ORDINANCE 166
STORMWATER MANAGEMENT ORDINANCE

ATTACHMENTS

' 100.1. Purpose.

The purpose of this Ordinance is to promote the public health, safety, and welfare by minimizing the damages described by these provisions designed to:

100.1.1. Manage and control stormwater runoff and erosion and sedimentation resulting from land alterations and disturbance activities by regulating activities that cause such problems;

100.1.2. Utilize and preserve the desirable existing natural drainage systems and to preserve the flood-carrying capacity of the streams;

100.1.3. Encourage natural infiltration of rainfall and runoff to preserve and recharge the supply of groundwater and stream flows;

100.1.4. Maintain the existing flows and quality of streams and watercourses in the Township and the Commonwealth;

100.1.5. Preserve and restore the flood carrying capacity of streams;

100.1.6. Provide for proper maintenance of all permanent stormwater management structures that are constructed in the Township.

100.1.7. Prohibit non-stormwater discharges into the Township's separate storm sewer system, except as provided herein or allowed under state or federal permit:

100.1.7.1. Discharges that may be allowed are:

- Discharges from fire fighting activities.
- Potable water sources, including dechlorinated water line and fire hydrant flushing.
- Irrigation drainage.
- Routine external building wash-down (which does not use detergents or other compounds).
- Air conditioning condensate.
- Water from individual residential car washing.
- Springs.
- Water from crawl space pumps.
- Uncontaminated water from foundation or footing drains.
- Flows from riparian habitats and wetlands.
- Lawn watering.

- Pavement wash-water 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.
- Dechlorinated swimming pool discharges.
- Uncontaminated groundwater.

100.1.7.2. In the event that the Township determines that any of the discharges identified in Section 100.1.7.1 significantly contribute to pollution of waters of the Commonwealth, or is so notified by the Pennsylvania Department of Environmental Protection, the Township will notify the responsible party to cease the discharge.

100.1.7.3. Upon notice provided by the Township under Section 100.1.7.2, 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.

100.1.7.4. Nothing in this Section shall affect a discharger's responsibility under state law.

100.1.7.5. The following connections are prohibited, except as provided in Section 100.1.7.1 above:

100.1.7.5.1. Any drain or conveyance, whether on the surface or subsurface, which allows any non-stormwater 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.

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

' 100.2. Authority.

This Ordinance is enacted under the authority of the Act of October 4, 1978, P.L. 864 (Act 167), the Stormwater Management Act, the Pennsylvania Municipalities Planning Code, 53 P.S. □ 10101 et seq. and the Second Class Township Code, 53 P.S □ 65101 et seq.

' 100.3. Applicability.

The following activities are included within the scope of this Article:

100.3.1. Land development;

100.3.2. Subdivision;

100.3.3. Earthmoving involving commercial development of one (1) acre or more or residential development of three (3) acres or more.

100.3.4. Agricultural operations;

100.3.5. Construction of new or additional impervious or semi-pervious surfaces (driveways, parking lots, etc.);

100.3.6. Construction of new buildings or additions to existing buildings;

100.3.7. Forest management operations.

100.3.8. Nursery operations;

100.3.9. Diversion or piping of any natural or man made stream channel;

100.3.10. Installation of stormwater systems or appurtenances thereto; and

100.3.11. Mining operations.

' 100.4. Definitions.

The following is a list of definitions used in this Ordinance. For the purposes of this Ordinance, these terms shall be defined as follows:

BCCD - Beaver County Conservation District; organization responsible for erosion and sedimentation control and NPDES permitting.

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.

ACT - The Stormwater Management Act (Act of October 4, 1978 P.L. 864 No. 167; 32 P.S. 5680.1-680.17, as amended by Act of May 24, 1984, No. 63).

APPLICANT - A landowner owner, developer, or other person who has filed an application for approval to engage in any regulated earth disturbance activity at a project site in the Municipality.

BASIN - A defined area depression in the surface of the land within a watershed or subwatershed where water collects.

BMP (BEST MANAGEMENT PRACTICE) – 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 Ordinance. BMPs include, but are not limited to, infiltration, filter strips, low impact design, bio-retention, wet ponds, permeable paving, grassed swales, sand filters, and detention basins.

CHANNEL - A natural stream that conveys water; a ditch or open channel excavated to convey water.

CONDUIT – Any watercourse intended for the conveyance of water, whether open or closed.

CONSERVATION DISTRICT - The Beaver County Conservation District.

COUNTY - The County of Beaver, Pennsylvania.

CULVERT - A pipe, conduit, or similar structure, including appurtenant works, which carries surface water or a stream under or through embankment or fill.

DEP – The Pennsylvania Department of Environmental Protection.

DESIGN STORM - The magnitude and distribution of precipitation for a rainfall event measured in probability of frequency of occurrence (e.g., 50-year storm) and duration (e.g., 24-hour) and used in analyzing and designing stormwater management control systems.

DETENTION - The slowing, dampening, or attenuating of runoff entering the natural drainage pattern or storm drainage system by temporarily holding it in surface or subsurface areas such as detention basins, reservoirs, rooftops, streets, parking lots, or within the drainage system itself, and releasing the water at a desired rate of discharge.

DETENTION BASIN - A basin designed to retard stormwater runoff by temporarily

storing the runoff and releasing it at a predetermined rate. A detention basin can be designed to drain completely after a storm event.

DETENTION STORAGE - The temporary detaining or storage of stormwater in reservoirs, on rooftops, in streets, parking lots, or other areas under predetermined and controlled conditions, with the rate of drainage therefrom regulated by appropriately installed devices.

DEVELOPER - Any person, persons, corporation, partnership, association, or other entity or any responsible party or person therein or agent therefore that undertakes the activities regulated by this ordinance. 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.

DEVELOPMENT - Any activity, construction, alteration, change in land use, or similar action that affects stormwater runoff characteristics.

DEVELOPMENT SITE – A lot, parcel, or tract of land on which development is taking place or is proposed.

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 (C.F.S.), million gallons per day (M.G.D.), gallons per minutes (G.P.M.), or cubic meters per second (C.M.S.).

DIVERSION TERRACE - A channel and a ridge constructed to a predetermined grade across a slope, and designed to collect and divert runoff from slopes that are subject to erosion.

DRAINAGE - Interception and removal of excess surface water or ground water 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 - Any activity involving the changing, grading or transportation of fill from or on to land, or any other activity which causes an increase in the exposure of land to the danger or erosion.

EFFLUENT - The discharge or outflow of water from ground or subsurface storage.

EMBANKMENT (FILL) - A bank of earth, rock or other material above the natural ground surface.

ENGINEER (TOWNSHIP ENGINEER) - A professional engineer duly appointed as the engineer for the Township.

ERODIBLE - Susceptible to erosion.

EROSION - The natural process by which the surface of the land is worn away by the action of water, wind, ice, chemical action, or other geological agents, including gravitational creep.

EROSION AND SEDIMENT CONTROL PLAN - A plan for a project site that identifies BMPs to minimize accelerated erosion and sedimentation.

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

FLOOD HAZARD AREA (ZONE) - That portion of a floodplain that is subject to inundation under Intermediate Regional Flood (100-year frequency flood) conditions. Such a flood has a one percent annual chance of occurring each year.
FLOODPLAIN - A normally dry land area adjacent to stream channels that is susceptible to being inundated by over bank stream flows. For regulatory purposes

the Flood Plain Management Act (Act of October 4, 1978, P.L. 851, No. 166) and regulations pursuant to the act define floodplain as the area inundated by a 100-year flood and delineated on a map by FEMA (Federal Emergency Management Agency).

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

FLOOD CONTROL PROJECT - Any device or structure designed and constructed to protect a designated area from flood flows of a specified (design storm) magnitude and probability (frequency) of occurrence.

FLOOD HAZARD AREA - A normally dry land area that has been and is susceptible to being inundated by surface or subsurface flow in addition to stream over bank flows. For regulatory purposes the Flood Plain Management Act (Act of October 4, 1978, P.L. 851, No. 166) and regulations pursuant to the act define flood hazard areas identified by FEMA (as shown on the floodplain map) as being subject to flooding by a 100-year flood.

GROUND WATER - That part of the subsurface water that is within the zone of saturation.

GROUND-WATER RECHARGE - Replenishment of existing underground water supplies.

HYDRAULIC CHARACTERISTICS - The features of a watercourse that determine its water conveyance capacity. These include size and configuration of a cross section of the watercourse, alignment of the watercourse, gradient of the 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.

HYDROGRAPH - A plot of the discharge of stream flow, discharge, or runoff versus time. Also, a graph showing, for a given point in any drainage system, the discharge, stage, or other property of water in respect to time.

HYDROLOGY - The science dealing with the waters of the earth and their distribution and circulation through the
atmosphere. Engineering hydrology deals with the application of hydrologic

concepts to the design of projects for use and control of water.

IMPERVIOUS MATERIAL - Material that resists the entrance or passing through of water or other liquids.

IMPERVIOUS SURFACE - A surface that prevents the infiltration of water into the ground.

INFILTRATION - The penetration and movement of water through the earth's surface.

