

**BOROUGH OF ORWIGSBURG
SCHUYLKILL COUNTY, PENNSYLVANIA**

**STORM WATER MANAGEMENT AND
EARTH DISTURBANCE ORDINANCE**

ORDINANCE NO. 402

AUGUST 11, 2010

Prepared for:

**Borough of Orwigsburg
P.O. Box 128, 209 North Warren Street
Orwigsburg, Pennsylvania 17961**

By:

**Hanover Engineering Associates, Inc.
20-C Snyder Lane
Ephrata, Pennsylvania 17522**

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ORWIGSBURG BOROUGH

Schuylkill County, Pennsylvania

ORDINANCE NO. 402

AN ORDINANCE FOR THE MANAGEMENT OF STORM WATER RUNOFF AND EARTH DISTURBANCE ACTIVITIES IN ORWIGSBURG BOROUGH, SCHUYLKILL COUNTY, PENNSYLVANIA; CONTAINING GENERAL PROVISIONS, DEFINING CERTAIN TERMS; ESTABLISHING PERMIT PROCEDURES AND REQUIREMENTS; ESTABLISHING DESIGN STANDARDS AND PLAN REQUIREMENTS; AND PROVIDING FOR THE ADMINISTRATION OF THE ORDINANCE INCLUDING THE IMPOSITION OF FINES AND PENALTIES.

BE AND IT IS HEREBY ORDAINED AND ENACTED by the Borough Council of Orwigsburg Borough, Schuylkill County, Pennsylvania, as follows:

**ARTICLE I
GENERAL PROVISIONS**

SECTION 101 SHORT TITLE

This Ordinance shall be known as the Orwigsburg Borough Storm Water Management and Earth Disturbance Ordinance of 2010.

SECTION 102 STATEMENT OF FINDINGS

The Borough Council of Orwigsburg Borough finds that:

- A. Inadequate management of accelerated storm water runoff resulting from development throughout a watershed increases flood flows and velocities, contributes to erosion and sedimentation, overtaxes the carrying capacity of existing streams and storm sewers, greatly increases the cost of public facilities to convey and manage storm water, undermines floodplain management and flood reduction efforts in upstream and downstream communities, reduces groundwater recharge, and threatens public health and safety.

- B. A comprehensive program of storm water management, including reasonable regulation of development and activities causing accelerated erosion, is fundamental to the public health, safety, welfare and the protection of the people of the Borough and all the people of the Commonwealth, their resources and the environment.

SECTION 103 PURPOSE

The purpose of this Ordinance is to promote health, safety, and welfare within the Borough by minimizing the damages described in Section 102 A. of this Ordinance through provisions designed to:

- A. Manage accelerated runoff and erosion and sedimentation problems at their source by regulating activities that cause these problems.

- B. Utilize and preserve the existing natural drainage systems.

- C. Encourage recharge of groundwater where appropriate and prevent degradation of groundwater quality.

- D. Maintain existing flows and quality of streams and watercourses in the Borough and the Commonwealth.

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

- F. Provide proper maintenance of all permanent storm water management facilities that are constructed in the Borough.

- G. Provide performance standards and design criteria for watershed-wide storm water management and planning.

SECTION 104 LEGISLATIVE INTENT

- A. In the enactment of this Ordinance, it is the legislative intent of the Borough Council to implement the policies set forth in various statutes of the state and federal governments, including but not limited to the Pennsylvania Clean Streams Law, Act of June 22, 1937, P.L. 1987, as amended, 35 P.S. Section 691.1 et seq.; the Pennsylvania Storm Water Management Act, Act of October 4, 1978, P.L. 864, No. 167, as amended, 32 P.S. Section 680.1 et seq.; the Pennsylvania Scenic Rivers Act, Act of December 5, 1972, P.L. 1277, No. 283, 32 P.S. Section 820.21 et seq.; and the Federal Water Pollution Control Act, commonly known as the Clean Water Act, 33 U.S.C. Section 1251 et seq.

- B. In the enactment of this Ordinance it is the further legislative intent of the Borough Council to fulfill its obligations under Section 11(b) of the Storm Water Management Act to adopt and implement ordinances and regulations as are necessary to regulate development within the Borough in a manner consistent with a watershed storm water management plan approved by the Pennsylvania Department of Environmental Protection (PADEP). The PADEP has not yet approved an ACT 167 Watershed Storm Water Management Plan for any watershed located within the Borough. Any storm water management plan proposed within a future ACT 167 Watershed shall comply with that particular ACT 167 Watershed Storm Water Management Plan as may be adopted by the Schuylkill County Board of Commissioners and be considered as part of this Ordinance.

SECTION 105 ABROGATION AND GREATER RESTRICTIONS

Within that portion of the Borough located in any future Act 167 Watershed Plan, any ordinance or provision of any ordinance, which is inconsistent with the provisions of this Ordinance, is hereby repealed to extent of the inconsistency only. Within the remainder of the Borough, this Ordinance supersedes any provisions currently in effect with respect to storm water management and erosion control; all other ordinances and regulations shall remain in full force and effect to the extent that those provisions are more restrictive than the provisions of this Ordinance.

SECTION 106 WAIVER OF LIABILITY

Except as specifically provided by the Storm Water Management Act the making of any administrative decision by the Borough or any of its officials or employees shall not constitute a representation, guarantee or warranty of any kind by the Borough of the practicability or safety of any proposed structure or use with respect to damage from erosion, sedimentation, storm water runoff, flood, or any other matter, and shall create no liability upon or give rise to any cause of action against the Borough and its officials and employees. The Borough Council, by enacting this ordinance, does not waive or limit any immunity granted to the Borough and its officials and employees by the Governmental Immunity Act, 42 Pa. C.S. §8541 et seq., and does not assume any liabilities or obligations.

SECTION 107 SEVERABILITY

The provisions of this Ordinance are severable, and if any section, sentence, clause, part or provision hereof shall be held illegal, invalid or unconstitutional by any court of competent jurisdiction, such decision of the court shall not affect or impair the remaining sections, sentences, clauses, parts or provisions of this Ordinance. It is hereby declared to be the intent of the Borough Council that this Ordinance would have been enacted if such illegal, invalid or unconstitutional section, sentence, clause, part or provision had not been included herein.

SECTION 108 RIGHT-OF-ENTRY

Upon presentation of proper credentials, duly authorized representatives of Orwigsburg Borough may enter at reasonable times upon any property within the Borough to investigate or ascertain the condition of the subject property in regard to any aspect regulated by this Ordinance.

The landowner shall grant to the Borough, or its agents, access to the site of the work at all times, while under construction, for the purpose of inspecting the work.

SECTION 109. 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 any other applicable code, rule, act or ordinance. If more stringent requirements concerning regulation of storm water or erosion and sedimentation control are contained in the other code, rule, act or ordinance, the more stringent regulation shall apply.

ARTICLE II DEFINITIONS

SECTION 201 DEFINITIONS

Unless otherwise stated, the following words shall for the purpose of this Ordinance have the meaning herein indicated. Words in the present tense include the future tense. Words in singular include the plural and words in the plural include the singular.

The word “includes” or “including” shall not limit the term to the specific example but is intended to extend its meaning to all other instances of like and character.

The words “shall” and “must” are mandatory; the words “may” and “should” are permissive.

The words “used or occupied” include the words “intended, designed, maintained or arranged to be used or occupied.”

The masculine gender includes the feminine gender and the neuter. The word "person" includes a partnership, corporation, association, trust, estate, or any other legally recognized entity as well as an individual and the officers of any corporation and the members of any partnership. References to "codes, ordinances, resolutions, plans, maps, governmental bodies, commissions or agencies, or officials" are references to codes, ordinances, resolutions, plans, maps, governmental bodies, commissions or agencies, or officials of Orwigsburg Borough or the Commonwealth of Pennsylvania as in effect or office from time to time including amendments thereto or revisions or successors thereof, unless the text indicates another reference is intended.

Words not herein defined shall have the meanings given in Webster's Unabridged Dictionary and shall be interpreted so as to give this Ordinance its most reasonable application.

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

Act 167 Watershed Storm Water Management Plan: All plans proposed within the Borough shall comply with any future “Act 167 Watershed Storm Water Management Plan” for any of the watersheds located within the Borough, as may be adopted by the Schuylkill County Board of Commissioners and considered to be part of this Ordinance when completed.

Agricultural Activities: The work of producing crops and raising livestock including tillage, plowing, discing, harrowing, pasturing and installation of conservation measures. Construction of new buildings or impervious areas is not considered an agricultural activity.

Agricultural Use of Land: The use of land exclusively for the cultivation of soil, the production of crops or livestock, or the science of forestry in accordance with recognized soil management practices; also land which has been diverted from agricultural use by an active federal farm program, provided the land has a conservation cover of grass, legume, trees, or wildlife shrubs.

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

Applicant: A landowner or developer, as hereinafter defined who has filed an application for a storm water management or earth disturbance permit, including his heirs, successors and assigns.

Best Management Practice (BMP): Structural devices or non-structural methods that temporarily store or treat storm water runoff to reduce flooding, remove pollutants and provide other environmental amenities.

Bio-retention: A form of BMP designed as either on-line or off-line which are areas constructed with sand and soil mixtures planted with native plants. Bio-retention is an efficient method for removing a wide variety of pollutants from storm water runoff, such as suspended solids and nutrients.

- A. Off-line bio-retention areas receive runoff from overland flow or from a diversion structure in a traditional drainage system.
- B. On-line bio-retention areas have the same composition as off-line areas; however they are located in grass swales or other conveyance systems that have been modified to enhance pollutant removal by quiescent settling and biofiltration.

Borough: Orwigsburg Borough, Schuylkill County, Pennsylvania, as represented by the Borough Council, or its duly authorized agents.

Borough Council: The Borough Council of the Borough of Orwigsburg, Schuylkill County, Pennsylvania (Governing Body).

Borough Engineer: See “Engineer, Borough.”

Building: Any structure, either temporary or permanent, having walls and a roof, designed or used for the shelter of any person, animal or property and occupying more than one hundred (100) square feet of area.

Carbonate Geology: Limestone or dolomite bedrock.

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

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

Chapter 102: Chapter 102 of the Regulations of PADEP, 25 Pa. Code Sect. 102.1 et seq.

Chapter 105: Chapter 105 of the Regulations of PADEP, 25 Pa. Code Sect. 105.1 et seq.

Chapter 106: Chapter 106 of the Regulations of PADEP, 25 Pa. Code Sect. 106.1 et seq.

Cistern: An underground reservoir for storing storm water runoff from rooftops.

Conservation District: The Schuylkill Conservation District.

Conveyance: The ability of a pipe, culvert, swale or similar facility to carry the peak flow from the design storm.

Culvert: A structure with appurtenant works that carries a watercourse under or through an embankment or fill.

