004)

**§23-133. Revocation of Permit**.

Any building, land development or other permit or approval for regulated earth disturbance activities issued by the Township may be suspended or revoked by the Township Stormwater Management Officer for:

A. Noncompliance with or failure to implement any provision of the permit.

B. A violation of any provision of this Part.

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.

(*Ord. 559*, 6/2/2004)

**§23-134. Appeals**.

1. *Application for Appeal*. Any person directly affected by a decision of the Stormwater Management Officer or other Township official or a notice or order issued under this Part shall have the right to appeal to the Board of Appeals established under §5-105, "Board of Appeals," of the Township of Moon Code of Ordinances; provided that a written application for an appeal is filed within 10 days after receipt of said decision, notice or order.

2. *Regulations and Procedures for Appeals*. All appeals under this Section shall proceed under the regulations and procedures established under §5-105, "Board of Appeals," of the Township of Moon Code of Ordinances.

3. *Appeal to Court*. Any person aggrieved by any decision of the Township Board of Appeals referenced in paragraph .1 above may appeal therefrom within 30 days after entry of the decision to the Court of Common Pleas of Allegheny County.

(*Ord. 559*, 6/2/2004)

**§23-135. Violations and Penalties**.

1. The violation of any provision of this Part is hereby deemed a public nuisance.

2. It shall be unlawful for any person to:

A. Engage in clearing and development work without a permit as provided herein.

B. Continue work on the offending portion of a project after receipt of a stop-work order, other than remedial work to bring the project into compliance, unless said stop-work order is reversed, canceled or suspended by the Township.

C. Fail to complete the recommended remedial action within the time allowed under those circumstances set forth in §23-112.

3. *Violation Penalties*. Any person, firm, or corporation who shall violate any provision of this Part, or fails to comply therewith, or with any of the requirements thereof, upon conviction thereof in an action brought before a magisterial district judge in the manner provided for the enforcement of summary offenses under the Pennsylvania Rules of Criminal Procedure, shall be sentenced to pay a fine of not less than $300 nor more than $1,000 plus costs, including reasonable attorney fees incurred by the Township, and, in default of payment of said fine and costs, to a term of imprisonment to the extent permitted by law for the punishment of summary offenses. A separate offense shall arise for each day or portion thereof in which a violation of this Part is

found to exist and for each section of this Part found to have been violated. The Township may also commence appropriate actions in equity or other to prevent, restrain, correct, enjoin, or abate violations of this Part. All fines and penalties collected for violations of this Part shall be paid to the Township Treasurer. The initial determination of ordinance violation and the service of notice of violation are hereby delegated to the Township Manager, the Police Department, the Code Official, the Township Stormwater Management Officer, the authorized designee of the Township Manager, and to any other officer or agent that the Township Manager or the Board of Supervisors shall deem appropriate. [A.O.]

4. The Township may also commence appropriate actions in equity, at law or other to prevent, restrain, correct, enjoin or abate violations of this Part including, but not limited to, enforcement actions under the Storm Water Management Act and DEP's erosion and sediment control regulations, 25 Pa.Code §102.1 *et seq*. Any activity conducted in violation of this Part or any Pennsylvania approved watershed stormwater management plan may be declared a public nuisance by the Township and abatable as such.

5. In accordance with the §515.1 of the MPC, 53 P.S. §10515.1, the Township may refuse to issue any permit or grant approval to further improve or develop any property which has been developed in violation of this Part.

(*Ord. 559*, 6/2/2004; as amended by A.O.

## Appendix 23-A
## Release Rates for Flaugherty Run Watershed

| Subshed | Release Rate Percentage |
|---|---|
| 7 | 85 |
| 15 | 70 |
| 18 | 60 |
| 22 | 90 |
| 28 | 85 |
| 31 | 60 |
| 37 | 80 |
| 39 | 70 |
| 42 | 70 |
| 59 | 95 |
| 60 | 100 |

Note: The above release rates apply to runoff conditions resulting from proposed (new) development in the subsheds and are applicable for all design events to be analyzed.