INFILTRATION STRUCTURES - A structure designed to direct runoff into the ground, e.g., french drains, seepage pits, or seepage trench.

INTERCEPTION - Precipitation that is retained by the leaves and stems of vegetation.

LAND DEVELOPMENT - (i) The improvement of one (1) lot or two (2) or more contiguous lots, tracts, or parcels of land for any purpose involving (a) one (1) or more buildings, or (b) a division or allocation of land or space between or among two (2) or more existing or prospective occupants by means of, or for the purpose of, streets, common areas, leaseholds, and condominiums, building groups, or other features; (ii) a subdivision of land.

LAND DISTURBANCE - Any activity involving grading, digging, or filling or stripping of vegetation; or any other activity which causes land to be exposed to the danger of erosion.

MINING – Underground and open cut strip-mining activities.

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

MUNICIPALITY - Township of New Sewickley, Beaver County, Pennsylvania.

NEW SEWICKLEY MS4 STORMWATER AREAS – MS4-1: Harvey Run – 9th Street Area; MS4-2: Route 989 Area; and MS4-3: Sunflower Corners Area (all located within the Township).

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 U.S. Department of Agriculture, Natural Resources Conservation Service, formerly the Soil Conservation Service

OUTFALL - "Point source" as described in 40 CFR 122.2 at the point where the Township's storm sewer system discharges to surface waters of the Commonwealth.

OUTLET CONTROL STRUCTURE - A structure designed to control the volume of stormwater runoff that passes through it during a specific length of time.

PADEP - Pennsylvania Department of Environmental Protection, formerly the Pennsylvania Department of Environmental Resources

PEAK DISCHARGE - The maximum rate of flow of water at a given point resulting from a naturally occurring storm or which may result from a naturally occurring storm or which may result from a design storm.

PERFORMANCE STANDARD - A standard which established 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.

PERVIOUS MATERIALS - Material that permits the passage or entrance of water or other liquid.

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 – Instantaneous measurement of water flow expressed in a unit of volume per unit of time, also referred to as discharge. Usually stated in cubic feet per second (cfs) or gallons per minute (gpm).

REDEVELOPMENT - Earth disturbance activities on land that has previously been disturbed or developed.

REGULATED EARTH DISTRUBANCE ACTIVITY - Earth disturbance activities impacting one acre or more with a point source discharge to surface waters or the

Township's storm sewer system, or five 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 or 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 that provides for storage of stormwater runoff and controlled release of this runoff during and after a storm.

ROAD MAINTENANCE - Earth disturbance activities within the existing road right-of-way, such as grading and repairing existing unpaved road surfaces, cutting road banks, cleaning or clearing drainage ditches and other similar activities.

RETENTION BASIN - A basin designed to retard stormwater runoff by providing storage during the storm and allowing the runoff to percolate into the ground and/or to control the release of this runoff after the storm event. A Retention Basin is often designed to contain a permanent pool of water, and may be used as an irrigation pond.

RUNOFF - That part of precipitation that flows off the land without filtering into the soil.

RUNOFF CHARACTERISTICS - The surface components of any watershed that affect the rate, amount, and direction of stormwater runoff. These may include, but are not limited to, vegetation, soil, slopes, and man-made landscape alteration.

SCS - Soil Conservation Service, U.S. Department of Agriculture, now known as the Natural Resources Conservation Service (NRCS).

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, sediment, or other material carried in a stream or channel.

SEEPAGE PIT/SEEPAGE TRENCH - An area of excavated earth filled with loose stone or similar material and into which surface water is directed for infiltration into

the ground.

SEMI-PERVIOUS SURFACE - A surface such as stone, rock, concrete or similar materials that permits some vertical transmission of water.

SEPARATE STORM SEWER SYSTEM - A conveyance or system of conveyances (including roads with drainage systems, municipal roads, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) primarily used for collecting and conveying stormwater runoff.

SMALL DEVELOPMENT - A small development as defined in Section 100.9.

SLOPE - Degree of deviation of a surface from the horizontal, usually expressed in percent or degrees.

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 and found in its publication Urban Hydrology for Small Watersheds, Technical Release No. 55, SCS, June 1986 (or most current edition).

STATE WATER QUALITY REQUIREMENTS - As defined under state regulations – protection of *designated* and *existing* used (See 25 PA Code Chapters 93 and 96) – including:

A. 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.

B. "Existing uses" are those attained as of November 1975, regardless whether they have been designated in Chapter 93. Regulated earth disturbance activities must be designated 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.

C. 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 system of pipes or other conduits 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 - Drainage runoff from the surface of the land resulting from precipitation or snow or ice melt.

STORMWATER DRAINAGE FACILITY - Any element in a stormwater drainage system that is made or improved by man.

STORMWATER MANAGEMENT PLAN - The plan for managing stormwater runoff as required by this Ordinance, and/or other applicable state or county regulations.
STORMWATER MANAGEMENT DISTRICTS – MS4 storm water districts.

STORMWATER RUNOFF - Water 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.

STREAM - A natural watercourse.

STRUCTURE - Any manmade 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.

SUBDIVISION - A division or re-division of a lot, tract or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, transfer of ownership or building or lot development: provided, however, that the division of land for agricultural purposes into parcels of more than ten (10) acres, not involving any new street or easement of access, shall be exempt.

SUB-SHED - A defined area within a designated watershed that drains to a specific point.

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 that gathers or carries surface water runoff.

TOWNSHIP – New Sewickley Township, Beaver County, Pennsylvania.

TIME OF CONCENTRATION - The time period necessary for surface runoff to reach the outlet of a subarea.

VOLUME OF STORMWATER RUNOFF - Quantity of water normally measured in inches, cubic feet, or acre feet, measured or determined analytically from runoff coefficients, rainfall/runoff ratios, or areas underneath the plotted lines of hydrographs.

WATERCOURSE (WATERWAY) – A permanent stream; intermittent stream, river, brook, creek, channel, or ditch, having a defined bed and banks with perennial or intermittent flow, for the conveyance of water whether natural or manmade.

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 PADEP and approved by the Environmental Quality Board for which counties are required to develop Watershed Stormwater Management Plans.

WATERSHED STORMWATER MANAGEMENT PLAN - The plan for managing stormwater runoff throughout a designated watershed adopted by the County as required by the Act.

' 100.5. Stormwater management districts.

100.5.1. In order to implement the provisions of the Stormwater Management Plan, as required by DEP under the Township's MS4 NPDES storm water permit, the Township is hereby divided into three (3) storm water management districts that have been defined by DEP for the purposes of this program. These districts have been identified on the various maps included as Exhibit 1.

100.5.2. When a project or land disturbance activity is located in more than one stormwater management district, stormwater may not be transferred from a district with stricter stormwater management criteria to a district with less strict criteria, unless the need for such a transfer is identified in the Stormwater Management Plan, the regional water quality management plan or the state water plan.

' 100.6. Standards and criteria.

100.6.1. The following provisions shall be considered the overriding performance standards against which all proposed stormwater control measures shall be evaluated, and they shall apply to all watersheds and sub-sheds within the Township.

100.6.1.1. Any landowner and any person engaged in the alteration or development of land that 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 such actions as are required:

100.6.1.1.1. To assure that the maximum rate of stormwater runoff (for each frequency storm event required by this Ordinance to be monitored and controlled) is no greater after development than prior to development activities;

100.6.1.1.2. To manage the quantity, velocity, and direction of resulting stormwater runoff in a manner which otherwise adequately protects health and property from possible injury. Said measures shall be in accordance with the criteria hereinafter provided. Such measures may include, but are not limited to the following: detention basins; retention basins; roof-top storage; parking lot and street ponding; seepage pits; seepage trenches; or other infiltration structures; porous pavement and concrete lattice block surfaces; grassed channels and regulated strips; cisterns and underground reservoirs; routing flow over grass; and decreased impervious area coverage. The use of other control methods that meet the criteria in this

Section will be permitted when approved by the Township Engineer and Supervisors. Various combinations of methods may be tailored to suit the particular requirements of the type of development and the topographic features of the project area.

100.6.1.2. The stormwater management plan for the development site must consider stormwater runoff flowing across the site from upland areas as well as the runoff originating from the site itself.

100.6.2. Specific standards.

100.6.2.1. The stormwater performance standards contained in this Section are intended to implement the standards and criteria as required by DEP as part of its MS4 NPDES storm water management program. These standards shall apply to all MS4 watersheds within the Township.

100.6.2.1.1. Storm selection. Five selected frequency storms (i.e., 2-, 5-, 10-, 25-, and 100-year storm events of 24-hour duration) and two (2) land use scenarios (existing and post-development conditions) shall be used for analyzing stormwater runoff. Table 1 summarizes the rainfall associated with each storm magnitude.

TABLE 1
Rainfall for Selected Magnitudes

Design Storm Frequency	Probability Of Exceedence	Rainfall Depth In Inches
2-Year	50%	2.60
5-Year	20%	3.30
10-Year	10%	3.80
25-Year	4%	4.40
100-Year	1%	5.00

Note: 1. Probability of exceedence of a storm indicates the probability of that size storm or a larger storm occurring in any given year.