Dam: An artificial barrier, together with its appurtenant works, constructed for the purpose of impounding or storing water or another fluid or semifluid, or a refuse bank, fill or structure for highway, railroad or other purposes which does or may impound water or another fluid or semifluid. The dam falls under the requirements of Chapter 105, Dam Safety and Waterway management, if the following is true:

- A. The contributory drainage area exceeds one hundred (100) acres.
- B. The greatest depth of water measured by upstream toe of the dam at maximum storage elevation exceeds fifteen (15) feet.
- C. The impounding capacity at maximum storage elevation exceeds fifty (50) acre-feet.

Dedication: The deliberate appropriation of land by its owner for any general and public use.

Design Storm: The magnitude of precipitation from a storm event measured in probability of occurrence (e.g., 10-year storm) and duration (e.g., 24-hour), and used in computing storm water runoff for the design of storm water management facilities.

Designee: The agent of a municipal governing body involved with the administration, review or enforcement of any provisions of this Ordinance by contract or memorandum of understanding.

Detention Basin: A vegetated basin designed to drain completely after storing runoff only for a given storm event and releasing it at a predetermined rate. Also known as a dry pond. In order not to fall under the requirements of Chapter 105, Dam Safety and Waterway Management, the following must be true:

- A. The contributory drainage area may not exceed one hundred (100) acres.
- B. The greatest depth of water measured by upstream toe of dam at maximum storage elevation may not exceed fifteen (15) feet.
- C. The impounding capacity at maximum storage elevation may not exceed fifty (50) acre-feet.

Developer: Any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to be made a subdivision of land or a land development, or any regulated activities covered by this Ordinance.

Development: Any man-made change to improved or unimproved real estate, including but not limited to buildings or other structures, mining, dredging, filling, grading, paving, logging, excavation, or drilling operations.

Development Site: The parent tract for which a Regulated Activity is proposed.

Disappearing Stream: A stream in an area underlain by limestone or dolomite that flows underground for a portion of its length.

Downslope Property Line: That portion of a property line of a parent tract located at the topographically lowest point of the tract such that some or all overland, swale, or pipe flow from a Development Site would be directed toward it.

Drainage Course: See “Drainage Conveyance Facility,” and “Watercourse.”

Drainageway: See “Drainage Conveyance Facility,” and “Watercourse.”

Drainage Conveyance Facility: A storm water management facility designed to transmit storm water runoff and shall include streams, channels, swales, pipes, conduits, storm sewers, etc.

Drainage Easement: A right granted by a landowner to a grantee, allowing the use of private land for storm water management purposes. The property shall not have the right to use the land in a manner that violates the right of the grantee and/or the performance/function of the storm water management facility.

Earth Disturbance: Any activity including, but not limited to construction, mining, farming, timber harvesting and grubbing which alters, disturbs and exposes existing land surfaces. (See “Land Disturbance Activity”)

Energy Dissipator: A device used to slow the velocity of storm water particularly at points of concentrated discharge such as pipe outlets.

Enforcement Officer: The duly constituted municipal official designated to administer and enforce this Ordinance. The Enforcement Officer shall administer this Ordinance in accordance with its literal terms. The Enforcement Officer also may be the Building Inspector and/or Zoning Officer of the Borough or other designated person, persons or consultant.

Engineer, Borough: The Orwigsburg Borough Engineer or any consultant designated by the Borough Council to review a Land Disturbance Plan and perform the duties of engineer on behalf of the Borough.

Ephemeral Stream: A transient stream, one that flows for a relatively short time.

Erosion: The removal of soil particles by the action of water, wind, ice, or other geological agents.

Erosion and Sedimentation Control Plan: A plan that is designed to minimize accelerated erosion and sedimentation.

Existing Conditions: The initial condition of a Development Site prior to the proposed construction. If the initial condition of the site is undeveloped land, the land use shall be considered as “meadow” unless the natural land cover is proven to generate lower curve numbers or Rational “C” coefficient values, such as forested lands.

Existing Lot of Record: A lot that was in existence at the time of the adoption of this Ordinance. This does not include a lot subdivided or consolidated after the adoption date of this Ordinance.

FEMA: The Federal Emergency Management Agency.

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

Flood Plain: The land adjoining a river or stream that has been or may be expected to be inundated with floodwaters in a one hundred (100) year frequency flood. The flood plain areas are identified on flood plain maps available at the Orwigsburg Borough Building. Also, the area of inundation which functions as a storage or holding area for floodwater to a width required to contain a base flood of which there is a one percent (1%) chance of occurrence in any given year. Additionally included are areas that comprise Group 13 Soils, as listed in Appendix A of the Pennsylvania Department of Environmental Protection (PADEP) Technical Manual for Sewage Enforcement Officers (as amended or replaced from time to time by PADEP).

Flood Plain Management Act: Act of October 4, 1978, P.L. 851, No. 166, as amended 32 P.S. Section 679.101 et seq., and as may be amended in the future.

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

Forest Management/Timber Operations: Planning and activities necessary for the management of forest land. These include timber inventory and preparation of forest management plans, silvicultural treatment, cutting budgets, temporary logging road design and construction of temporary logging road, timber harvesting, site preparation, reforestation, transporting and selling trees for commercial purposes all of which does not involve any land development and does not include clear cutting. Removal of tree stumps with earthmoving equipment will constitute a regulated activity.

Freeboard: A vertical distance between the maximum design highwater elevation and the top of a dam, levee, tank, basin or diversion ridge.

Governing Body: The Borough Council of the Borough of Orwigsburg, Schuylkill County, Pennsylvania.

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

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

Ground Water: Subsurface water in a zone of saturation.

Groundwater Recharge: Replenishment of existing natural underground water supplies.

Grubbing: The clearing of land by digging up roots and stumps. This constitutes a Regulated Activity.

Holding Pond: A retention or detention basin.

Impervious Surface: Those surfaces that do not absorb runoff. All buildings, including roof overhangs, parking areas, driveways, roads, sidewalks, and such areas as those in concrete, asphalt or any compacted all-weather materials, including, but not limited to, stone and gravel shall be considered impervious surfaces within this definition. In addition, other areas determined by the Borough Engineer to be impervious within the meaning of this definition will also be classified as impervious surfaces.

Impoundment: A retention or detention basin designed to retain storm water runoff and infiltrate it into the ground (in the case of a retention basin) or release it at a controlled rate (in the case of a detention basin).

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

Inlet: A surface connection to a closed drain. The upstream end of any structure through which water may flow.

Land Development:

- A. The improvement of one lot or two or more contiguous lots, tracts, or parcels of land for any purpose involving: (i) a group of two or more residential or nonresidential buildings, whether proposed initially or cumulatively, or a single nonresidential building on a lot or lots regardless of the number of occupants or tenure; or (ii) the division or allocation of land or space, whether initially or cumulatively, between or among two or more existing or prospective occupants by means of, or for the purpose of streets, common areas, leaseholds, condominiums, building groups, or other features; or
- B. A subdivision of land.
- C. Development in accordance with Section 503(1.1) of the PA Municipalities Planning Code.

Landowner: The legal or beneficial owner or owners of land including the holder of an option or contract to purchase (whether or not such option or contract is subject to any condition), a lessee if he is authorized under the lease to exercise the rights of the landowner, or other persons having a proprietary interest in land.

Land Disturbance Activity: Any use involving the installation of ground cover, grading, filling or excavation of land; or the erection of a dwelling or other principal structure; or modification, removal, filling, or alteration of an existing stormwater management facility or drainage easement. Land disturbance activities shall be classified as follows:

A. Minimal Impact Activity:

- 1. The use of land for any single-family residential purpose meeting the setback and coverage standards listed in Appendix 27.

B. Minor Land Disturbance Activity:

- 1. The use of land for any single-family residential purpose on an existing lot of record including subdivided lots or land developments approved under a Major Land Disturbance Activity; provided that:

- a. The use is not within a floodplain area; and
 - b. No diversion or piping of any natural or man-made watercourse or existing drainage pattern is involved; and
 - c. Such use does not involve the installation of impervious or semi-impervious surface of more than three thousand five hundred (3,500) square feet at any time, does not meet all the requirements of a Minimal Impact Activity and/or in the aggregate does not exceed then thousand (10,000) square feet, for the combination at existing and proposed impervious surface. See Appendix 26 for exemption criteria for existing lands improved with existing residential use structures at the time of the adoption of this Ordinance (date).
 - d. Such use does not involve the removal of ground cover, grading, filling or excavation greater than or equal to one (1) acre.
 - e. Forestry operations are exempt in accordance with Appendix 26.
 - f. Linear Utility Line Maintenance operations are exempt in accordance with Appendix 26.
 - g. Wellhead protection areas are exempt from certain types of storm water management facilities as listed in Appendix 26 for specific Wellhead Protection Zones, as may be adopted by the Borough.
- * A residential subdivision consisting of no more than one (1) new lot and remaining lands may also qualify as a Minor Land Disturbance Activity provided that items B. 1.c. and B. 1.d. are not exceeded and the subdivision is not part of a phased plan.

C. Major Land Disturbance Activity:

- 1. Any use involving the diversion or piping of any natural or man-made watercourse or existing drainage pattern; or
- 2. Any use within the floodplain area; or
- 3. Any non-residential use involving the installation of impervious or semi-impervious surface, or more than three thousand five hundred (3,500) square feet at any time and/or in the aggregate more than ten thousand (10,000) square feet, for the combination at existing and proposed impervious surface; or
- 4. Any non-residential use involving the removal of ground cover, grading, filling, excavation or destruction of woodland greater than or equal to one (1) acre, except for the agricultural use of land when operated in accordance with a Farm Conservation Plan approved by the Schuylkill Conservation District; or
- 5. Any non-residential development meeting the above requirement including but not limited to commercial, industrial, and institutional development; or
- 6. Any Land Disturbance Activity not considered a Minor Land Disturbance Activity or a Minimal Use Activity as defined above; or

7. The submission of a Subdivision or Land Development Plan;
8. Forestry operations are exempt in accordance with Appendix 26.
9. Linear Utility Line Maintenance operations are exempt in accordance with Appendix 26.
10. Wellhead protection areas are exempt from certain types of storm water management facilities as listed in Appendix 26 for specific Wellhead Protection Zones, as may be adopted by the Borough.

Land Disturbance Plan: A plan that is designed to minimize the impacts of a land disturbance activity.

Leach Ring: A subsurface storm water runoff detention facility consisting of a concrete structure (usually circular) with an open bottom and several perforations in the vertical concrete walls designed to allow detained storm water to percolate in to the ground rather than discharge overland. Also commonly referred to as a Leach Pit and/or Dry Well.

Lineament: A fracture on the order of tens of kilometers long, usually extending to the basement below sedimentary rock.