## Appendix 23-B

## Release Rates for Montour Run Watershed

| Subshed | Release Rate Percentage |
|---|---|
| 1 | 75 |
| 2 | 75 |
| 3 | 75 |
| 4 | 75 |
| 5 | 75 |
| 6 | 80 |
| 7 | 75 |
| 8 | 75 |
| 9 | 80 |
| 10 | 80 |
| 11 | 80 |
| 12 | 80 |
| 13 | 100 |
| 14 | 70 |
| 15 | 70 |
| 16 | 90 |
| 17 | 100 |
| 18 | 100 |
| 19 | 100 |
| 20 | 100 |
| 21 | 100 |
| 22 | 100 |
| 23 | 100 |
| 24 | 100 |
| 25 | 100 |
| 26 | 100 |
| 27 | 100 |
| Midfield Terminal | 100 |

Note: The above release rates apply to runoff conditions resulting from proposed (new) development in the subsheds and are applicable for all design events to be analyzed.

## Appendix 23-C

## Procedure for Performing No-Harm Evaluations on Flaugherty Run Montour Run Watersheds

1. Identify the discharge control points, as shown on the subarea map, which are downstream of the proposed development site and at which the existing peak flow from the subarea in which the development site is located is greater than 10 percent of the watershed peak flow rate at that point These points of interest so identified shall be used for comparison in subsequent steps of the no-harm evaluation.

2. Compute the pre-development and post-development peak rate of runoff for the subarea in which the development site is located for the 2-, 10-, 25- and 100-year design storms, using the Soil Cover Complex Method (SCS TR-55). The peak flows must match within (+/- 10%) of the peak flows reported in the watershed plan.

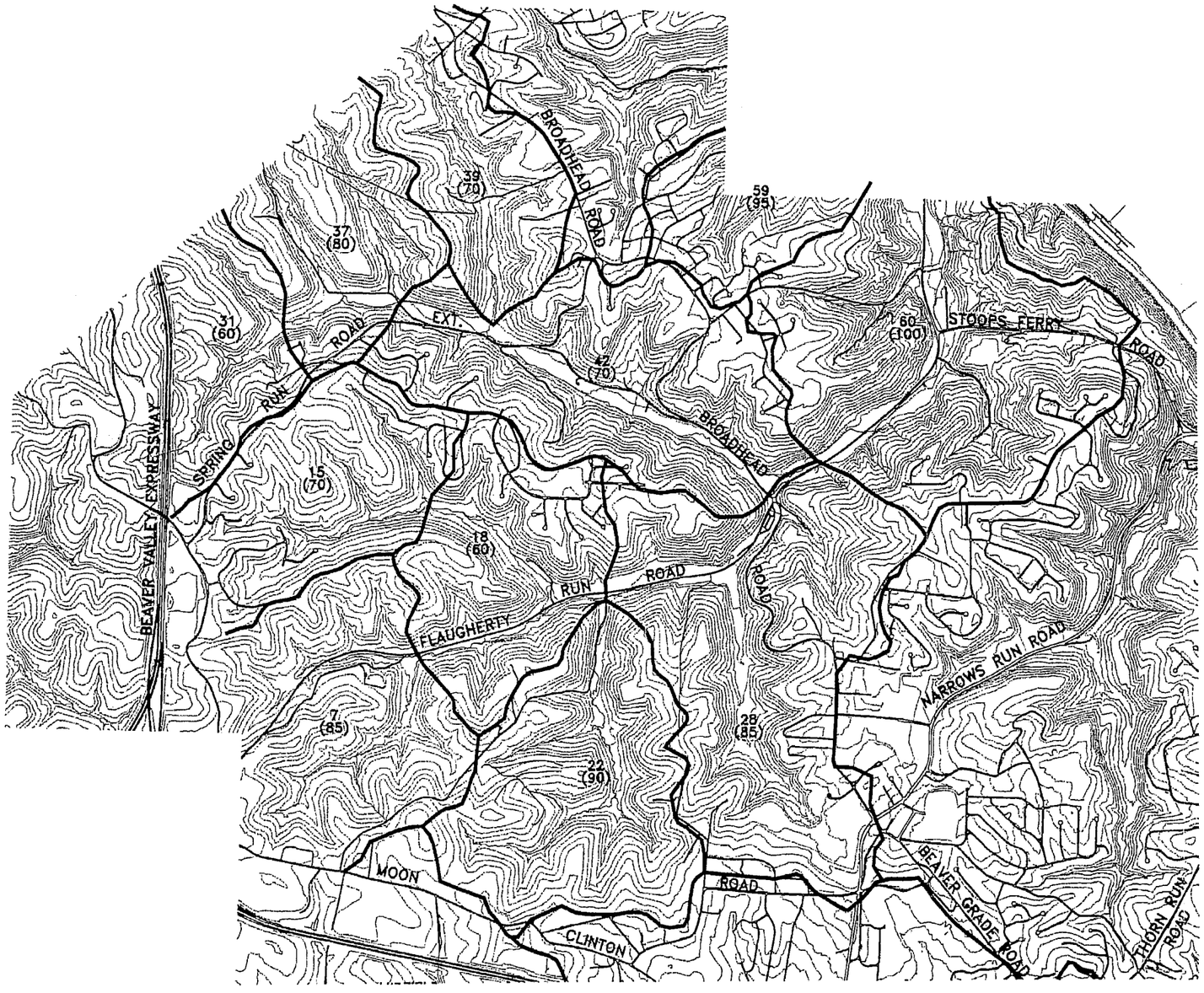
3. Using the same method of calculation, determine the pre-development and post-development peak flow rate at the points of interest identified in Step 1. For determining the contributing flow of subareas (other than that in which the development is located) at a point of interest, the applicant shall use the existing conditions runoff hydrograph for that subarea prepared for the watershed plan. Copies of this information may be obtained from the Allegheny County Department of Economic Development.