2. Rainfall amounts taken from Urban Hydrology for Small Watersheds, SCS Technical Report No. 55 (TR-55), Appendix B, June 1986.

100.6.2.1.2. Release rate percentage.

100.6.2.1.2.1. Application. All subdivision and land development activities that result in an increase in the post-development peak rate or volume of stormwater runoff from any outfall on the development site shall be subject to the release rate percentage for the MS4 watershed plan.

100.6.2.1.2.1.1. The release rate for all MS4 watershed or storm water districts is 100 percent. Compute the pre- and post-development runoff hydrographs for each location where stormwater leaves the development site using an acceptable hydrological procedure model, for 2-, 5-, 10-, 25-, and 100-year 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 hydrograph is identical to the pre-development hydrograph, then additional stormwater control shall not be required at that outfall. If the post-development peak runoff rate and volume are greater than the pre-development peak runoff rate and volume, then stormwater management controls will be required and the calculations must be performed.

100.6.2.1.2.1.2. Multiply the sub-shed's release rate percentage by the pre-development rate of runoff from the development site to determine the maximum allowable release rate from the site for the five (5) different storm events.

100.6.2.1.3. **No Harm Evaluation**.

100.6.2.1.3.1. An applicant may seek to exceed the otherwise applicable sub-shed release rate percentage by performing the "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.

100.6.2.1.3.2. 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 Section 100.6.2 and Sections 100.7 and 100.8 of this Article, according to the procedure set forth in Appendix D to this Article, entitled "No Harm Option."

100.6.3. Erosion and sedimentation.

All land disturbance activities shall be conducted in such a way as to minimize accelerated erosion and resulting sedimentation. Measures to control erosion and sedimentation shall at minimum meet the standards of the BCCD and Chapter 102 (Erosion Control) of Title 25, Rules and Regulations, of the PADEP.

100.6.3.1. No Regulated Earth Disturbance activities within the Township shall commence until the Township has approved the Erosion and Sediment Control Plan for construction activities.

100.6.3.2. The PADEP 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).

100.6.3.3. In addition, under 25 Pa. Code Chapter 92, a PADEP "NPDES Construction Activities" permit is required for any earth disturbance one acre or more with a point source discharge to surface waters or the Township's storm sewer system, or five 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 developments.

100.6.3.4. Evidence of any necessary permit(s) for Regulated Earth Disturbance Activities from the PADEP Southwest Regional Office or the BCCD must be provided to the Township. The issuance of an NPDES Construction Permit (or permit coverage under the statewide General Permit (PAG-2)) satisfies these requirements.

100.6.3.5. A copy of the Erosion and Sediment Control Plan and any required permits, as required by the PADEP regulations, shall be available at the project site at all times.

' 100.7. General design criteria.

100.7.1. Applicants may select runoff control techniques, or a combination of techniques, which are most suitable to control stormwater runoff from the development site. All controls must be subject to approval of the Township Engineer. The Township Engineer may request specific information, design and/or operating features of the proposed stormwater controls in order to determine their suitability and adequacy in terms of the standards of this Ordinance. No Regulated Earth Disturbance activities shall commence within the Township until a plan that demonstrates compliance with State Water Quality Requirements after construction is complete and has been approved by the Township.

100.7.1.1. The Township may through a formal agreement with BCCD transfer some or all of the Township Engineer's review and approval responsibilities of this Ordinance.

100.7.2. In selecting and designing stormwater management systems and controls, applicants may be guided by the following references:

- "Urban Hydrology for Small Watersheds", Technical Release No. 55, USDA, Soil Conservation Service, 1975 (or most recent edition).
- "Erosion and Sediment Pollution Control Program Manual", Pennsylvania Department of Environmental Resources, March 2000 (or most recent edition).
- "Standards and Specifications for Soil Erosion and Sediment Control", Maryland Water Resources Administration, 1983.
- "Urban Stormwater Management", Special Report No. 49, American Public Works Administration, 1981.
- "Water Resources Protection Measures in Land Development A Handbook, University of Delaware Water Resources Center, April 1974.
- "Design and Construction of Sanitary and Storm Sewers", WPCF Manual of Practice No.9, Water Pollution Control Federation, 1970.

100.7.2.1. Methods of Stormwater Runoff Detention and Control: The following is a list of detention and control methods that may be used in stormwater management systems, if appropriate. The choice of control techniques is not limited to those appearing on this list or in Appendices A and C. The use of control methods not listed herein, but which meet the criteria in this section, shall be permitted when approved by the Township Engineer. Various combinations of methods should be

designed to suit the particular requirements of the type of development and the topographic features of the project area.

- Detention Facilities – See Section 100.7.4.
- Roof-top storage.
- Parking lot and street storage.
- Seepage pits, seepage trenches, level spreaders, or other infiltration structures.
- Porous pavement and concrete lattice block surfaces.
- Grassed channels and vegetated strips.
- Routed flow over grass.
- Decreased impervious area coverage.

100.7.2.2. Maintenance of Natural Drainage Ways: All natural streams, channels, swales, drainage systems and/or areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the Township. All encroachment activities shall comply with the requirements of Chapter 105 (Water Obstruction and Encroachments) of Title 25, Rules and Regulations of the Pennsylvania Department of Environmental Protection.

100.7.2.3. If the performance of a stormwater management control is dependent upon specific soil or geologic conditions at the site such as infiltration or filtration, an in-depth site-specific study by a competent geotechnical engineer, soil scientist, or hydrogeologist shall be conducted to demonstrate that the conditions required for adequate performance of the control will exist.

100.7.3. The applicant should consider the effect on the proposed stormwater management techniques of any special soil conditions or geological hazards that may exist on the development site. In the event such conditions are identified on the development site, the Township Engineer may require in-depth studies by a competent geotechnical engineer. Not all stormwater control methods may be advisable or allowable at a particular development site.

100.7.4. Criteria for stormwater detention facilities.

100.7.4.1. If detention facilities are utilized for the development site, the facility(s) shall be designed such that the post-development peak runoff rates from the developed site are controlled to those rates defined by the sub-shed release rate percentage or "No Harm Evaluation" for the 2-, 5-, 10-, 25-, and 100-year storm events.

100.7.4.2. All detention facilities shall be equipped with outlet structures

to provide discharge control for the 2-, 5-, 10-, 25-, and 100-year storm events. Provisions shall also be made for safely passing the post-development 100-year storm runoff flows without damaging (i.e., impairing the function of) the facilities.

100.7.4.3. Shared storage facilities, which provide detention of runoff for more than one (1) development site, may be considered within a single sub-shed. Such facilities shall meet the design criteria contained in this Section. In addition, runoff from the development sites involved shall be conveyed to the facility in a manner that avoids adverse impacts, such as flooding or erosion, to channels and properties located between the development site and the storage facilities.

100.7.4.4. Where detention facilities will be utilized, multiple-use facilities, such as lakes, ball fields, or similar recreational uses, may be permissible as long as the welfare and safety of human life is protected.

100.7.4.5. Design Features / Criteria.

100.7.4.5.1. As a general rule, detention facilities shall be designed as dry basins, although wet facilities shall be considered in specific situations where they can be shown to represent a significant amenity to the development and/or the Township.

100.7.4.5.2. Except in approved wet basins; stormwater detention basins shall be designed to drain completely. All interior portions of the basin shall slope toward the outlet or low flow sluice at a minimum slope of two percent (2%).

100.7.4.5.3. In general, basins shall be designed to have a design water depth as shallow as possible.

100.7.4.5.4. All detention facilities involving an earth embankment shall be designed with a minimum free board of one (1) foot between the peak emergency spillway design flow elevation and the top of the embankment.

100.7.4.5.5. All embankments shall be designed according to sound engineering practice for such structures and shall meet the approval of the

Township. Facilities with a design water depth in excess of ten feet shall require a supporting report from a Professional Engineer (design engineer) experienced in the design of earth embankments, and shall be constructed under the supervision of the design engineer.

100.7.4.5.6. The slopes of the embankment shall not exceed two horizontal to one vertical. The total slopes of the structure should not exceed a total of five (5) to one (1) horizontal to vertical. (e.g. If the exterior slope is 2:1, the interior slope must be at least 3:1.)

100.7.4.5.7. Except where special erosion protection measures are provided, all disturbed areas shall be graded evenly, topped with four (4) inches of topsoil, fertilized, and mulched by methods approved by the Township.

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

100.7.4.5.9. Outlet control structures shall be constructed of reinforced concrete (cast-in-place, precast, or block) and provided with debris grates (trash racks) approved by the Township Engineer.

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

100.7.4.5.11. All detention facilities shall be provided with an access road (with a legal easement) for maintenance purposes. Such roads shall be a minimum of ten feet wide and have a maximum grade of fifteen percent (15%). At the access road terminus, adequate “turn around” provisions for maintenance vehicles shall be provided.

100.7.4.5.12. Control and removal of debris both in the storage facility and in all inlet or outlet devices shall be a design consideration.