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

Memorandum of Understanding: An agreement between Orwigsburg Borough and the Schuylkill Conservation District to provide for cooperation between the Schuylkill Conservation District and Orwigsburg Borough officials to include within its ordinances, and to jointly promote conservation of natural resources within Orwigsburg Borough on lands both public and private, for the purposes of preventing accelerated soil erosion and sedimentation of streams, reducing storm water damage, and promoting the health, safety and general welfare of the residents of Orwigsburg Borough.

MPC: The Pennsylvania Municipalities Planning Code, Act of July 1, 1967, P.L. 805, No. 247, as reenacted and amended, 53 P.S. Section 10101 et seq., and as may be amended in the future.

Municipality: The Borough of Orwigsburg, Schuylkill County, Pennsylvania.

Natural Drainageway: An existing channel for water runoff that was formed by natural forces.

NPDES: The U.S. EPA's "National Pollution Discharge Elimination System," which regulates point discharges (discrete conveyances such as pipes or man-made ditches).

NRCS: Natural Resources Conservation Service (previously SCS).

Non-point Source Pollution: Pollution that enters a body of water from diffuse origins in the watershed and does not result from discernible, confined or discrete conveyances.

On-Lot Storm Water Management: A storm water management facility which is typical of serving a single residential property for the purpose of this Ordinance.

On-Site Storm Water Management: The control of runoff to allow water falling on a given site to be absorbed or detained on-site to the extent that after development the peak rate of discharge leaving the site is no greater than if the site had remained undeveloped.

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

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

Outlet: Point of water disposal from a stream, river, lake, tidewater or artificial drain.

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

Parent Tract: All contiguous land held in single and separate ownership, regardless of whether (i) such land is divided into one or more lots, parcels, purparts or tracts; (ii) such land was acquired by the landowner at different times or by different deeds, devise, partition or otherwise; or (iii) such land is bisected by public or private streets or rights-of-way, which was held by the landowner or his predecessor in title on the effective date of this Ordinance.

PADEP: The Pennsylvania Department of Environmental Protection, former entity the Pennsylvania Department of Environmental Resources, or any agency successor to the Pennsylvania Department of Environmental Protection [Note: The Department of Environmental Resources was abolished by Act 18 of 1995].

PENNDOT: The Pennsylvania Department of Transportation or any agency successor thereto.

Peak Discharge: The maximum rate of flow of water at a given point and time resulting from a specified storm event.

Penn State Runoff Model (calibrated): The computer-based hydrologic modeling technique adapted to the Tulpehocken Creek Watershed for the Act 167 Plan. The model has been "calibrated" to reflect actual recorded flow values by adjoining key model input parameters.

Person: An individual, partnership, association, corporation or other legally recognized entity and the members of such partnership or association and the officers of such corporation.

Pervious Area/Surface: Any area capable of absorbing runoff, including, but not limited to, lawns, meadows, and woodland areas.

Pipe: A culvert, closed conduit or similar structure (including appurtenances) that conveys storm water.

Plan: The storm water management and erosion and sediment pollution control plans and narratives.

Planning and Zoning Commission: The Orwigsburg Borough Planning and Zoning Commission. The Planning and Zoning Commission is vested with the right to review and recommend action to the Borough Council for all plans submitted to the Borough.

Pond: A body of water.

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

Project Site: An area of land under land disturbance or development and within the jurisdiction of this Ordinance.

Rational Formula (Rational Method): A rainfall-runoff relation used to estimate peak flow.

Record Plan/Drawings: Where a regulated activity constitutes a subdivision or land development, the Final Subdivision or Land Development plan which contains the information the Ordinance requires. Where a regulated activity does not constitute a subdivision or land development, a Storm Water Management Plan containing all required information and prepared in a form acceptable to the Office of the Recorder of Deeds for recording.

Registered Professional: A person duly licensed as a professional engineer, surveyor, geologist or landscape architect by the Commonwealth of Pennsylvania.

Regulated Activities: Any activity or proposed activity to which this Ordinance is applicable pursuant to Section 104 of this Ordinance.

Retention Basin: A basin containing a permanent pool of water designed to store runoff for a given storm event with its primary release of water being through the infiltration of said water into the ground.

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

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

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

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

SCS: U.S. Department of Agriculture, Soil Conservation Service (now known as NRCS).

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

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

Sedimentation Control: The use of manmade or other methods to minimize accelerated erosion and sedimentation.

Sediment Basin: A temporary dam or barrier constructed across a storm water conveyance, i.e. swale, storm pipe outlet, etc. or at other suitable locations to intercept the runoff and to trap and retain the sediment.

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

Seepage Bed/Seepage Trench: A subsurface storm water runoff detention facility filled with loose clean stone or similar coarse material designed to allow detained storm water to percolate in to the ground rather than discharge overland. Also commonly referred to as an Infiltration Trench.

Semi-impervious Surface: A surface such as stone, rock or other material that prevents some percolation of water into the ground.

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

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

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

Spillway: A depression in the embankment of a pond or basin, which is used to pass a Post development 100-year storm peak flow rate. Spillways in the embankment of ponds or basins are generally used for emergency situations when the storm event exceeds the design outflow of the basin and/or when the primary outlet structure outflow pipe of the pond or basin is clogged. No storm water is to flow through a spillway during the normal function of the pond or basin.

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

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

Storm Sewer: A system of pipes, conduits, swales, or other similar structures including appurtenant works which carries intercepted runoff, and other drainage, but excludes domestic sewage and industrial wastes.

Storm Water: The total amount of precipitation or snow or ice reaching the ground surface.

Storm Water Management: A program of controls and measures, including BMPs, designed to convey and regulate the quantity and quality of storm water runoff from a development while promoting the protection and conservation of groundwaters and groundwater recharge.

Storm Water Management Act: The Pennsylvania Storm Water Management Act, Act of October 4, 1978, P.L. 864, No. 167, as amended, 32 P.S. §680.1 et seq.

Storm Water Management Facilities: Those controls and measures used to affect storm water management.

Storm Water Management Permit: A permit issued by the municipal governing body after the Storm Water Management Site Plan has been approved. Said permit is issued prior to or with the final municipal approval.

Storm Water Management Site Plan: The Plan prepared by the Developer or his representative indicating how storm water runoff will be managed at a particular site according to this Ordinance.

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

Street: A highway, road, avenue, lane, or alley, whether publicly or privately owned, which includes an impervious surface cartway.

Subdivision: The division or re-division of a lot, tract, or parcel of land by any means into two or more lots, tracts, parcels or other divisions of land including changes in existing lot lines for the purpose, whether immediate or future, of lease, partition by the court for distribution to heirs or devisees, transfer of ownership, or building or lot development.

Swale: A natural channel or other low-lying stretch of land that collects or carries surface water runoff.

Tile Field (Tiling): The installation of subsurface drainage facilities (i.e. pipe, etc.) to drain areas otherwise affected by high groundwater levels.

Timber Operations: See "Forestry Operations."

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

Watercourse: A perennial or intermittent stream, river, brook, creek, run, channel, swale, pond, lake, or there body of surface water, carrying or holding surface water, whether natural or man-made, for gathering or carrying surface water from storm water runoff and/or from groundwater that has reached the surface of land.

- A. Watercourse, Exceptional Value: A watercourse that has been designated as containing Exceptional Value Waters.
- B. Watercourse, High Quality: A watercourse that has been designated as containing High Quality Waters.
- C. Watercourse, Intermittent: A watercourse that alternately contains and is empty of water.
- D. Watercourse, Man-made: Any watercourse designed and constructed as a land development improvement, including storm water drainage swales, retention basins, detention basins, farm ponds, canals, aqueducts, or other similar constructions.
- E. Watercourse, Perennial: A watercourse that contains water throughout all seasons of the year.

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

Wetlands: Area inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands include swamps, marshes, bogs, wet meadows and similar areas.

Wetland Delineation: The defined boundary between a wetland and an upland, in accordance with the Federal Manual for Identifying and Delineating Jurisdictional Wetlands, 1987.

**ARTICLE III
PLAN REQUIREMENTS**

SECTION 301 GENERAL REQUIREMENTS

In accordance with Section 103 of this Ordinance, a land disturbance activity, as defined in Section 201 of this Ordinance, shall not be initiated until a Storm Water Management Permit has been issued.

SECTION 302 EXEMPTIONS

The following activities are specifically exempt from the plan requirements of this Ordinance:

- A. Use of land for gardening and landscaping of the property, when performed as an accessory use to the primary use of the property.

- B. Agricultural and farming activities such as, but not limited to, production of field crops, truck gardening, planting and production of nursery stock, household gardening, field maintenance by way of mowing, trimming and hedgerow/fence row management provided such activities are conducted with the approval of the Schuylkill Conservation District or the Soil Conservation Service if required by state regulations. Application of this section to claim exemption shall require submittal of written verification from the Schuylkill Conservation District that an inspection has been performed, and the farm has, and is, implementing an approved Farm Conservation Plan or Erosion and Sedimentation Control Plan. Exemptions do not apply to disturbance related to agricultural building construction except were exempted by Section 302 C.

- C. Any land disturbance activity meeting the criteria for exemption in Appendix 26.

SECTION 303 PLAN CONTENTS – MINIMAL IMPACT ACTIVITY

The Minimal Impact Activity plan submission shall include a general plan of:

- A. Lot Configuration including distances between proposed improvements and the property line, or any stream or body of water.

- B. Existing and proposed building and improvement locations with proposed dimensions and areas.

- C. Site Topography per the guidelines of Appendix 27.

- D. Proposed Erosion and Sedimentation Control facilities

Refer to Appendix 27 of this Ordinance for the submission package guidelines for a Minimal Impact Activity. This information is intended to demonstrate the level of effort required to be included on a Minimal Impact Activity Application.

SECTION 304 PLAN CONTENTS – MINOR LAND DISTURBANCE

The Minor Land Disturbance Plan shall include a general plan of:

- A. Lot Configuration (showing the shape and layout of the lot, roadways with names, any significant features i.e. stream, wooded areas, pond, basin, swale, or other stormwater facilities).
- B. Existing and proposed building location and amount of impervious area for the structures or any impervious surfaces.
- C. Grading, where an area in excess of 1,000 square feet is proposed; if less than a 1,000 square foot area, flow arrows should be provided indicating the direction the water would travel.
- D. Stormwater management facilities, existing and proposed.
- E. Proposed Erosion and Sedimentation Control facilities.

Refer to Appendix 21 and Appendix 21a of this Ordinance for a Blank Minor Land Disturbance Plan Form and a Minor Land Disturbance Plan example, respectively. This plan is intended to demonstrate the level of effort required to be included on a Minor Land Disturbance Plan application.

Although the plan need not demonstrate literal compliance with all provisions of plan requirements within Section 304 and the Design Standards of Article IV, the plan must demonstrate that the proposed activity will comply with this Ordinance as outlined within Section 103.