4. When the computed post-development discharges for the 2-, 10-, 25- and 100-year storms at all designated points of interest do not exceed the computed pre-development discharges at the same points, then the applicant shall have demonstrated, within reasonable limits, that no harm or adverse affects will occur downstream.

5. Computed post-development discharges may exceed computed pre- development discharges at a designated point of interest, provided that the applicant can demonstrate that the potential for flooding is not increased at that point of interest.

## Appendix 23-D

## Flaugherty Run Watershed Map

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| | | | |
|---|---|---|---|
| Drawn By: DKS | Date: APRIL 28, 1999 | **FLAUGHERTY RUN WATERSHED** | |
| Checked By: TM | File Name: MOONSHED | SUBAREAS AND RELEASE RATES | |
| Approved By: | Scale: 00 1" = 2500' | Situate In MOON TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA | |

## Appendix 23-E

## Montour Run Watershed Map

# Appendix 23-E



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| | | | |
|---|---|---|---|
| Drawn By: DKS | Date: APRIL 28, 1999 | **MONTOUR RUN WATERSHED** | |
| Checked By: TM | File Name: MOONSHED | SUBAREAS AND RELEASE RATES | |
| Approved By: | Scale: 00 1" = 2500' | Situate In MOON TOWNSHIP, ALLEGHENY COUNTY, PENNSYLVANIA | |

## Appendix 23-F

## Maintenance Plan

The Stormwater Management Plan developed for the project is supplemented by this Maintenance Plan to help ensure continuing operation of all stormwater facilities.

The following is a list of items that shall be inspected and corrective action taken by the owner (owner (a)):

a. Owner refers to individual ultimately responsible for storm facility condition and function.

1. Outlet conditions in detention facility.

2. Storm sewer, swales, concrete gutters and other conveyance devices.

3. Catch basins, manholes and other stormwater catchment/transition structures.

4. Access for maintenance.

The following actions will be taken by the owner to help ensure the facilities shown on the plan and identified above are in working order:

1. Replace or repair facilities so as to function as intended.

2. Remove silt debris and trash in catch basin/storm sewers.

3. Repair outlet structures.

4. Remove any silt, debris and trash in detention facility.

5. Disposal of collected silt, debris and trash in a manner which will not adversely affect the environment.

6. Replace eroded material and re-vegetate eroded areas. Seed and mulch disturbed areas.

The corrective actions to be taken are not limited to those listed above.

## Stormwater Facilities

## Maintenance Plan

The inspection shall be undertaken by a minimum of two persons at least two times per year on or before March 1 and October 1. Additional inspections will be required if it becomes apparent facilities are not functioning properly. Corrective actions will then be taken within 30 days of the discovery of the deficiencies as required to help ensure continuing operation of stormwater facilities. Any deficiencies noted in items inspected by the owner shall be documented and corrective actions taken by the owner. This recommended maintenance plan shall not be considered a guarantee as to the adequacy of the stormwater management facilities in the future.

Moon Township may require other items to be included in the agreement where determined necessary to guarantee the satisfactory maintenance of all facilities. If stormwater facilities are not maintained by Moon Township, the owner shall maintain all facilities in accordance with the approved maintenance schedule and shall keep all facilities maintained in a safe and attractive manner. The owner shall convey to Moon Township easements and/or rights-of-way to assure access for periodic inspections by Moon Township and maintenance if required. The owner shall keep on file with Moon Township the name, address and telephone number of the person or company responsible for maintenance activities and an as-built drawing of all stormwater facilities. In the event of a change, new information will be submitted to Moon Township within 10 days of the change. The owner shall establish any special maintenance funds or other financing sources, in accordance with the approved maintenance plan. If the owner fails to maintain the stormwater control facilities, following due notice (30 days) by Moon Township to correct deficiencies, Moon Township shall perform the necessary maintenance or corrective work. The owner shall reimburse Moon Township for all costs associated with the required maintenance of the stormwater control facilities.