100.7.4.5.13. Inflow and outflow structures, pumping stations, and other structures shall be protected and designed to minimize safety hazards.

100.7.4.5.14. 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 as-built drawing shall also provide specific details (e.g. opening sizes and invert elevations) for all inlet and outlet structures / devices included within the detention facility. The drawing shall be stamped by a registered Professional Engineer and submitted to the Township within sixty days of the completion of the facility. No facility shall be accepted until this requirement has been fulfilled.

100.7.4.6. Other considerations which should be incorporated into the design of the detention facilities:

100.7.4.6.1. Inflow and outflow structures shall be designed and installed to prevent erosion, and bottoms of impoundment type structures should be protected from soil erosion.

100.7.4.6.2. Appropriately landscaped fencing shall be provided unless side slopes are (4:1) horizontal to vertical or flatter. A minimum 4-foot high split rail fence with vinyl coated wire mesh (chain link) backing shall be provided. The wire mesh shall have a maximum opening of 2 inches. Fencing shall include adequate and appropriately sized access gates (minimum 10 feet wide) for maintenance purposes.

100.7.4.6.3. Landscaping that harmonizes with the surrounding area and requires minimal maintenance is required. Details of per project landscaping requirements shall be as negotiated with the Township.

100.7.4.6.4. The facility(s) shall be located to facilitate maintenance, considering the frequency and type of equipment that will be required.

100.7.5. Criteria for Collection/Conveyance Facilities

100.7.5.1. As a general rule, 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.

100.7.5.2. The design for culverts, pipes, and other stormwater

conveyance structures shall be consistent with the design of the other stormwater management facilities.

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

100.7.5.4. 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.

100.7.6. Criteria for Dry Sumps.

100.7.6.1. All dry sumps designed for accepting surface water from roof or driveway areas shall be designed according to the Township's standard drawings.

100.7.6.2. Each sump shall be designed to store a minimum water volume equivalent to two inches of water covering the tributary area. For example, a sump for a 1,200 square foot roof area would be designed to store a water volume of 200 cubic feet. The total storage area, assuming the sump is sixty percent (60%) rock and forty percent (40%) voids, would be 500 cubic feet. The contents of the dry sump (e.g. rock) shall be completely wrapped with geotextile fabric.

100.7.6.3. 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.

100.7.6.4. Dry sumps shall be constructed in undisturbed ground only. No dry sumps shall be permitted in fill material.

100.7.6.5. The minimum distance between a dry sump and the property line shall be twenty (20) feet.

100.7.6.6. Dry sumps shall not be permitted in or upslope of areas determined to be susceptible to landslides.

100.7.7. Post-Construction Stormwater Runoff Controls for New Development and Redevelopment.

100.7.7.1. Post-construction 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").

100.7.7.2. 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 PADEP's Comprehensive Stormwater Management Policy (#392-0300-002, September 28, 2002), this may be achieved by the following:

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

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

100.7.7.2.3. 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).

100.7.7.3. The PADEP 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 operation and maintenance of those BMPs. Additional information regarding operation and maintenance of BMPs may be found in Appendix B.

' 100.8. Stormwater plan requirements.

No final subdivision or land development plan shall be approved, no permit

authorizing construction issued, nor any earthmoving or land disturbance activity initiated until the final stormwater management plan for the development site is approved in accordance with the provisions of this Ordinance.

100.8.1. Exceptions for Small Developments

100.8.1.1. At the time of application, the Township shall determine if the subdivision or land development qualifies as a "small development" (see Section 100.9 of this Ordinance for the definition and specifics of a small development) and, therefore, is eligible for a simplified stormwater plan submission.

100.8.1.2. Small developments may be exempt from the preparation of a formal stormwater management plan as specified herein. However, such developments shall still provide safe management of stormwater runoff.

100.8.1.3. Applications for small developments shall include a plan that describes, narratively and graphically, the type and location of proposed on-site stormwater management techniques or the connection to an existing storm sewer system. The plan should show accurately site boundaries; contours at five-foot intervals for areas of greater than twenty five percent (25%) slope gradient and at two-foot intervals for areas with less than twenty five percent (25%) slope; 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.

100.8.1.4. Stormwater management plans for small developments do not have to be prepared by a registered professional engineer. Whenever the submission of runoff calculations are required by the Township Engineer, they shall be prepared in accordance with this Ordinance.

100.8.1.5. The Township Engineer shall review and approve the proposed provisions for stormwater management for a small development. Where the applicant is proposing to connect to an existing storm sewer, the applicant shall demonstrate that sufficient capacity exists in the storm sewer from the point of connection to the point of outlet in the natural drainage system. The Township Engineer shall determine if the proposed development site is part of a larger parcel or tract for which a stormwater management plan was approved previously, and, therefore, subject to any specific stormwater management control contained in the prior plan.

100.8.2. Preliminary plan contents.

100.8.2.1. General. Five (5) copies of the preliminary stormwater management plan shall be filed together with the application for preliminary subdivision or land development approval. The plan shall be prepared by or under the direction of a Pennsylvania licensed professional civil or sanitary engineer using the general requirements for plan format contained in this Section and in the Subdivision regulations and shall contain the following elements:

100.8.2.1.1. A written description of the proposed development and the stormwater management plan proposed for it.

100.8.2.1.2. A location map at a scale and detail to identify the project site as it relates to the watershed basin in which it is located.

100.8.2.1.3. A site plan with contours at intervals of 2' or 5' (see Section 100.8.2.6. of this Ordinance). If these contours are closer than 1/4" to each other, a larger contour interval will be approved by the reviewing agency for those areas of the plan.

100.8.2.1.4. Calculations shall be indexed and all charts, figures, tables, etc. obtained from hydraulic texts and manuals shall be referenced.

100.8.2.1.5. Detailed plans, sections, details, etc., as required to construct the proposed stormwater management control facility(s).

100.8.2.1.6. Discussion of the proposed BMP facilities designed to control the stormwater runoff from the proposed impervious areas to address water quality concerns.

100.8.2.1.7. A Post-Construction Stormwater Management Plan addressing operation and maintenance issues, water quality controls, and the anticipated stormwater runoff benefit to the project.

100.8.2.1.8. All plans shall be sealed by a Pennsylvania registered professional engineer when submitted.

100.8.2.2. Watershed location: Provide a key map showing the development site's location within the designated MS4 watershed and watershed sub-

shed, if applicable. On all site drawings, show the boundaries of the watershed(s) and sub-sheds as they are located on the development site and identify watershed names and/or sub-shed number(s), if applicable.

100.8.2.3. Floodplain features: Identify the 100-year floodplain(s) and the floodway(s) on the development site based on the FEMA maps or determine the 100-year floodplain for any watercourse or water body on the development site.

100.8.2.4. Natural features: Show all 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.

100.8.2.5. Soils. Provide an overlay showing soil types and boundaries within the development site.

100.8.2.6. Contours. Show existing and final contours at intervals of two (2) feet. In areas with slopes greater than 15%, five-foot contour intervals may be used.

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

100.8.2.8. Professional certification. The stormwater management plan (including all calculations) must be prepared and sealed by a Pennsylvania registered professional engineer with training and expertise in hydrology and hydraulics. Documentation and qualifications may be required by the Township.

100.8.2.9. Runoff calculations. Calculations for determining pre- and post-development discharge rates and for designing proposed stormwater control facilities must be submitted with the stormwater management plan. All calculations shall be prepared using the method and data prescribed by Sections 100.6. and 100.7. of this Ordinance.

100.8.2.10. Stormwater controls. All proposed runoff control measures must be shown on the plan, including methods for collecting, conveying, infiltrating, filtering, detaining, storing, and improving the quality of stormwater runoff on-site which are to be used both during and after construction. Allegheny County

Conservation District approved erosion/sedimentation controls shall be shown. The preliminary plan should provide information on the general type, location, sizing, etc., of all proposed facilities and their relationship to the existing watershed drainage system.

100.8.2.10.1. If the development is to be constructed in stages, the applicant must demonstrate that stormwater facilities will be installed to manage stormwater runoff safely during each stage of development.

100.8.2.11. Easements, rights-of-way, deed restrictions. 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. Show any areas subject to special deed restrictions relative to or affecting stormwater management on the development site.

100.8.2.12. Other permits/approvals. A list of any approval/permits relative to stormwater management that will be required from other governmental agencies (e.g., an obstructions permit from PADEP) and anticipated dates of submission/receipt should be included with the preliminary plan submission. Copies of said applications may be requested by the Township when they may be helpful for the stormwater review.

100.8.2.13. Maintenance program. The preliminary application shall contain a proposed maintenance plan for all stormwater control facilities in accordance with the following:

100.8.2.13.1. Identify the proposed ownership entity (e.g., property owner, homeowners' association, or other management entity). If the facility is to be owned, operated, and maintained by other than the Township, an Operation and Maintenance Agreement, similar to that included with Appendix B shall be provided.

100.8.2.13.2. Include an inspection and maintenance program for all facilities, outlining the type of maintenance activities, probable frequencies, personnel and equipment requirements, and estimated annual maintenance costs.