The Borough may require additional information or invoke any section of this Ordinance deemed necessary to demonstrate compliance with the intent of this Ordinance. The requirements of the Borough's Enforcement Officer may be appealed to the Borough Council in accordance with Section 603 of this Ordinance.

SECTION 305 PLAN CONTENTS - MAJOR LAND DISTURBANCE

The following items shall be included as part of the Major Land Disturbance Plan:

- A. The Following General Information:
 - 1. Proposed name or identifying title of the project.
 - 2. Name and address of the landowner and developer of the project site.
 - 3. Total acreage of the project site and the tract of land on which the project site is located.
 - 4. Plan date, date of latest revision, north point, graphic scale and written scale. All plans shall be drawn at a common engineering scale.
 - 5. A location map, for the purpose of locating the project site to be developed, at a minimum scale of two thousand (2,000) feet to the inch, showing the relation of the

tract to adjoining property and to all streets and Borough boundaries existing within one thousand (1,000) feet of any part of the tract of land on which the project site is proposed to be developed.

6. A note on the plan indicating any area that is not to be offered for dedication along with a statement that the Borough is not responsible for maintenance of any area not dedicated to and accepted for public use, and that no alteration to swales, or basins, or placement of structures shall be permitted within easements.
7. Certificate, signed and sealed by a Registered Professional registered in the Commonwealth of Pennsylvania and qualified to perform such duties, indicating compliance with the provisions of this Ordinance. See form of certificate in Appendix No. 25.
8. The following certificates when the application is not in conjunction with the submittal of a Subdivision and/or Land Development Plan:
 - a. Certificate for approval by the Borough Council. See form of certificate in Appendix No. 22.
 - b. Certificate for review by the Borough Planning and Zoning Commission. See form of certificate in Appendix No. 23.
 - c. Certificate for review by the Borough Engineer, if required by the Borough Council. See form of certificate in Appendix No. 24.
9. Storm water management facility designs shall be prepared in accordance with the requirements of any future Act 167 Watershed Storm Water Management Plan relevant to the proposed site.
10. In areas of carbonate geology, a geologic evaluation prepared by a Registered Geologist shall be provided. This report shall contain remedies to address the formation of sinkholes and closed depressions in the land disturbance area.

B The Following Existing Features:

1. Tract boundaries showing distances, bearings and curve data, as located by field survey or by deed plotting.
2. Existing topographical data. This information shall be provided by field survey of contour lines. Contour lines shall be provided at two (2) foot vertical intervals for slopes of four (4) percent or less, and at vertical intervals of five (5) feet for more steeply sloping land. Additionally, the benchmark and the datum used shall also be indicated.
3. The names of all owners of all immediately adjacent land, the names of all proposed or existing developments immediately adjacent, and the locations and dimensions of any streets or easements shown thereon.
4. The names, locations, and dimensions of all existing streets, railroads, watercourses, drainage facilities, flood plains, wetlands, and other significant features within five hundred (500) feet of any part of the tract proposed to be

developed and the location of all buildings and approximate location of all tree masses within the tract.

5. Soil types as designated by the USDA SCS Soil Survey of Schuylkill County.
6. Designation of limits of on-site watershed areas, including a map that shows the off-site watershed areas.
7. Boundaries of watersheds as identified in a relevant Act 167 Watershed Storm Water Management Plan.

C. The Following Proposed Features:

1. The proposed land use, the number of lots and dwelling units and the extent of commercial, industrial, or other nonresidential uses.
2. The locations and dimensions of all proposed streets, parks, playgrounds, and other public areas; sewer and water facilities; lot lines and building locations, and parking compounds and other impervious and semi-pervious surfaces.
3. The proposed changes to land surface and vegetative cover including areas to be cut or filled.
4. Proposed topographical data. This information shall be provided by contour lines. Proposed contour lines shall be provided at two (2) foot vertical intervals for slopes of four (4) percent or less, and at vertical intervals of five (5) feet for more steeply sloping land.
5. Plans and profiles of all proposed storm water management facilities including vertical and horizontal alignment, size and type of material. This information shall be of the quality required for the construction of all facilities.
6. For all basins, which hold two (2) acre-feet or more of water and have an embankment that is six (6) feet or more in height, soil structure and characteristics shall be provided. Plans and data shall be prepared by a registered professional engineer. These submissions shall provide design solutions for frost-heave potential, shrink-swell potential, soil bearing strength, water infiltration, soil settling characteristics, fill and back-filling procedures, and soil treatment techniques as required to protect the improvements for adjacent structures.
7. The type, location and extent of all temporary and permanent erosion and sedimentation control measures shall be shown on an erosion and sedimentation control plan that conforms to the requirements of the Soil Erosion and Sedimentation Control Manual of the PADEP and which shall be submitted to the Schuylkill Conservation District for review.
8. Data concerning subsoil and rock foundation conditions and the physical properties of the materials entering into the construction of all BMPs.

D. Written hydrologic and hydraulic report and erosion and sedimentation narrative including or prepared in accordance with the following:

1. Storm water runoff calculations for both pre-development and post-development conditions for peak discharge and pollutant removal.
2. An erosion and sedimentation control plan narrative that conforms to the requirements of the Soil Erosion and Sedimentation Control Manual of the PADEP and provides a description of all erosion and sedimentation control measures, temporary as well as permanent, including the staging of earth-moving activities, sufficient in detail to clearly indicate their function.
3. Description of an ownership and maintenance program, in a recordable form, that clearly sets forth the ownership and maintenance responsibilities for all temporary and permanent storm water management facilities, including the following:
 - a. Description of the method and extent of the maintenance requirements.
 - b. When maintained by a private entity, identification of an individual, corporation, association, or other entity responsible for ownership and maintenance.
 - c. When maintained by a private entity, a copy of the legally binding document which provides that the Borough shall have the right to:
 - (1) Inspect the facilities at any time.
 - (2) Require the private entity to take corrective measures and assign the private entity reasonable time periods for any necessary action.
 - (3) Authorize maintenance to be done and lien the cost of the work against the properties of the private entity responsible for maintenance.
 - d. Establishment of suitable easements for access to storm water management facilities.

This document shall be recorded by the Borough in the Schuylkill County Recorder of Deeds Office at the applicant's expense prior to issuance of a permit.

4. For all proposed detention basins and retention basins, and temporary sedimentation basins, the documentation shall include a plotting or tabulations of storage volumes with corresponding water surface elevations and the outflow rates for those water surfaces.
5. For all proposed detention basins and retention basins, and temporary sediment basins, documentation shall set forth the design hydrology, and the short-cut routing method or a method of equal caliber acceptable to the Borough Engineer and Borough Planning and Zoning Commission or Borough Council utilized to determine the function of the basin.
6. A Pennsylvania Department of Transportation Highway Occupancy Permit for any storm water management facility proposed within the right-of-way of a state road.

7. Receipt of appropriate State and Federal permits for all activities in or along any bodies of water, waters of the U.S., or wetlands.
8. Receipt of approvals or permits from the appropriate agency for the Erosion and Sedimentation Control Plan.

SECTION 306 APPLICATION AND PLAN PROCESSING PROCEDURE

- A. An application for a Storm Water Management Permit may be submitted to the Borough on any business day. In the event that a question arises as to whether a proposed activity requires a Storm Water Management Permit, the landowner or developer shall furnish the Borough with such information as the Borough Engineer may deem necessary to determine whether the proposed activity constitutes a land disturbance activity. A decision by the authorized Borough representative may be appealed to the Borough Council in accordance with Section 603 herein.
- B. If an application for a storm water management permit is submitted in conjunction with an application for subdivision and/or land development approval submitted to the Borough in accordance with the requirements of the Orwigsburg Borough Subdivision and Land Development Ordinance, the landowner shall submit the required number of copies and follow all other procedural requirements as set forth in the Subdivision and Land Development Ordinance. The application for a storm water management permit shall be considered a part of the application for subdivision and/or land development approval, and the Borough shall act upon that application at the time it acts upon the application for subdivision and/or land development approval.
- C. Applications for a storm water management permit which are not submitted to the Borough in conjunction with an application for subdivision and/or land development approval shall adhere to the procedures in this Section 306 C.

Minimal Impact Activity and Minor Land Disturbance Plans

1. The Borough staff may review the application with the Borough Engineer and other municipal officials in order to make recommendations to the Borough Enforcement Officer whether to accept or not accept the application.
2. The Borough Enforcement Officer shall, within ninety (90) days from the receipt of an accepted complete application, issue a permit or disapprove the application and transmit the decision in writing to the applicant. Failure of the Borough Enforcement Officer to render a decision and communicate it as prescribed above shall be deemed an approval unless the time period is extended by written request by the applicant.
3. A notice of disapproval shall cite the reasons for disapproval.
4. The requirements of the Borough Enforcement Officer may be appealed to the Borough Council in accordance with Section 603 of this Ordinance.

Major Land Disturbance Plans

1. The Borough staff may review the application with the Borough Engineer, Borough Solicitor, the Schuylkill Conservation District, and other municipal officials in order to make recommendations to the Borough Council whether to approve, conditionally approve, or disapprove the application.
 2. The Borough Council shall, within ninety (90) days from the receipt of a complete application, issue a permit or disapprove the application and transmit the decision in writing to the applicant.
 3. A notice of disapproval shall cite the reasons for disapproval.
- D. Borough approval of an application for a storm water management permit whether for a Minor Land Disturbance or Major Land Disturbance or in conjunction with an application for subdivision and/or land development approval shall not be considered as an indication that the application complies with the standards of any agency of the Commonwealth or meets the requirements of any other Borough ordinance or regulation. The Borough may approve a storm water management permit subject to the condition that the landowner obtains other required permits and approvals, in which case the landowner shall not be entitled to commence development authorized by such conditional storm water management permit until presenting the Borough with evidence that the landowner has obtained such other required permits or approvals.

SECTION 307 APPLICATION REQUIREMENTS

- A. Minimal Impact Activity: An application for a Storm Water Management Permit for a minimal impact activity, as defined in Section 201 of this Ordinance, shall include the following items:
1. One (1) completed copy of the Application for a Storm Water Management Permit, Minimal Impact Activity (See Appendix No. 1).
 2. Three (3) copies of the Land Disturbance Plan prepared in accordance with Section 303 of this Ordinance.
 3. Permit fee as established by resolution or Ordinance from time to time.
- B. Minor Land Disturbance Activity: An application for a Storm Water Management Permit for a minor land disturbance activity, as defined in Section 201 of this Ordinance, shall include the following items:
1. One (1) completed copy of the Application for a Storm Water Management Permit, Minor Land Disturbance Activity (See Appendix No. 1).
 2. Three (3) copies of the Land Disturbance Plan prepared in accordance with Section 304 of this Ordinance.
 3. Permit fee as established by resolution or Ordinance from time to time.