## Appendix 23-G

## Requirement for Erosion and Sediment Controls

Erosion and Sediment Control

A. No regulated earth disturbance activities within the Township shall commence until approval by the Township of an erosion and sediment control plan for construction activities.

B. The Pennsylvania Department of Environmental Protection (DEP) has regulations that require an erosion and sediment control plan for any earth disturbance activity of 5,000 square feet or more, under 25 Pa.Code §102.4(b).

C. In addition, under 25 Pa.Code, Chapter 92, a DEP "NPDES construction activities" permit is required for any earth disturbance 1 acre of more with a point source discharge to surface waters or the Township's storm sewer system, or 5 acres or more regardless of the planned runoff (hereinafter collectively referred to as "regulated earth disturbance activities"). This includes earth disturbance on any portion of, part of, or during any stage of, a larger common plan of development.

D. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office or County Conservation District must be provided to the Township. The issuance of an NPDES construction permit (or permit coverage under the statewide General Permit (PAG-2)) satisfies the requirements paragraph .A.

E. A copy of the erosion and sediment control plan and any required permit, as required by DEP regulations, shall be available for review at the project site at all times.

## Appendix 23-H

## Post-Construction Stormwater Runoff Controls for New Development and Redevelopment, Including Operations and Maintenance of Stormwater BMP's

Post-Construction Runoff Control Requirements

A. No regulated earth disturbance activities within the Township shall commence until approval by the Township of a plan which demonstrates compliance with State water quality requirements after construction is complete.

B. The BMPs must be designed to protect and maintain existing uses (e.g., drinking water use; cold water fishery use) and maintain the level of water quality necessary to protect those uses in all streams, and to protect and maintain water quality in "special protection" streams, as required by Statewide regulations at 25 Pa.Code, Chapter 93 (collectively referred to herein as "State water quality requirements").

C. To control post-construction stormwater impacts from regulated earth disturbance activities, State water quality requirements can be met by BMPs, including site design, which provide for replication of pre-construction stormwater infiltration and runoff conditions, so that post-construction stormwater discharges do not degrade the physical, chemical or biological characteristics of the receiving waters. As described in the DEP Comprehensive Stormwater Management Policy (#392-0300-002, September 28, 2002), this may be achieved by the following:

1. Infiltration: replication of pre-construction stormwater infiltration conditions.

2. Treatment: use of water quality treatment BMPs to ensure filtering out of chemical and physical pollutants from the stormwater runoff.

3. Streambank and Streambed Protection: management of volume and rate of post-construction stormwater discharges to prevent physical degradation of receiving waters (e.g., from scouring and erosion).

D. DEP has regulations that require municipalities to ensure design, implementation and maintenance of BMPs that control runoff from new development and redevelopment (hereinafter "development") after regulated earth disturbance activities are complete. These requirements include the need to implement post-construction stormwater BMPs with assurance of long-term operations and maintenance of those BMPs.

E. Evidence of any necessary permit(s) for regulated earth disturbance activities from the appropriate DEP regional office or County Conservation District must be provided to the Township. The issuance of an NPDES Construction Permit (or permit coverage under the statewide General Permit (PAG-2)) satisfies the requirements paragraph .A.

## Appendix 23-I

## Low Impact Development Practices
## Alternative Approach for Managing Stormwater Runoff

Natural hydrologic conditions may be altered radically by poorly planned development practices, such as introducing unneeded impervious surfaces, destroying existing drainage swales, constructing unnecessary storm sewers, and changing local topography. A traditional drainage approach of development has been to remove runoff from a site as quickly as possible and capture it in a detention basin. This approach leads ultimately to the degradation of water quality as well as expenditure of additional resources for detaining and managing concentrated runoff at some downstream location.

The recommended alternative approach is to promote practices that will minimize post-development runoff rates and volumes, which will minimize needs for artificial conveyance and storage facilities. To simulate pre-development hydrologic conditions, forced infiltration is often necessary to offset the loss of infiltration by creation of impervious surfaces. The ability of the ground to infiltrate depends upon the soil types and its conditions.