100.8.2.13.3. Identify a method of financing continuing operation and maintenance if the facility is to be owned by other than the Township or other governmental agency.

100.8.3. Final Plan Contents. Five (5) copies of the final stormwater management plan shall be submitted to the Township together with the application for final subdivision or land development approval. The final stormwater management plan shall contain:

100.8.3.1. All information pertaining to stormwater management from the preliminary plan along with any changes.

100.8.3.2. Final plan maps and drawings showing the exact nature and location of all temporary and permanent stormwater management controls along with design and construction specifications. Details for the construction of all facilities shall be included as part of the construction drawings.

100.8.3.3. A schedule for the installation of all temporary and permanent stormwater control measures and devices.

100.8.3.4. An accurate survey showing all current and proposed easements and rights-of-way, and copies of all proposed deed restrictions.

100.8.3.5. 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, as well as any legal agreements required to implement the maintenance program and copies of the maintenance agreement as specified by Section 100.12 of this Ordinance. If the facility is to be owned, operated, and maintained by other than the Township, an Operation and Maintenance Agreement, similar to that included with Appendix B shall be provided.

100.8.3.6. Financial guarantees, consistent with Section 100.12 of this Ordinance, to ensure that all stormwater controls will be installed properly and function satisfactorily.

100.8.4. Approval criteria.

100.8.4.1. The Township shall review all MS4 watershed storm water plans and revisions or amendments thereto. It shall approve the plan if it determines:

100.8.4.1.1. That the plan is consistent with the Township floodplain management plans, state programs which regulate dams, encroachments, and water obstructions, and state and federal flood control programs; and

100.8.4.1.2. That the plan is compatible with other watershed stormwater plans within the Township for the basin in which the watershed is located and is consistent with the policies and purposes of this Ordinance.

100.8.5. Plan review procedure.

100.8.5.1. Prior to submitting the preliminary plan, applicants are urged to consult with the Township Engineer on the requirements for safely managing stormwater runoff from the development site in a manner consistent with this Article and the County Stormwater Management Plan.

100.8.5.1.1. Applicants are encouraged to submit a sketch plan with a narrative description of the proposed stormwater management controls for discussion with the Township Engineer.

100.8.5.1.2. The pre-application phase is not mandatory, but encouraged, and any review comments provided by the Township Engineer are advisory only and do not constitute any legally binding action on the part of the Township.

100.8.5.2. With respect to stormwater management plans for the New Sewickley Township MS4 Watersheds, the Township Engineer shall approve or disapprove the preliminary and final stormwater management plan based on the requirements of this Ordinance, the standards and criteria of the watershed plan, and good engineering practice. The Township Engineer shall recommend to the Township in writing whether the preliminary or final plan, as applicable, shall be approved, disapproved or amended within sixty (60) days of its submission to the Township Engineer. Failure of the Township Engineer to render an opinion within the sixty (60) day time limit shall be deemed a favorable review, unless the applicant has agreed in writing to an extension of time. The Township Supervisors shall render its decision on the preliminary or final plan at a public meeting as part of the overall review and consideration on the preliminary and final application for subdivision or land development.

100.8.5.3. With respect to the New Sewickley MS4 Watersheds, the approval or disapproval of the site's stormwater management plan by the Township Engineer shall be considered final. The Township Supervisors shall not reverse the Township Engineer's determination by approving or disapproving the site's stormwater management plan or any specific control measure in contradiction to the Township Engineer's action. The Township's Supervisors can request modifications or alternative approaches to the stormwater management controls, provided these are agreed to by the Township Engineer.

100.8.5.4. No preliminary or final approval shall be granted for the overall subdivision or land development application until a stormwater management plan for the site has been approved.

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

100.8.5.4.2. 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.

100.8.5.5. When the subdivision or land development application requires an obstruction permit from the PADEP and/or an erosion and sedimentation permit from BCCD, final subdivision or land development plan approval shall be conditional upon receipt of such permits. However, no building permit shall be issued, nor construction started, until the permits are received and copies filed with the Township and the County agency.

100.8.6. Status of the plan after final approval.

100.8.6.1. Upon final stormwater management plan approval, the applicant may commence to install or implement the approved stormwater management controls, subject to the provisions of Section 100.8.4 above. If site development or building construction does not begin within two (2) years of the date of final approval of the subdivision or land development plan, then, before doing so, the applicant shall resubmit the stormwater management plans to verify that no

condition has changed within the watershed that would affect the feasibility or effectiveness of the previously approved stormwater management controls. If for any reason development activities are suspended for two (2) years or more, then the same requirements for resubmission of the stormwater management plan shall apply.

100.8.7. Stormwater plan modifications.

100.8.7.1. Request for modifications to the finally approved stormwater management controls shall be submitted to the Township Engineer as follows:

100.8.7.1.1. If the request is initiated before construction begins, the stormwater plan must be resubmitted and reviewed according to the procedures in Section 100.8.5 of this Ordinance.

100.8.7.1.2. 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: (a) the requested changes to stormwater controls do not result in any modifications to other approved Township land use/development requirements (such as required building set-backs, yards, etc.); and (b) the performance standards in Sections 100.6 and 100.7 are met. The Township Supervisors may issue a stay of stormwater plan modification within five (5) days and require the permittee to resubmit the plan modification for full stormwater review in accordance with procedures in Section 100.8.4.

' 100.9. Exemptions.

100.9.1. At the time of application, the Township shall determine if the subdivision or land development qualifies as a "small development" and therefore, are exempt from the requirements of Sections 100.6.2, 100.7 and 100.8 of this Ordinance. For the purposes of this Section, a small development is:

100.9.1.1. 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;

100.9.1.2. Land disturbance associated with existing one and two-family dwellings that disturb less than one acre of land for the total development;

100.9.1.3. Use of land for gardening for home consumption;

100.9.1.4. Agriculture, when operated in accordance with a conservation plan or erosion and sedimentation control plan prepared and approved by the BCCD; or

100.9.1.5. Forest management operations that are following the PADEP management practices contained in its publication, "Soil Erosion and Sedimentation Control Guidelines for Forestry" and are operating under an approved erosion and sedimentation control plan.

100.9.2. Subdivision of a parcel of land in order to meet the definition of a "small development" is not acceptable. A stormwater management plan is always required in the case of a subdivision under single ownership unless it meets the criteria in Section 100.9.1.

' 100.10. Permit requirements.

All land disturbance activities specified in Section 100.3, except those specifically exempt from permit requirements by Section 100.9, shall be conducted only after the issuance of a land disturbance permit.

100.10.1. The applicant shall obtain the required land disturbance permit after obtaining the required plan approval as specified in Section 100.8 of this Ordinance. This land disturbance permit will be issued by the Township concurrently with the final subdivision and land development approval.

100.10.2. In those cases where land disturbance will occur but the applicant does not require subdivision or land development approval, the land disturbance permit will be issued by the Township after the final stormwater management plan is approved as specified in Section 100.8 of this Ordinance.

100.10.3. All applications for permits required by this Ordinance shall be made on forms supplied by the Township. Such application shall provide a brief description of the stormwater management controls and the land disturbance activity. This application shall become part of the plan submission required by Section 100.8 of this Ordinance.

100.10.4. All land disturbance permits shall expire six (6) months from the date of issuance unless construction is commenced prior to that date.

100.10.5. A renewal of an expired land disturbance permit may be issued by the

Township following a resubmittal of the permit application form, and its approval by the Township Engineer.

100.10.6. The refusal of the Township to reissue an expired land disturbance permit shall contain the reasons for such refusal.

100.10.7. Any permit issued under this Ordinance may be suspended or revoked by the Township for:

100.10.7.1. Noncompliance with or failure to implement any provisions of the permit.

100.10.7.2. A violation of any provision of this Ordinance or any other applicable law, ordinance, rule or regulation relating to the project.

100.10.7.3. The creation of any condition or the commission of any act during construction or development which constitutes or creates a hazard or nuisance, or which endangers the life or property of others.

100.10.8. A suspended permit shall be reinstated by the Township when:

100.10.8.1. The Township Engineer has inspected and approved the corrections to the stormwater management control measure(s), or the elimination of the hazard or nuisance, and

100.10.8.2. The Township is satisfied that the violation of the ordinance, law, or rule and regulation has been corrected.

100.10.9. A permit that has been revoked by the Township cannot be reinstated. The applicant may apply for a new permit under the procedures outlined in this Ordinance.

' 100.11. Enforcement and penalties.

100.11.1. Inspection.

100.11.1.1. The Township Engineer or his/her representative shall inspect the construction of the temporary and permanent stormwater management control facilities for the development site. The permittee shall notify the Township Engineer forty-eight (48) hours in advance of the completion of the following key development phases:

100.11.1.1.1. Preliminary site preparation, including stripping of vegetation, stockpiling of topsoil, and construction of temporary stormwater management and erosion control facilities;

100.11.1.1.2. Rough grading, prior to the placement of topsoil, permanent drainage, or other site development improvements and ground covers;

100.11.1.1.3. Construction of the permanent stormwater facilities at times specified by the Township Engineer;

100.11.1.1.4. Installation of permanent stormwater management facilities, including established ground covers and plantings;

100.11.1.1.5. Final grading, vegetative control measures, or other site restoration work done in accordance with the approved plan and permit.