- C. Major Land Disturbance Activity: An application for a Storm Water Management Permit for a major land disturbance activity, as defined in Section 201 of this Ordinance, shall include the following items:
1. One (1) completed copy of the Application for a Storm Water Management Permit, Major Land Disturbance Activity (See Appendix No. 2.).
 2. Three (3) copies of the Land Disturbance Plan prepared in accordance with Section 305 of this Ordinance.
 3. Permit fee as established by resolution or Ordinance from time to time.

SECTION 308 WAIVER PROCEDURE

The provisions of this Ordinance are intended as minimum standards for the protection of the public health, safety and welfare. The Borough Council may grant a waiver from literal compliance with mandatory provisions of the Ordinance if the applicant can demonstrate either (1) that compliance would cause undue hardship as it applies to a particular property, or (2) that an alternative proposal will allow for equal or better results.

The approval of the waiver shall not have the effect of making null and void the intent and purpose of the Ordinance. In the approval of a waiver, the Borough Council may impose such conditions, as will, in its judgment, secure substantially the objectives of the standards and requirements of the Ordinance.

- A. Application Procedures (Waiver): All requests for waivers shall be processed in accordance with the following:
1. A request for a waiver shall be submitted to the Borough with the required fee for an appeal or waiver. The request shall be made in writing and identify (1) the specific section of the Ordinance or decision which is requested for waiver, (2) the proposed alternative to the requirement, when applicable, and (3) justifications for an approval of the waiver.
 2. The Borough Secretary shall (1) schedule the request for consideration by the Borough Council at a public meeting within forty-five (45) days of receipt, and (2) provide adequate notice to the applicant and any other involved parties of the meeting at which consideration of the request is scheduled.
 3. The Borough Council shall, following the consideration of the request, take such public action as it shall deem advisable and notify all parties involved of the action. Such notice shall cite the findings and reasons for the deposition of the waiver.

SECTION 309 EXPIRATION OF A STORM WATER MANAGEMENT PERMIT

All Storm Water Management Permits shall expire twelve (12) months from the date of issuance unless an application for extension of time has been filed prior to the expiration date. An extension of an unexpired Storm Water Management Permit shall be issued by the Borough Council following the submission of a written request from the applicant if, in the opinion of the Borough

Council, the subject property or affected surrounding area has not been altered in a manner which requires alteration to the Land Disturbance Plan.

The refusal of an extension of time shall cite the reasons for such refusal. The applicant may re-file the request for extension of a Storm Water Management Permit after the reasons for refusal are addressed.

A Storm Water Management Permit shall not expire while a request for an extension is pending.

SECTION 310 FINANCIAL SECURITY

- A. The Borough shall, prior to issuing a Storm Water Management or Earth Disturbance Permit, require financial security to be posted for the storm water detention and/or retention basin and other drainage facilities, which may adversely affect adjacent properties, streets, or other public improvements in accordance with provisions outlined by Section 310 B. of this Ordinance.
- B. Where required, the developer shall file with the Borough Council financial security in an amount sufficient to cover the costs and installation of the storm water management facilities, including any inspection fees reasonably expected to be incurred by the Borough.
- C. Federal or Commonwealth chartered lending institution irrevocable letters of credit and escrow accounts shall be deemed acceptable financial security. Letters of credit shall be posted with a Federal or Commonwealth chartered lending institution chosen by the developer, provided said lending institution is authorized to conduct such business within the Commonwealth. Escrow accounts shall be established in such financial institutions as may be designated by the Borough Council.
- D. Such security shall provide for, and secure to the public, completion of the storm water management facilities within one (1) year of the date fixed on the permit for such facilities. The amount of financial security shall be equal to one hundred ten (110) percent of the cost of the required facilities for which financial security is to be posted.
- E. The amount of financial security required shall be based upon an estimate of the cost of completion of the required improvements, submitted by an applicant or developer and prepared by a professional engineer licensed as such in this Commonwealth and certified by such engineer to be a fair and reasonable estimate of such cost. The Borough Council, upon the recommendation of the Borough Engineer, may refuse to accept such estimate for good cause shown. If the applicant or developer and the Borough Engineer are unable to agree upon an estimate, then the estimate shall be recalculated and re-certified by another professional engineer licensed as such in this Commonwealth and chosen mutually by the Borough Council and applicant or developer. The estimate certified by the third engineer shall be presumed fair and reasonable and shall be the final estimate. In the event that a third engineer is so chosen, fees for the services of said engineer shall be paid equally by the Borough and the applicant or developer.

SECTION 311 RECORD DRAWINGS

- A. At the completion of the project, and as a prerequisite for the release of the Financial Security, the developer or his representative shall provide a certificate of completion from a registered engineer, architect, surveyor or other qualified person verifying that all permanent facilities have been constructed according to the plans and specifications and approved revisions thereto. Certification shall be provided on a set of record drawings.

- B. After receipt of the record drawing certification of completion, a final inspection shall be conducted by the Borough Engineer or other person designated by the Borough to certify compliance with this Ordinance.

**ARTICLE IV
DESIGN STANDARDS**

SECTION 401 GENERAL DESIGN RECOMMENDATIONS

- A. In the interest of (1) reducing the total area of impervious surface, (2) preserving existing features, which are critical to storm water management and (3) reducing the concentration of storm water flow, the design should consider alternate design concepts.

- B. Maximum use should be made of the existing on-site natural and man-made storm water management facilities.

- C. Innovative storm water management and recharge facilities shall be used whenever and wherever feasible or necessary to protect adjoining properties; to control the volume of water leaving the site; to remove pollutants from runoff leaving the site; or to provide for recharge of ground water supplies. Such facilities may include rooftop storage, dry-wells, cisterns, diversion structures, aeration of lawns, holding tanks, infiltration systems, stream channel storage, in line storage in storm sewers, and grading patterns. Applications including such facilities shall be accompanied by detailed engineering plans and performance capabilities for review by the Borough.

- D. Where possible, the number of detention/retention facilities should be minimized by providing larger facilities to serve larger drainage areas. The use of multiple detention/retention facilities for a single development should be avoided where possible and practical.

SECTION 402 GENERAL DESIGN REQUIREMENTS

- A. All storm water management plans shall be designed and certified by individuals registered in the Commonwealth of Pennsylvania and qualified to perform such duties.

- B. All storm water runoff flowing over the project site shall be considered in the design of the storm water management facilities.

- C. Storm water management facilities located within or affecting the floodplain of any watercourse shall also be subject to the requirements of the Orwigsburg Borough Zoning Ordinance, as amended, the relevant Act 167 Watershed Storm Water Management Plan, or any future Ordinances regulating construction and development within areas of the Borough subject to flooding. All facilities shall also receive all other local, county, state and federal approvals and permits required by any regulatory agency having jurisdiction.

- D. Where applicable, storm water management facilities shall comply with the requirements of Chapter 105 (Water Obstructions and Encroachments) of Title 25, Rules and Regulations of the PADEP.

- E. Storm water management facilities, which involve a State highway, shall be subject to the approval of the Pennsylvania Department of Transportation.

- F. Storm water runoff from a project site shall flow directly into a natural watercourse or into an existing storm sewer system, or onto adjacent properties in a manner similar to

the runoff characteristics of the predevelopment flow conditions. The applicant shall provide proof, in the form of a certified U.S. Mail receipt, to the Borough or Borough Engineer that he or his agent has informed the immediate downstream property owner of the effects of the storm water discharge from the proposed development.

- G. Storm water runoff shall not be transferred from one watershed to another unless the watersheds are sub-watersheds of a common watershed, which join together within the perimeter of the property, or the effect of the transfer does not alter the peak discharge onto adjacent lands, or drainage easements from the affected landowners are provided.
- H. All storm water runoff flowing over the project site shall be considered in the design of the storm water management facilities. In all conditions or locations, positive drainage shall be provided where warranted or as required by the Borough Engineer.
- I. Innovative methods for the detention and control of storm water runoff may be used when approved by the Borough. Various combinations of methods should be tailored to suit the particular requirements of the type of development and the topographic features of the project site. The following is a partial listing of detention and control methods, which can be utilized in storm water management systems where appropriate:
 - 1. Detention basins and retention basins (the use of retention basins shall require prior approval by the Borough).
 - 2. Roof-top storage.
 - 3. Parking lot ponding.
 - 4. Seepage pits, seepage trenches or other infiltration structures.
 - 5. Concrete lattice block surfaces.
 - 6. Grassed channels and vegetated strips.
 - 7. Cisterns and underground reservoirs.
 - 8. Routed flow over grass.
 - 9. Decreased impervious surface coverage.
 - 10. Bio-retention areas.
- J. The applicant or his agent shall demonstrate that any facilities intended to be installed and located on an individual or group of individual lots can be adequately maintained by the homeowner(s) and/or lot owner(s).
- K. In areas of carbonate geology, a registered professional geologist shall certify the following:
 - 1. No storm water facilities shall be placed in, over or immediately adjacent to the following features:
 - a. Sinkholes.

- b. Closed depressions.
 - c. Lineaments in carbonate areas.
 - d. Fracture traces.
 - e. Caverns.
 - f. Intermittent streams.
 - g. Ephemeral streams.
 - h. Bedrock pinnacles (surface or subsurface)
2. Storm water management basins shall not be located closer than 100 feet from the rim of sinkholes or closed depressions, nor within 100 feet from disappearing streams; nor shall these basins be located closer than 50 feet from lineaments or fracture traces; nor shall these basins be located closer than 25 feet from surface or identified subsurface pinnacles.
 3. Storm water resulting from land development activities shall not be discharged into sinkholes.
- L. Storm water runoff from a project site shall flow directly into a natural watercourse or into an existing storm sewer system. If neither of these is available, the applicant shall obtain an easement from the downstream landowner to allow the runoff discharge from the 10-year storm to be piped to a natural watercourse or existing storm sewer system. Where the downstream owner will not grant such an easement, the runoff from the applicant's site shall flow onto the adjacent property in a manner similar to the runoff characteristics of the pre-development flow. Where such an easement is granted, the 25- through 100-year discharge from the basin shall flow onto the adjacent property in a manner similar to the runoff characteristics of the pre-development flow.
- M. Storm water management facilities shall be provided so that the peak rates of runoff for storm water originating on the project site must meet the following conditions, for all watersheds (as defined by Section 402 G.) within the site:
1. The 2-, 5-, 10-, 25-, 50- and 100-year post-development peak flow must be less than or equal to 50% of the corresponding calculated 2-, 5-, 10-, 25-, 50- and 100-year pre-development peak flows.
 2. In any future Act 167 Watershed Storm Water Management Plan Districts, the requirements of that future District shall apply.