Preserving natural hydrologic conditions requires careful alternative site design considerations. Site design practices include preserving natural drainage features, minimizing impervious surface area, reducing the hydraulic connectivity of impervious surfaces, and protecting natural depression storage. A well-designed site will contain a mix of all those features. The following describes various techniques to achieve the alternative approach:

- **Preserving Natural Drainage Features**. Protecting natural drainage features, particularly vegetated drainage swales and channels, is desirable because of their ability to infiltrate and attenuate flows and to filter pollutants. However, this objective is often not accomplished in land development. In fact, commonly held drainage philosophy encourages just the opposite pattern - streets and adjacent storm sewers typically are located in the natural headwater valleys and swales, thereby replacing natural drainage functions with a completely impervious system. As a result, runoff and pollutants generated from impervious surfaces flow directly into storm sewers with no opportunity for attenuation, infiltration, or filtration. Developments designed to fit site topography also minimizes the amount of grading on site.

- **Protecting Natural Depression Storage Areas**. Depressional storage areas have no surface outlet, or drain very slowly following a storm event. They can be commonly seen as ponded areas in farm fields during the wet season or after large runoff events. Traditional development practices eliminate these depressions by filling or draining, thereby obliterating their ability to reduce surface runoff volumes and trap pollutants. The volume and release-rate characteristics of depressions should be protected in the design of the development site. The depressions can be protected by simply avoiding the depression or by incorporating its storage as additional capacity in required

detention facilities.

- **Avoiding Introduction of Impervious Areas**. Careful site planning should consider reducing impervious coverage to the maximum extent possible. Building footprints, sidewalks, driveways and other features producing impervious surfaces should be evaluated to minimize impacts on runoff.

- **Reducing the Hydraulic Connectivity of Impervious Surfaces**. Impervious surfaces are significantly less of a problem if they are not directly connected to an impervious conveyance system (such as storm sewer). Two basic ways to reduce hydraulic connectivity are routing of roof runoff over lawns and reducing the use of storm sewers. Site grading should promote increasing travel time of stormwater runoff, and should help reduce concentration of runoff to a single point in the development.

- **Routing Roof Runoff Over Lawns**. Roof runoff can be easily routed over lawns in most site designs. The practice discourages direct connections of downspouts to storm sewers or parking lots. The practice also discourages sloping driveways and parking lots to the street. By routing roof drains and crowning the driveway to run off to the lawn, the lawn is essentially used as a filter strip.

- **Reducing the Use of Storm Sewers**. By reducing use of storm sewers for draining streets, parking lots, and back yards, the potential for accelerating runoff from the development can be greatly reduced. The practice requires greater use of swales and may not be practical for some development sites, especially if there are concerns for areas that do not drain in a "reasonable" time. The practice requires educating local citizens and public works officials, who expect runoff to disappear shortly after a rainfall event.

- **Reducing Street Widths**. Street widths can be reduced by either eliminating on-street parking or by reducing roadway widths. Municipal planners and traffic designers should encourage narrower neighborhood streets which ultimately could lower maintenance.

- **Limiting Sidewalks to One Side of the Street**. A sidewalk on one side of the street may suffice in low-traffic neighborhoods. The lost sidewalk could be replaced with bicycle/recreational trails that follow back-of-lot lines. Where appropriate, backyard trails should be constructed using pervious materials.

- **Using Permeable Paving Materials**. These materials include permeable interlocking concrete paving blocks or porous bituminous concrete. Such materials should be considered as alternatives to conventional pavement surfaces, especially for low use surfaces such as driveways, overflow parking lots, and emergency access roads.

- **Reducing Building Setbacks**. Reducing building setbacks reduces driveway and entry walks and is most readily accomplished along low-traffic streets where traffic noise is not a problem.

- **Constructing Cluster Developments**. Cluster developments can also reduce the amount of impervious area for a given number of lots. The biggest savings is in street length, which also will reduce costs of the development. Cluster development clusters the construction activity onto less-sensitive areas without substantially affecting the gross density of development.

In summary, a careful consideration of the existing topography and implementation of a combination of the above-mentioned techniques may avoid construction of costly stormwater control measures. Other benefits include reduced potential of downstream flooding, water quality degradation of receiving streams/water bodies and enhancement of aesthetics and reduction of development costs. Beneficial results include more stable baseflows in receiving streams, improved groundwater recharge, reduced flood flows, reduced pollutant loads, and reduced costs for conveyance and storage.