100.11.1.2. 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 must be made.

100.11.1.3. If, during construction, the contractor or permittee identifies any site conditions, such as a subsurface soil condition or alterations in surface or subsurface drainage, which could affect the feasibility of the approved stormwater facilities, he/she must notify the Township Engineer, building inspector, or the Township's designated agent within twenty-four (24) hours of the discovery of such condition and request a field inspection. The Township Engineer shall determine if the condition requires a stormwater plan modification.

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

100.11.2. Right of entry.

100.11.2.1. Upon presentation of proper credentials, duly authorized representatives of the Township and the Township Engineer may enter at reasonable

times upon any property within the Township to investigate or ascertain the conditions of the subject property in regard to any aspect regulated by this Ordinance.

100.11.2.2. In the event that an applicant, owner, subdivider, developer, or his/her agent fails to comply with the requirements of this Ordinance 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 the time specified, unless otherwise extended by the Township, the applicant, developer, owner, or his/her agent shall be subject to the enforcement remedies of this Ordinance. The land disturbance permit shall also be suspended or revoked, as applicable.

100.11.3. Public Nuisance. The violation of any provision of this Ordinance is hereby deemed a Public Nuisance. Each day that a violation continues shall constitute a separate violation.

100.11.4. Enforcement.

100.11.4.1. Whenever the Township determines that a person has violated a prohibition or failed to meet a requirement of this Ordinance, the Township may order compliance by written notice to the responsible party. Such notice may require without limitation:

- The performance of monitoring, analyses, and reporting;
- The elimination of prohibited discharges;
- Cessation of any violating discharges, practices, or operations;
- The abatement or remediation of stormwater pollution or contamination hazards and the restoration of any affected property;
- Payment of a fine to cover administrative and remediation costs;
- The implementation of stormwater BMPs;
- Operation and maintenance of stormwater BMPs.

100.11.4.2. Failure to comply within the time specified shall also subject such parties to the penalty provisions of this Ordinance. All such penalties shall be deemed cumulative and shall not prevent the Township from pursuing any and all other remedies available in law or equity.

100.11.4.3. Suspension and Revocation of Permits and Approvals. 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 governing body for non-compliance with or failure to implement any provision of the permit or for a violation of any provision of the Ordinance. 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.

100.11.4.4. Penalties.

100.11.4.4.1. Any person violating the provisions of this ordinance shall be guilty of a misdemeanor, and upon conviction shall be subject to a fine of not more than $100.00 for each violation, recoverable with costs, or imprisonment, or both. Each day that the violation continues shall be a separate offense unless the district justice further determines that there was a good faith basis for the person violating this Ordinance to have believed that there was no such violation. In such case there shall be deemed to have been only one such violation until the fifth day following the date of the district justice's determination of a violation; thereafter each day that a violation continues shall constitute a separate violation.

100.11.4.4.1.1. All judgments, costs, and reasonable attorney fees colleted for the violation of this Ordinance shall be paid over to the Township.

100.11.4.4.1.2. The court of common pleas, upon petition, may grant an order of stay, upon cause shown, tolling the per diem fine pending a final adjudication of the violation and judgment.

100.11.4.4.1.3. Nothing contained in this section shall be construed or interpreted to grant to any person or entity other than the Township the right to commence any action for enforcement pursuant to this section.

100.11.4.4.2. In addition, the Township, through its solicitor, may institute injunctive, mandamus or any other appropriate action or proceeding at low or in equity for the enforcement of this Ordinance. Any court of competent jurisdiction shall have the right to issue restraining orders, temporary or permanent injunctions, mandamus or other appropriate forms of remedy or relief.

100.11.4.4.3. In addition to the above remedies, the Township may also seek remedies and penalties under applicable Pennsylvania statutes, or regulation adopted pursuant thereto, including but not limited to the Stormwater Management Act (32 P.S. Section 693.1-693.27) and the Erosion and Sedimentation Regulations (25 Pennsylvania Code, Chapter 102). Any activity conducted in violation of this Ordinance or any Pennsylvania approved watershed stormwater management plan may be declared a public nuisance by the Township and abatable as such.

100.11.4.4.4. In addition to other remedies, the Township may institute and maintain appropriate actions by law or in equity to restrain, correct, or abate a violation, to prevent unlawful construction, to recover damages and to prevent illegal occupancy of a building or premises.

100.11.4.4.5. In accordance with the Planning Code (Section 515.1), the Township may refuse to issue any permit or grant approval to further improve or develop any property that has been developed in violation of this Ordinance.

' 100.12. Financial guarantees and maintenance.

100.12.1. Maintenance responsibilities.

100.12.1.1. The stormwater plan for the development site shall establish responsibilities for the continuing operation and maintenance of all proposed stormwater control easements and/or rights-of-way to assure access for periodic inspections by the Township and maintenance, if required.

100.12.1.1.1. 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 change, new information will be submitted to the Township within ten (10) days of the change.

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

100.12.1.1.3. The owner shall pay the amount due to the Township's Stormwater Facility Maintenance Fund under Section 100.12.2 of this Ordinance.

100.12.1.1.4. If the owner fails to maintain the stormwater control facilities following due notice 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 and, if he fails to do so, the Township may lien all costs against the owners of the property served by the facility.

100.12.1.2. 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 the Supervisors.

100.12.2. Township Stormwater Facility Maintenance Fund.

100.12.2.1. Persons installing stormwater storage facilities will be required to pay a specified amount to the Township Stormwater Maintenance Fund to help defray costs of periodic inspections and maintenance expenses, if determined to be necessary. The amount of the deposit shall be determined as follows:

100.12.2.1.1. If the storage facility(ies) is(are) to be privately owned and maintained, the deposit shall cover the cost of periodic inspections performed by the Township for a period of ten (10) years, as estimated by the Township. After that period of time, inspections will be performed at the expense of the Township.

100.12.2.1.2. The amount of the deposit to the maintenance fund, covering annual inspection and maintenance costs, if appropriate, shall be converted to present worth of the annual series values. The Township Engineer shall determine the present worth equivalents that shall be subject to the final approval of the Township Supervisors. With this approach, the required deposit would be equal to an amount that, with interest, would generate sufficient income annually to pay the maintenance and inspection costs over the ten-year period. For example, if the estimated maintenance and inspection cost for a facility is $500.00 each year, the required deposit could be the full $5,000.00 (500 x 10 years). If this amount is converted to present worth of the annual series, the deposit would be reduced to $3,690.00, assuming a six percent (6%) annual interest rate and that the funds for this development site would be reduced to zero at the end of the ten-year

period.

100.12.2.2. If a storage facility which also serves as a recreation facility such as a lake or ball field is proposed, the Township may reduce or waive the amount of the maintenance fund deposit based on the value of the land for pubic recreational purposes.

100.12.2.3. If at some future time any storage facility (whether publicly or privately owned) is eliminated due to installation of storm sewers or another storage facility (e.g., a distributed storage facility), the unused portion of the maintenance fund will be applied to the cost of abandoning the facility and connecting to the storm sewer system or other facility. Any amount of the deposit remaining after the cost of abandonment is paid will be returned to depositor.

100.12.3. Guarantee of improvements.

100.12.3.1. Guarantees of completion: A completion guarantee in the form of a bond, cash deposit, certified check, or other negotiable securities acceptable to the Township shall be filed. This guarantee will cover all stormwater management facilities. The guarantees shall run in favor of the Township and shall be in the amount of one hundred ten percent (110%) of the estimated cost of the stormwater facilities, and shall be in a form acceptable to the Township Solicitor.

100.12.3.2. Default of completion guarantee: If improvements are not installed and completed within two (2) years of the date of recording for the plat or do not comply with the standards and specifications of this Ordinance, the Township may proceed to complete the improvements and facilities and may use whatever proceeds from the bonds, cash deposits, checks, or securities as are required to meet the expense of completing such improvements.

' 100.13. Fees.

A reasonable schedule of fees for land disturbance permits and administrative services necessary to implement and to enforce the stormwater management plan's controls will be established by the Township and adopted by resolution of the Supervisors.

' 100.14. Appeal.

Any person aggrieved by any decision of the Township under this Ordinance may

appeal to the Court of Common Pleas of Beaver County, Pennsylvania within the time allowed by law for such an appeal.

' 100.15. Compatibility with other permit and ordinance requirements.

Permits and approvals issued pursuant to this Ordinance do not relieve the applicant of the responsibility to secure required permits or approvals for activities regulated by other applicable code, rule, act, or ordinance. If more stringent requirements concerning regulation of stormwater or erosion and sedimentation control are contained in the other code, rule, act, or ordinance, the more stringent regulation shall apply.

ENACTED AND ORDAINED This 7th day of September 2004.