The boundaries of any future adopted Watershed Storm Water Management Plan Districts will be shown on official maps, which will be available for inspection at the Borough Office when such Watershed Districts are adopted. The exact location of any future Storm Water Management District boundaries as they may apply to a given development site shall be determined by mapping the boundaries using two-foot topographic contours (or most accurate data required) provided as part of the Land Disturbance Plan.

- N. Storm water management facilities shall be supplemented by BMPs as outlined in the Orwigsburg Borough BMP Design Standards, Section 407. Required storage volume shall be provided to minimize the impacts to water quality of receiving waters.
- O. Runoff calculations for the pre- and post- development comparison shall consider six (6) different storm frequencies (2-, 5-, 10-, 25-, 50- and 100-year storm events.).
- P. Consideration shall be given to the relationship of the subject property to the drainage pattern of the watershed.
- Q. The applicant shall demonstrate that any facilities intended to be installed and located on an individual or group of individual lots can be maintained by the lot owner or owners.

SECTION 403 METHODS FOR CALCULATION OF RUNOFF

- A. Runoff calculations for on-site storm water facilities shall be based upon the following methods:
 - 1. Rational Method. This method is recommended and preferred for design of all collection, conveyance and retention facilities when drainage areas are less than 100 acres or where times of concentration are less than 60 minutes.
 - 2. SCS TR-55 Tabular Hydrograph Method (1986, or latest revision). This method is recommended and preferred for design of conveyance and retention facilities when drainage areas are greater than 100 acres. For drainage areas greater than 100 acres, the Borough will also accept PSU-IV, PSRM, HEC-I and SCS TR-20.
- B. Criteria and assumptions to be used in the determination of storm water runoff and design of storm water management facilities are as follows:
 - 1. Runoff coefficients shall be based on the land use coefficients listed in Appendices No. 5 and 6 of this Ordinance and in conjunction with the criteria outlined by Section 403 C. of this Ordinance.
 - 2. When utilizing the Rational Method Times of concentration shall be based on the following design parameters:
 - a. Overland flow: The maximum length for each reach of overland flow before concentrated swale and/or sheet flow develops is one hundred fifty (150) feet. The nomograph in Appendix No. 7 shall be used for determination of the times of concentration.
 - b. Concentrated flows: At points where overland flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the time of concentration between these design points shall be based upon Manning's Equation.
 - 3. When utilizing the Soil-Cover-Complex Method (SCS TR-55) Times of concentration shall be based on Worksheet No. 3 of the Soil Conservation Service Engineering Division Technical Release No. 55 dated June 1986 Second Edition

as amended. Overland Flow Criteria of the referenced Worksheet shall utilize a 150-foot maximum rather than a 300-foot maximum.

4. If the Rational Method is used, the Rainfall Intensity Duration-Frequency Chart shown in Appendix No. 4 shall be used to compute the rainfall intensities.
5. If the Soil-Cover-Complex Method (SCS TR-55) is used, storm water runoff shall be based on the following 24-hour storm events:

Design Storm Rainfall Amount (Inches)				
Return Period (Yrs.)				24 hr.
2				3.0
5				3.9
10				4.6
25				5.5
50				6.0
100				6.6

6. Use of other criteria, assumptions, references, calculation methods and/or computer modeling may be utilized, provided detailed design information and programming with references are submitted and approved by the Borough.
- C. For the purpose of determining pre- and post-development runoff coefficients, the following criteria shall be used:
1. Pre-development runoff coefficients for all areas within the site boundaries shall be based on a good grass cover unless portions of the site contain wooded areas. When the site contains wooded areas, runoff coefficients shall be based on forest/woodland cover.
 2. Off-site land use conditions used to determine storm flows for the pre- and post-development comparison shall be based on existing land uses assuming summer or good conditions for onsite areas and winter or poor conditions for offsite areas.
 3. Off-site land use conditions used to determine storm flows for collection and conveyance facilities shall be based on existing land uses assuming winter or poor conditions.
- D. Runoff calculations shall include a hydrologic and hydraulic analysis indicating volume and velocities of flow and the grades, sizes and capacities of water carrying structures, sediment basins, retention and detention structures and sufficient design information to construct such facilities. Runoff calculations shall also indicate both pre-development and post-development rates for peak discharge of storm water runoff from the project site.

SECTION 404

DESIGN STANDARDS - DETENTION AND RETENTION FACILITIES

- A. Retention basins and detention basins shall be designed to safely discharge the peak basin inflow rate of a post-development one hundred (100) year frequency storm event through an emergency spillway in a manner which will not damage the integrity of the basin. The emergency spillway shall be constructed in undisturbed ground. An easement shall be provided from the spillway outfall to a natural or artificial watercourse. The emergency spillway shall not be considered to function as part of the primary outlet structure. The primary outlet structure shall control the flow from all storm events up to and including the 100-year event. The purpose of the emergency spillway is to function in the event that the primary structure becomes non-functional for any reason.
- B. Retention basins and/or detention basins, and water-carrying facilities shall be stabilized in accordance with current engineering and U.S. Soil Conservation Service practices, and the Orwigsburg Borough BMP Design Standards.
- C. Retention basins and/or detention basins shall be designed and maintained to insure the design capacity after sedimentation has taken place.
- D. Basins, which are not designed to release all storm water, shall be specifically identified as retention basins or permanent pond basins. All other basins shall have provisions for de-watering. All basin bottoms shall be designed and constructed with positive drainage consisting of slopes no less than 2%. Where this cannot be provided, a low flow channel or other suitable facilities shall be installed to prevent ponding water, wet or unmaintainable conditions. Low flow channels shall not be used to dewater BMP storage volume areas. Tile fields or similar subsurface infiltration will be used to de-water the bottom of a BMP storage area should the BMP storage area be part of a detention basin storage area.
- E. Retention basins and/or detention basins, which are designed with earth fill dams, shall incorporate the following minimum standards:
 - 1. The maximum water depth shall not exceed six (6) feet.
 - 2. The minimum top width of all dams shall be eight (8) feet.
 - 3. The side slopes of earth fill dams shall not be less than three (3) horizontal to one (1) vertical.
 - 4. Basins without restricted access shall have impoundment areas with side slopes no greater than five (5) horizontal to one (1) vertical. Basins with side slopes steeper than five (5) horizontal to one (1) vertical shall be protected by fencing that will discourage access.
 - 5. A clay core and key trench of impervious material shall be provided under all dams.
 - 6. All pipes and culverts through dams shall have properly spaced concrete cutoff collars or factory welded anti-seep collars.

7. A minimum one (1) foot freeboard shall be provided above the water surface elevation flowing through the emergency spillway while conveying the 100-year post development storm flow in an emergency (blocked principle outlet) condition.
 8. Minimum floor elevations of the lowest floor, including basements, for all structures that would be affected by a basin, other temporary impoundments or open conveyance systems where ponding may occur shall be two (2) feet above the Q100 year water surface.
- F. All detention basins specifically designed to release all storm water shall include provisions for an outlet structure that permits draining the basin to completely dry position within 24 hours following the end of the design rainfall.
- G. Where retention basins, seepage pits, seepage tanks, seepage trenches and/or french drains are proposed, the applicant shall include an analysis of the potential for accelerated sinkhole development in the specific geology of the site due to the concentration of water introduction to the subsurface. The applicant shall submit a seepage report containing a test pit soils analysis, prepared by a soil scientist, or other recognized professional (i.e., Sewage Enforcement Officer), and percolation test results in accordance with PADEP regulations (Chapter 73, Section 15). The bottom of the test pits shall be no less than 30 inches below the elevation at which the soil/seepage interface is designed (i.e., the bottom of the trench, pit, etc.). Percolation tests shall be performed at this interface. Retention basins shall provide enough capacity to store the entire runoff volume created by a 100 year, 24-hour storm event. When supporting documentation, as stated above, is provided to the Borough Engineer, the applicant may (i) reduce the required volume by 20%; or, (ii) determine the volume required using 20% of the percolation rate to perform routing calculations, whichever volume is greater.

Surface retention systems (retention basins) shall incorporate the following minimum design standards:

1. Surface infiltration systems greater than 3 feet in depth shall be located no less than 30 feet from any basement wall.
2. Surface infiltration systems designed to handle runoff from commercial or industrial impervious parking areas shall be no closer than 100 feet from any water supply well.
3. Surface infiltration systems shall not receive runoff until the entire contributory drainage area to the infiltration system has received final stabilization.
4. The storm water management facility design shall provide an emergency overflow system with measures to provide a non-erosive velocity of flow along its length and at the outfall.
5. Surface infiltration systems for paved areas shall utilize some means of pre-filtering (i.e. a 20 foot or greater grass strip, oil-grit separator, or other standard practice) to prevent grits from clogging the system.
6. A liner of impervious material shall be provided in all wet ponds. In lieu of an impervious liner, the applicant may supply sufficient information to the Borough prepared by a soil scientist, which includes an analysis of the potential for

sinkhole development and demonstrates to the Borough and its consultants that sinkholes shall not develop.

- H. Sub-Surface retention systems (Seepage Beds, Leach-Rings, Infiltration Trench) shall incorporate the following minimum design standards:
1. Seepage beds shall not be located closer than 10 feet from any on-lot septic system. In the cases of elevated sand mounds, the distance shall be measured from the toe of slope of the sand mound.
 2. Every seepage bed shall be provided with an emergency overflow/spillway. The overflow shall be capable of conveying the flow of a 100-year event from the area contributing to the seepage bed. The overflow shall be designed to discharge away from buildings and other structures and toward existing natural or man made channels or storm water facilities.
 3. The following information shall be provided for the design of the seepage bed:
 - a. All calculations and assumptions used in the design of the seepage bed shall be submitted to the Borough for review. The calculations should indicate the discharge/percolation rate as determined by actual percolation or permeability tests.
 - b. Sufficient details showing the construction of the seepage bed. The details should include bed dimensions, aggregate size, percentage of voids, type and limits of geotextile, etc.
 - c. The Borough shall have the right to reject materials and methodology not proven to meet the standards contained herein.
 4. The tops and sides of all seepage beds shall be lined with geotextile material to prevent the migration of soil particles in to the bed aggregate.
 5. All seepage beds shall be provided with clean-outs for the primary bed feed lines.
 6. Seepage beds that are intended to collect surface runoff from areas other than roofs shall be provided with protection from sedimentation within the seepage bed. Inlets for seepage beds shall have a minimum 24" sump below the intake to the seepage beds.
 7. As with conventional detention/retention facilities, seepage beds shall be included in a storm water management easement.
 8. Specific seepage bed maintenance procedures shall be defined on the plan sheet intended to be recorded.
- I. All outlet structures and emergency spillways shall include a satisfactory means of dissipating the energy of flow at its outlet to insure conveyance of flow without endangering the safety and integrity of the basin and the downslope drainage area.

- J. No outflow from a detention basin shall discharge directly onto or be conveyed onto a public road. Discharge into a culvert under, or storm sewer along a public road is acceptable provided that the applicant provides evidence of adequate capacity in the culvert or storm sewer.
- K. Appropriate easements to enclose and permit access to all detention and retention facilities shall be provided.
- L. Cisterns may be used in lieu of conventional storm water detention/retention facilities provided that the following criteria are met:
 - 1. The proposed use of the structures directing runoff to the cistern is agricultural or residential in nature.
 - 2. The property use will draw from the cistern on a daily basis. The daily draw shall not be less than 5% of the total volume of the cistern.
 - 3. An alternate supply of water is available for the property use during dry periods.
 - 4. The cistern shall collect only roof water from the buildings it serves. All other areas shall use more conventional methods of detention/retention if necessary.
- M. Cisterns shall be designed to store the runoff volume of a 100-year storm event for the area served by the cistern.
- N. Every cistern shall be constructed of concrete.
- O. Every cistern shall be provided with a suitable access for maintenance purposes. The access shall not be less than 24" in diameter, or, in the case of square or rectangular access points, shall not be less than 24" measured along the shortest side of the access. All access points shall be located outside of buildings and shall be secured (locked) at all times other than for normal maintenance.
- P. Every cistern shall be provided with an emergency overflow/spillway. The overflow shall be capable of conveying the flow of a 100-year event from the area contributing to the cistern. The overflow shall be designed to discharge away from buildings and other structures and toward existing natural or man made channels or storm water facilities.
- Q. The following information shall be provided for the design of the cistern:
 - 1. All calculations and assumptions used in the design of the cistern shall be submitted to the Borough for review. The calculations should indicate the proposed use of water drawn from the cistern and the rate at which the water will be drawn.
 - 2. Sufficient details showing the method proposed to draw water from the cistern.
 - 3. Structural details of the cistern.
- R. Cisterns shall not be used as a source of potable drinking water.

SECTION 405 DESIGN STANDARDS - COLLECTION AND CONVEYANCE FACILITIES

- A. The design of storm water management collection and conveyance facilities that service drainage areas within the site shall be based upon a twenty-five (25) year storm frequency event. Storm water management facilities that convey off-site storm water through the site must be designed to convey a fifty (50) year event.
- B. All developments must also include design provisions that allow for the overland conveyance of the post Q100 year storm flows through the site without damage to any private or public property.
- C. When the design of the overall Land Disturbance Plan requires a transfer of watershed, as outlined by Section 402 G. of this Ordinance, the design shall illustrate that the facilities utilized to accomplish the transfer can safely convey the 100-year post-development storm event. Transfers into any future adopted Act 167 study areas will be prohibited.
- D. The capacities of the pipes, gutters, inlets, culverts, outlet structures and swales shall consider all possible hydraulic conditions. The following minimum design standards have been established by the Borough.

- 1. For grass swales and roadside gutters two (2) design considerations shall be met: the first shall consider channel velocity and stability based upon a low degree of retardance ("n" of .03); the second shall consider channel capacity based upon a high degree of retardance ("n" of .05).
- 2. The "n" factors to be used for paved or riprap swales or gutters shall be based on accepted engineering design practices.
- 3. The following chart shall be used to determine the "n" factors for corrugated metal pipe:

Pipe Diameter (inches)	"n" factors			
	Helical		Annular	
	Capacity	Velocity	Capacity	Velocity
up to 18	.017	.014	.026	.024
21 through 30	.021	.017	.026	.021
larger than 30	.026	.019	.026	.019

- 4. The "n" factor for concrete or any other smooth pipe shall be 0.010 for velocity and 0.013 for capacity.
- 5. The velocity to be used in the design of any piped storm water conveyance system shall be based on the maximum velocity obtainable. The capacity shall be based upon full flow conditions.
- 6. Inlets, culverts and basin discharge systems shall be designed for the worst-case condition. Inlet capacity shall be based on design data provided by the manufacturers. If acceptable information is not available, inlets in non-ponding areas shall be designed for a maximum capacity of four (4) cubic feet per second (cfs). Where ponding occurs, inlet capacity shall be based on accepted

engineering design practices. Culvert design shall consider either inlet/outlet control or a combination of hydraulic losses through the system, whichever is greater. Basin discharge systems shall be designed to the same standards as culverts. If it cannot be readily determined which hydraulic condition controls, the basin discharge rate shall be based on the highest possible discharge rating curve with the basin capacity sized to store the excessive storm runoff based on the lowest possible discharge rating curve.

- E. Manholes and inlets, when proposed, shall not be spaced more than four hundred (400) feet apart. Additionally, manholes shall be placed at points of abrupt changes in the horizontal or vertical direction of storm sewers. Inlets shall be substituted for manholes where they will serve a useful purpose. Where pipe sizes increase, the crown of piping shall match rather than the inverts of both so as to aid in hydraulic efficiency.
- F. Inlets shall be placed on both sides of the street at low spots and at points where the flow in gutters exceeds 3 inches. Inlets shall normally be along the curb line at or beyond the curb radius points. For the purpose of inlet location at corners, the depth of flow shall be considered for each gutter. At intersections, the depth of flow across the through streets shall not exceed 1 1/2 inches. At driveways, the depth of flow across the entrance of the driveway shall also not exceed 1 1/2 inches.
- G. Curves in pipes or box culverts without an inlet or manhole are prohibited. Tee joints, elbows and wyes are also prohibited.
- H. Storm water management pipe collection and conveyance systems shall have a minimum diameter of eighteen (18) inches and shall be made of reinforced concrete pipe (RCP), corrugated galvanized metal pipe (CMP), smooth lined high density polyethylene pipe (HDPE) or polyvinylchloride pipe (PVC). Where installation depths exceed fifteen (15) feet from ground surface to the crown of the pipe structural calculations that address the actual design requirements will be required.
- I. All storm sewer pipe and culverts shall be laid to a minimum depth of one (1) foot from finished subgrade to the crown of pipe in paved areas, unpaved vehicular areas and one (1) foot from finished grade to the crown of pipe in grassed areas.
- J. All storm sewer pipes, culverts, manholes, inlets, endwalls and endsections shall be constructed in accordance with Pennsylvania Department of Transportation, Form 408, as amended.
- K. Storm sewer pipes, culverts, manholes, inlets, endwalls and endsections proposed for dedication or located along streets shall conform to the requirements of the Pennsylvania Department of Transportation, Bureau of Design, Standards for Roadway Construction, Publication No. 72, in effect at the time the design is submitted, as modified by the adopted Borough construction standards.
- L. Inlets shall be depressed 2" below the grade of the street gutter or ground surface. Inlets used in ground areas will have their tops installed level. Inlets used along curbed streets shall have their tops installed at a grade equal to the street or curb grade.
- M. In residential areas bicycle safe grating shall be utilized with all storm water inlets.
- N. Where storm sewers exceed 15 percent slope, properly spaced concrete anchors will be used.

- O. Storm water roof drains and pipes shall discharge water into a storm water runoff dispersion and infiltration control device and not into storm sewers or street gutters.
- P. All storm pipe, other than culverts for existing channels, which discharge from residential lots to a street or from a street to residential lots shall extend from the street right-of-way a minimum distance of 2/3 the length of the longest adjacent lot dimension.
- Q. The proposed storm water discharge at the perimeter of the site shall not be beyond the capacity of any existing, immediately contiguous, storm water management facility into which it flows.
- R. All existing and natural watercourses, channels, drainage systems and areas of surface water concentration shall be maintained in their existing condition unless an alteration is approved by the Borough.
- S. Flow velocities from any storm sewer may not result in a deflection of the receiving channel.
- T. All storm drainage open channels, swales, detention and retention basins and areas of surface water concentration shall be seeded and hydro-mulched to the limits of the easement or right-of-way in which the facility is located.
- U. In residential areas protective grating shall be provided at all headwalls and endwalls for pipe openings greater than 24 inches in diameter to prevent clogging and unauthorized access to storm water facilities. Grating shall be provided in a manner similar to the detail provided in Appendix 8 to this Ordinance.
- V. All storm sewer crossings of streets shall be perpendicular to the street centerline.
- W. All storm sewer piping connections shall be constructed with watertight joints of a type approved by the Borough Engineer. This requirement shall be so noted and/or detailed on any plans.
- X. Storm pipes that discharge to a detention or retention basin shall be located as to outlet directly to the basin floor.
- Y. Endwalls and end sections shall be used where storm water runoff enters or leaves the storm sewer horizontally from a natural or manmade channel.
- Z. Energy dissipators (outlet protection) shall be placed at the outlets of all storm sewer pipes in keeping with the PADEP March 2000 E & S Pollution Control Manual, as amended.
- AA. Storm facilities not located within a public right-of-way shall be centered within an easement having a minimum width of eighteen (18) feet plus the top width of a swale or outside diameter of a pipe, or 20 feet, whichever is greater.

SECTION 406 DESIGN STANDARDS - EROSION AND SEDIMENTATION CONTROL

- A. The applicant must comply with the Erosion Control Rules and Regulations of Title 25 Rules and Regulations, Part I. PADEP, Subpart C. Protection of Natural Resources, Article II. Water Resources, Chapter 102, Erosion Control, as amended.
- B. The design plan and construction schedule shall incorporate measures to prevent soil erosion and sedimentation.
- C. The following principles shall be applied to the design plan and construction schedule to minimize soil erosion and sedimentation.
 - 1. Erosion and Sedimentation Controls designed in conformance with the PADEP Erosion and Sedimentation Pollution Control Program Manual shall be implemented during the construction and post-construction periods to prevent soil erosion, sedimentation, and other pollutants from entering streams, lakes, etc.
 - 2. Natural vegetation shall be retained and protected on all undisturbed areas.
 - 3. The extent of the disturbed area and the duration of its exposure shall be kept to a minimum. Stockpiles to remain in place longer than twenty (20) days shall be seeded.
 - 4. It shall be the applicant's responsibility during construction to prevent soil pollution to neighboring property, public streets and streams. Soil dropped from construction equipment and sedimentation shall be immediately removed from roads, public and private property, and streams.
 - 5. Drainage provisions shall accommodate the storm water runoff both during and after construction.
 - 6. Soil erosion and sedimentation facilities shall be installed prior to any on-site earth disturbance.
- D. The maximum swale, gutter or curb velocity of storm water runoff shall be maintained at levels, which result in a stable condition both during and after construction. The following are considered characteristics of a stable condition:
 - 1. It neither aggrades nor degrades the condition of the channel.
 - 2. The channel banks do not erode to the extent that the channel cross-section is changed.
 - 3. Sediment bars do not develop.
 - 4. Erosion does not occur around culverts and bridges or elsewhere.
 - 5. Gullies do not form or enlarge due to the entry of uncontrolled storm water runoff.
- E. Grass lined channels shall be considered stable if the calculated velocity does not exceed the allowable velocities shown below:

1. Three (3) feet per second where only sparse vegetation can be established and maintained because of shade or soil condition.
 2. Four (4) feet per second where normal growing conditions exist and vegetation is to be established by seeding.
 3. Five (5) feet per second where a dense, vigorous sod can be quickly established or where water can be temporarily diverted during establishment of vegetation. Jute matting and mulch shall be used for establishing vegetation.
 4. Six (6) feet per second where there exists a well established high quality sod.
- F. Where swale bends occur, the allowable velocities listed above shall be divided by the following factors:
- | | |
|------------------------------------|------|
| 1. Swale bends 0 to 30 degrees | 1.50 |
| 2. Swale bends 30 to 60 degrees | 1.75 |
| 3. Swale bends 60 to 90 degrees | 2.00 |
| 4. Swale bends 90 degrees and over | 2.50 |
- The method of erosion protection proposed must be supported by design information and/or references.
- G. Flow velocities from any storm sewer may not result in a deflection of the receiving channel.
- H. Energy dissipators (outlet protection) shall be placed at the outlets of all storm sewer pipes, culverts and bridges in keeping with the PADEP March 2000 E & S Pollution Control Manual, as amended.