ATTEST: TOWNSHIP OF NEW SEWICKLEY

_____ _____

Patricia Fowler
Secretary

Dennis L. Goehring
Chairman, Board of Supervisors

APPENDIX A

NEW SEWICKLEY TOWNSHIP STORMWATER MANAGEMENT ORDINANCE 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 re-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:

- **Maintaining Existing Terrain**. Incorporating the development into the existing terrain rather than regarding the site helps preserve tree canopy and other vegetative cover. Developments designed to fit site topography also minimizes the amount of grading on site. The extent of clearing and grubbing should be kept to the minimum required to construct the proposed development. As many of the existing trees on a development site should be maintained as possible.

- **Build in the Least Sensitive Areas**. By building in areas that are not as environmentally sensitive, negative impacts on ecologically valuable features are avoided. Areas that should be preserved include wetlands, floodplains, buffer areas adjacent to streams and lakes, prairies, and stands of mature trees. By increasing the density of the remaining portion of the property, approximately the same amount of building space can be utilized compare to "conventional" designs.

- **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. Natural streams, floodplains, and riparian buffers are vital to the success of natural systems. Buffered with trees and vegetation, natural streams also provide extremely important aesthetic value to neighborhoods and

communities. Natural, undeveloped floodplains provide storage for storm flows, minimizing downstream flooding.

- **Protecting Natural Depression Storage Areas**. Depression 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. Impervious surfaces are those such as roads, parking lots, driveways, and rooftops, which do not allow infiltration of storm water into the ground. The increase in stormwater runoff, along with the pollutants the runoff picks up from impervious surfaces, cause major problems for adjacent waterways. Building footprints, sidewalks, driveways and other features producing impervious surfaces should be evaluated to minimize impacts on runoff. Natural open spaces and parks provide a valuable service in creating wildlife habitat, stormwater infiltration areas, and protective buffers for ecologically sensitive areas. Other benefits are afforded by open space that benefits the community, including walking, biking, bird watching, and play areas.

- **Reducing the Hydraulic Connectivity of Impervious Surfaces**. Impervious surfaces are less of a problem if they are not directly connected to an impervious conveyance system (such as a 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 can be designed to promote increased travel times for stormwater runoff; increasing travel times should help reduce the concentration of runoff into a single point in the development.

- **Direct Runoff Over Vegetated Areas**. Discharges from roofs, roads, and parking lots should be directed onto vegetated areas, where practical. This offers an opportunity for infiltration of the runoff back into the ground. Infiltration reduces both the quantity of water and the amount of pollutants that would be introduced into the natural watercourse. Landscaped and vegetated areas also serve as an aesthetic benefit to the development. Incorporating vegetation and landscaping into parking lot designs and eliminating continuous curbs around parking areas allow runoff to discharge onto adjacent vegetated areas.

- **Routing Roof Runoff Over Lawns**. Roof runoff should be routed over lawns rather than connected directly to storm sewer systems, where practical. This 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 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.

- **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.

In summary, a careful consideration of the existing topography and implementation of a combination of the above mentioned techniques might 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 base flows in receiving streams, improved groundwater recharge, reduced flood flows, reduced pollutant loads, and reduced costs for conveyance and storage.

APPENDIX B

STORMWATER BEST MANAGEMENT PRACTICES OPERATIONS AND MAINTENANCE AGREEMENT

THIS AGREEMENT, made and entered into this _____ day of _____, 20 _____, by and between _____, (hereinafter the "Landowner"), and New Sewickley Township, Beaver County, Pennsylvania, (hereinafter "Township");

WITNESSETH

WHEREAS, the Landowner is the owner of certain real property as recorded by deed in the land records of Beaver County, Pennsylvania, Deed Book _____ at Page ___, (hereinafter "Property").

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

WHEREAS, the storm water management BMP Operations and Maintenance Plan approved by the Township (hereinafter referred to as the "Plan") for the property identified herein, which is attached hereto as Appendix A and made part hereof, as approved by the Municipality, provides for management of stormwater within the confines of the Property through the use of Best Management Practices (BMP's); and

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

WHEREAS, for the purposes of this agreement, the following definitions shall apply:

BMP - "Best Management Practice(s)" activities, facilities, designs, measures or procedures used to manage stormwater impacts from land development, to protect and maintain water quality and groundwater recharge and to otherwise meet the purposes of the Municipal Stormwater Management Ordinance, including but not limited to infiltration trenches, seepage pits, filter strips, bioretention, wet ponds, permeable paving, rain gardens, grassed swales, forested buffers, sand filters and detention basins.

Infiltration Trench - A BMP surface structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or groundwater aquifer,

Seepage Pit - An underground BMP structure designed, constructed, and maintained for the purpose of providing infiltration or recharge of storm water into the soil and/or groundwater aquifer,

Rain Garden -A BMP overlain with appropriate mulch and suitable vegetation designed, constructed, and maintained for the purpose of providing infiltration or recharge of stormwater into the soil and/or underground aquifer, and

WHEREAS, the Township requires, through the implementation of the Plan, that stormwater management BMP's as required by said Plan and the Township Stormwater Management Ordinance be constructed and adequately operated and maintained by the Landowner, his successors and assigns, and

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

1. The BMPs shall be constructed by the Landowner in accordance with the plans and specifications identified in the Plan, as approved by the Township.

2. The Landowner shall operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Township and in accordance with the specific maintenance requirements noted on the Plan.

3. The Landowner hereby grants permission to the Township, its authorized agents and employees, to enter upon the property, at reasonable times and upon presentation of proper identification, to inspect the BMP(s) whenever it deems necessary. Whenever possible, the Township shall notify the Landowner prior to entering the property.

4. In the event the Landowner fails to operate and maintain the BMP(s) as shown on the Plan in good working order acceptable to the Township, the Township or its representatives may enter upon the Property and take whatever action is deemed necessary to maintain said BMP(s). This provision shall not be construed to allow the Township to erect any permanent structure on the land of the Landowner. It is expressly understood and agreed that the Township is under no obligation to maintain or repair said facilities, and in no event shall this Agreement be construed to impose any such obligation on the Township.
5. In the event the Township, pursuant to this Agreement, performs work of any nature, or expends any funds in performance of said work for labor, use of equipment, supplies, materials, and the like, the Landowner shall reimburse the Township for all expenses (direct and indirect) incurred within 10 days of receipt of invoice from the Township.

6. The intent and purpose of this Agreement is to ensure the proper maintenance of the onsite BMP(s) by the Landowner; provided, however, that this Agreement shall not be deemed to create or effect any additional liability of any party for damage alleged to result from or be caused by stormwater runoff.

The Landowner, its executors, administrators, assigns, and other successors in interests, shall release the Township's employees and designated representatives, including the Township Engineer, from all damages, accidents, casualties, occurrences or claims which might arise or be asserted against said employees and representatives from the construction, presence, existence, or maintenance of the BMP(s) by the Landowner or Township. In the event that a claim is asserted against the Municipality, its designated representatives or employees, the Township shall promptly notify the Landowner and the Landowner shall defend, at his own expense, any suit

based on the claim. If any judgment or claims against the Township's employees or designated representatives, including the Township Engineer, shall be allowed, the Landowner shall pay all costs and expenses regarding said judgment or claim.

7. The Township shall inspect the BMP(s) at a minimum of once every three years to ensure their continued functioning.

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

ATTEST:

WITNESS the following signatures and seals:

(SEAL) For the Municipality:

_____

(SEAL) For the Landowner:

_____

ATTEST:

_____ (City, Borough, Township)

County of _____ , Pennsylvania

I, _____, a Notary Public in and for the County and State aforesaid, whose commission expires on the _____day of _____, 20___, do hereby certify that _____whose name(s) is/are signed to the foregoing Agreement bearing date of the _____ date of _____, 20_, has acknowledged the same before me in my said County and State.

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

_____ _____

NOTARY PUBLIC **(SEAL)**

APPENDIX C

NEW SEWICKLEY TOWNSHIP STORMWATER MANAGEMENT ORDINANCE ACCEPTABLE BEST MANAGEMENT PRACTICES DESIGN GUIDELINES

Best Management Practices (BMP) shall be implemented in New Sewickley Township in order to protect the Township's water quality. BMPs shall be applied to all applicable subdivision and land development plans and other land disturbance activities regulated by other Township ordinances. The purpose of this design guide is to provide designers and developers with guidance to meet the water quality requirements mandated by this ordinance and other state and federal regulations. The practice of designing to account for and improve the field of water quality is in its infancy and modifications will be necessary and develop as new methods and practices become available. Innovation is strongly encouraged in order to meet these objectives at a reasonable cost.

The strategy to improve water quality by the state and federal regulations avoids the use of performance standards related to effluent standards. Instead, the guidance provides suggested long-

term volumetric controls to be utilized within an area of proposed development. Other design methods are available and may be utilized provided supporting documentation is furnished and the Township Supervisors approve the design. Other measures of control, including the use of natural open space, may be substituted for structural measures. The use of non-storage related measures must be carefully evaluated to ensure the water quality goals are being met.

GENERAL CONDITIONS

1. Minimize onsite impervious areas wherever and however possible. Preservation of natural wooded cover and drainage ways is encouraged. Preservation of impervious surfaces such as porous pavement and gravel areas may be considered a BMP.

2. Maximize the amount of onsite drainage that is directed toward BMP facilities. The minimum accepted area is 70% of the site. All impervious area shall be directed to a BMP facility.

3. Directly connected impervious areas should be minimized wherever possible. The natural removal of pollutants using vegetation and soil should be encouraged and promoted. For example, roof drains and driveways should be directed to lawn areas and parking areas should be directed to vegetated areas or grass swales.

4. The mixing of onsite and offsite runoff should be minimized unless the upstream drainage areas are of insignificant size.

5. Care should be taken during the construction of BMP facilities to ensure that sediment-laden runoff does not become blocked or clogged and hinder the facility's overall performance. Ideally, BMP facilities should be constructed after all other land disturbance activities have been completed.

6. Special care should be taken when evaluating an individual site's soil conditions. Additional soil analysis may be necessary for particular BMP facilities, particularly infiltration and filtration devices.

7. The vegetation utilized in BMP facilities should be selected to be water tolerant and to comply with the results intended by the BMP.

8. A length to width ratio of 3:1 should be a design goal for basins and ponds and short circuiting should be avoided wherever possible; the distance between the inflow and outflow points should be maximized.

9. Erosion protection should be provided at all points of outflow.

10. Basins and ponds should be equipped with an underdrain and/or low flow channel to prevent ponding of water during dry periods.

11. Infiltration trenches provided for stormwater management do not require additional storage volume calculations for BMP.

SYSTEM CONTROLS

1. A comprehensive approach to water quality control is to minimize the impact of pollution in stormwater runoff through a system of controls. These controls can be at the source of the pollution, on an individual lot, at a particular development site, or at a regional treatment facility. Each is discussed herein:

2. Source controls eliminate the opportunity for the pollutants to mix with stormwater runoff. Regular street sweeping; covering chemical storage areas; providing dikes around potential spill areas; and regular sediment removal from drainage systems are all examples of source controls that should be employed within a development.

3. Lot controls minimize the potential for concentrating pollutants and concentrating stormwater runoff. Minimizing impervious areas; minimizing directly connected impervious areas; utilizing vegetated swales and filter strips; utilizing infiltration and filtration facilities; and incorporation of porous pavement techniques all provide individual lot controls that should be employed within a development.

4. Site controls employ structural methods to meet storage volume requirements and water quality objectives. Grass swales; infiltration trenches and basins; detention facilities; and wetlands are examples of site controls that can treat stormwater runoff to address water quality requirements.

DESIGN PROCEDURES AND STANDARDS

The Pennsylvania Department of Environmental Protection (PADEP) is providing design guidance regarding the volume of runoff that must be treated to meet the water quality requirements. The difference between the pre-development and post-development 2-year storm event should be determined and infiltrated into the ground to promote the recharge of the surrounding groundwater table. While it is acknowledged that infiltration will not work in all cases, other BMPs, that will treat at least this volume, should be employed where infiltration is not a viable option. Soil analyses, the proximity of bedrock, the proximity of groundwater, and the presence of on-site contamination are all valid reasons to avoid infiltration.

1. Filter strips, vegetative strips across which stormwater runoff sheet flows before entering a stormwater collection system, are only effective in pollutant removal for sheet flow conditions from impervious areas. Filter strips must be at least 20 feet in width, perpendicular to the flow direction, and have a maximum horizontal to vertical slope of 5:1 (20%).

2. Grass swales, vegetated stormwater conveyance channels, are effective pollution removal devices when the longitudinal slope and side slopes are relatively flat. Side slopes should be less than 3:1 and the longitudinal slope should be between 0.5% and 4%. The velocity expected in swales should be determined at 100-foot intervals to ensure that flow velocities do not exceed 2 feet per second (fps) during the 2-year peak flow.

3. Infiltration trenches, long, narrow excavations backfilled with crushed aggregate, provide storage for stormwater runoff and allow infiltration into the surrounding soil. Infiltration trenches should have a contributory drainage area no greater than 5 acres and should not be located in areas that experience seasonal high water tables. Bedrock should be at least 2 feet below the bottom of the trench. The surrounding soil, and the soil beneath the trench, should be able to infiltrate the calculated storage volume within 72 hours. The soils permeability should be between 0.5 and 12 inches per hour (in/hr). Soil testing must be performed at the depth of the bottom of the trench; the procedure followed for determining the suitability of onsite sewage disposal is acceptable.

4. Infiltration basins, shallow excavations or depressional areas, are designed to store stormwater runoff and dissipate it slowly via infiltration into the surrounding soil. Infiltration basins should have a drainage area less than 5 acres; should be located in areas that do not experience periods of high groundwater; should have bedrock located at least 2 feet below the bottom of the basin; and have horizontal to vertical side slopes no greater than 3:1. Soil permeability should be between 0.5 and 12 in/hr.

5. Extended dry detention ponds, modified stormwater basins, allow for the BMP storage volume below the volume required to control stormwater runoff quantities. The BMP storage volume, the difference between the pre- and post-development 2-year storm event, must be calculated separately from the water quantity computation. The retention time for the BMP portion of the facility should be at least 36 hours. The retention time to draw down between the 100-year detention elevation and the 2-year elevation should occur within 24 hours; the remaining draw down will occur in the remaining 12 hours. Areas with high seasonal water tables or bedrock within 2 feet of the bottom of the basin should be avoided. Vegetation that is water tolerant should be provided within the BMP area. All other relevant Township design requirements apply to this feature, including minimum side slopes, length to width ratios, fencing, and access.

APPENDIX D

NO-HARM OPTION

The release rates assigned to the MS4 storm water management areas within New Sewickley Township have been established to prevent additional flood damages downstream of future development sites. In certain limited circumstances, the release rates may be "unreasonably restrictive" or inappropriate when applied to a specific site. The No-Harm option can then be used to demonstrate if the proposed development will not increase flooding downstream; that is, the development will cause no adverse effect on downstream areas. The burden of proof rests with the developer to clearly and conclusively demonstrate "no-harm". Qualitative judgments do not constitute adequate proof.

A developer who wishes to use the no-harm option should use hydrologic and hydraulic methods outlined in Section 100.7.2 of the Ordinance and consistent with the site conditions. All no-harm option users must demonstrate the following:

- That the maximum rate of stormwater runoff as outlined in Section 100.7.4.1 from the site is no greater after development than prior to development activities, both at the outlet of the site and at all downstream areas; and

- That the quantity, velocity, and direction of resulting stormwater runoff does not increase erosion or sedimentation problems or conditions downstream, and adequately protects health and property from possible injury.

To successfully demonstrate no-harm, the user must demonstrate that outflows from each watershed or sub-shed area downstream of the development site, including the sub-shed area containing the site, would not be increased by the development. "On-site Stormwater Management" analysis and a "Downstream Stormwater Management " analysis must be performed to demonstrate no harm.

General Procedure

1. Perform an on-site SWM analysis using an approved hydrologic model to determine discharges from the development site. Demonstrate that the existing conditions flows are not increased by the development at all points of interest identified for the development.

2. Perform the downstream stormwater analysis to ensure that the downstream flows are not impacted.

3. Incorporate the proposed site conditions into the model ("Post Development Model").

4. Run the "Proposed Development Model" for the required design storms and obtain the predicted flows at the downstream points of interest.

5. Perform appropriate hydraulic analyses for flood levels, erosion and/or sedimentation potential for areas downstream of the development site. The no-harm evaluation must include an analysis of the 2-year, 5-year, 10-year, 25-year, and 100-year events.

The no-harm option user should demonstrate that the developed conditions hydrograph is less than the existing conditions hydrology at all points in time except at the extreme ends (climbing limb and recession limb) of the hydrograph. This demonstration must be done for all design storms and all points of interest.

Special Circumstances

Certain special circumstances can occur which may allow a simpler analysis to demonstrate no-harm. Examples include:

1. A development that significantly reduces the runoff volume or runoff hydrograph at the point of interest. The development of an existing parcel that has a large impervious area into a parcel that has significantly less impervious area would most likely reduce both the runoff volume and runoff hydrograph at the point(s) of interest.

2. A development with stormwater controls which store runoff for the duration of a storm and which release the stored water at a minimal rate. This type of stormwater control could require as large a facility as that designed for a release rate.

Required Submittals

The following documentation must be submitted to allow review of the no-harm evaluation:

- A narrative that describes the site, existing conditions, and proposed conditions development, stormwater runoff and management.

- Graphics (maps, USGS quadrangles, etc…) as may be needed to clearly present site and watershed conditions affecting stormwater runoff.

- Calculations, including computer data and model output.

- Summaries of stormwater conditions and the results of stormwater analyses.

- Certification statement, signed and sealed by a Professional Engineer, licensed in the Commonwealth of Pennsylvania, experienced in hydrology and hydraulics.

A listing of existing conditions peak flows, post-development peak flows, points of interest, and each design storm should be provided to document the no-harm option flows. Hydraulic analyses predicting flood levels and the potential for increased erosion/sedimentation should provide similar documentation.