SECTION 407 DESIGN STANDARDS - BEST MANAGEMENT PRACTICES (BMP)

- A. Best Management Practices (BMPs) shall be implemented in Orwigsburg Borough in order to protect the Borough's water quality. BMPs shall be applied to all subdivision and land development plans and other activities regulated by the Storm Water Management and Earth Disturbance Ordinance. The goal of BMPs is to improve the water quality of surface runoff entering the waterways, streams and creeks thereby improving other watershed resources. These goals and the related runoff characteristics include:
1. Infiltration of the majority of annual rainfall to replenish the water table and provide stable base flow to streams.
 2. Physical and biological filtration of runoff to provide a clear and pollution free source of runoff to watercourses and other water bodies.
 3. Moderation of runoff peak velocities to minimize erosion and damage to aquatic habitat in downstream areas.

This philosophy stresses preserving natural storage, infiltration and pollutant-filtering functions where practical. BMPs are created to provide permanent water quality treatment compared to the typical temporary erosion and sedimentation control facilities provided during construction to address water quality.

- B. The purpose of these Design Standards is to provide designers with guidance and basic minimum design criteria to meet (BMP) requirements. This field is in its infancy and modifications will be necessary as new methods become available. Innovations and alternate means are strongly encouraged in order to meet the objectives at a reasonable cost. Beyond basic minimum design criteria of this Ordinance, designers, developers and contractors are encouraged to utilize the *Pennsylvania Handbook of Best Management Practices for Developing Areas* (dated Spring of 1998 as prepared by CH2MHill) as a selection guide and design reference for developing BMPs as necessary for any regulated activity.
- C. Application of BMPs. BMPs shall be required under the following conditions and/or activities:
1. Any new or proposed land development or subdivision where storm water management facilities are required as identified in § 103.
 2. Any expansion or alteration of an existing storm water management facility.
 3. Any other development, land disturbance or construction activity where the Borough determines that said activities might adversely affect storm water runoff.

The strategy employed avoids the use of performance standards related to effluent standards. Instead, it establishes a suggested long-term storage volume to be provided with any proposed land use. Other design methods are available and may be utilized provided documentation is furnished and reviewed by the Borough Engineer and approved by the Borough Council.

D. General Conditions:

The Borough shall require a minimum long-term storage volume to be provided with a regulated activity as set forth below. If an applicant demonstrates to the satisfaction of the Borough that a method other than the minimum long-term storage volume required by this Ordinance will provide the same level of improvement of water quality for surface runoff entering waterways, streams and creeks, the applicant may use such alternate design. The Borough will consider non-storage measures such as the use of natural open space buffers only if an evaluation of such alternate design demonstrates that it will accomplish the water quality goals to at least the same as the minimum long-term storage volume. All applicants shall adhere to the following as part of the design for any BMP facility:

1. Minimize the amount of onsite impervious areas.
 - a. Preserve existing natural wooded and vegetative cover while maintaining any natural drainage ways.
 - b. Consider providing semi-impervious surfaces such as porous pavements and gravel, which can be considered an application of BMPs.

2. Maximize the amount of onsite drainage areas that are directed toward or drain to BMP facilities. The minimum area of the site, which shall be directed towards or drain to BMP facilities shall be 70%. All impervious areas installed on the site will drain toward the BMP facilities.
3. Minimize directly connected impervious areas by providing vegetative strips, sand filters, gravel traps or other similar BMP facilities. Other means could be the use of bio-retention facilities to promote the natural removal of pollutants and groundwater recharge. Runoff from impervious areas should be directed to pervious areas such as lawns or grassed swales in order to promote the spreading (and not the concentration) of storm water prior to leaving the onsite area.

For example:

Roof downspouts to lawns
Driveways to lawns
Parking areas to lawns or grassed swales.

4. Prevent mixing of off-site and on-site runoff, unless the upstream drainage area is less than five percent (5%) of the total on-site area.
5. Minimize the amount of site disturbance and grading in order to retain existing drainage patterns.
6. Delay the construction of BMPs, except temporary erosion and sedimentation controls, until all site construction and related land disturbance activities are complete in order to minimize the potential for clogging, maintenance or other remedial action.
7. Evaluate the underlying soils of the site and incorporate any conditions of such into the design of BMPs to ensure the maximum life of the facility.
8. Use water tolerant vegetation and grass (orchard, bermuda, perennial rye, fescue, reed canary grasses, etc.) in swales with slopes less than 2% or other areas where appropriate. In other areas, native plant materials should be utilized to reduce the degree of required maintenance.
9. Provide a length to width ratio in all detention/retention basins/ponds and other such storage facilities of at least 2:1 to maximize the flow paths between the inflow point and the outlet structure.
10. Provide proper erosion control at all storm sewer discharge points, pipe outlets or other concentrated flow locations where accelerated runoff velocities can be expected. Use natural materials for energy dissipation and erosion control.
11. Utilize under drains for all ponds.
12. Size BMP outlets to release water at a rate producing a 36-hour drawdown time - in addition to normal basin storage drawdown time. Orifices should be sized to accomplish this (minimum 1" diameter holes). To prevent clogging around a vertical riser use a cone of gravel.

13. Infiltration trenches provided for storm water management do not require additional storage volume calculations for BMP. Subsurface detention facilities (non-perforated pipes, concrete box/vault) that ultimately outlet to the surface via a discharge pipe or similar outlet do not satisfy storage volume requirements for a BMP facility.

E. System of Controls:

1. The Orwigsburg Borough approach to protect water quality is to eliminate the impact of pollutants in storm water runoff through a system of controls. These controls can be at the source, in the lot, at the site, or at some regional facility. Examples are listed below.
2. Source Controls - eliminate the opportunity for pollutants to mix with storm water runoff.
 - a. Street sweeping
 - b. Cover chemical storage areas
 - c. Dike potential spill areas
 - d. Regular sediment removal from drainage system
3. Lot Controls - prevent the potential for concentrating pollutants and concentrating storm water runoff.
 - a. Eliminate directly connected impervious areas
 - b. Minimize impervious areas
 - c. Utilize grass swales and filter strips
 - d. Utilize infiltration trenches, where applicable
 - e. Utilize porous pavement
4. Site Controls - structural methods required to meet storage volume requirements and water quality objectives.
 - a. Grass swales
 - b. Infiltration basins
 - c. Detention ponds
 - d. Wetlands
5. Regional Controls (Drainage Area greater than 100 Acres) - off-site structural measures for large projects.
 - a. Detention basins

b. Retention basins

F. Design Requirements. The means and methods of addressing BMPs as part of site development shall be based on actual performance depending on site conditions. Applicants shall design BMP facilities to attain the goals set forth in this §407. All storm water management facilities shall include the following minimum requirements to implement BMPs within the Borough.

1. Required BMP Storage Volume Calculation. Regardless of any storage volume provided to address storm water management, additional BMP storage volume shall be provided as follows:
 - a. Measure the area of land disturbance activity on the site draining to the discharge point.
 - b. Compute the impervious area within the area of the land disturbance activity on the site draining to the discharge point.
 - c. Compute the percentage of impervious area for the land disturbance activity.
 - d. Determine the storage volume requirement, using Appendix 9 and the impervious percentage calculated in Step 3, below.
 - e. Compute the required storage volume by multiplying the storage requirements times the total drainage area to the discharge point.

Sample calculation as follows:

Given: 50-acre site within a high quality watershed,
35-acre drainage area to discharge point,
15 acre land disturbance area, and
7.5 acres of impervious cover

Step (1)	15 acres
Step (2)	7.5 acres
Step (3)	$(7.5 + 15) \times 100 = 50\%$
Step (4)	from Appendix 8, 1,500 CF/acre
Step (5)	$1,500 \text{ CF/acre} \times 35 \text{ acres} = 52,500 \text{ CF}$

Total required BMP Storage Area to be provided = 52,500 CF

2. Storage Volume Reduction for Filter Strip and Grass Swale Effectiveness. To account for the effectiveness of filter strips and grass swales to remove pollutants from storm water runoff, the required BMP Storage Volume can be reduced when filter strips and grass swales are incorporated into the site design.
 - a. The percentage of reduction is determined by using the chart in Appendix 10 for the “flow length” of the appropriate measure. The maximum reduction allowed for residential/agricultural uses is 80% and the maximum reduction allowed for commercial/industrial uses is 50%. In such cases, some other method or means to achieve the total storage volume shall be provided.

Sample calculation as follows:

Given: Residential Development
Required Storage Volume = 52,500 CF
Filter Strip Flow Length = 50 feet
Grass Swale Flow Length = 300 feet

From Appendix 10:

Filter Strip Reduction = 20%
Grass Swale Reduction = 60%
Total Reduction = 80%
Use 80% reduction (also the maximum allowed)

Storage Volume Adjustment
 $52,500 \text{ CF} \times 0.80 = 42,000 \text{ CF}$ (adjustment factor)
 $52,500 \text{ CF} - 42,000 \text{ CF} = 10,000 \text{ CF}$ Storage to be provided

G. BMP Design Guidelines. The following are example facilities and design guidelines that may be utilized to address BMP requirements:

1. Filter Strip. Filter strips are vegetative areas across which storm water sheet flows before entering the storm water collection system or discharging offsite. For filter strips to be effective in pollutant removal, the runoff from impervious areas must also be in a sheet flow condition.

The following guidelines must be adhered to in the design of filter strips;

Minimum Flow Length = 20 feet
Maximum Slope = 5:1
(See Appendix 10 and 11 for sample details)

2. Grass Swale. Grass swales are required to be lined with vegetative ground cover to promote pollutant removal. Swales are used for collecting and conveying surface storm water in a channel with relatively flat side and longitudinal slopes. The following guidelines must be adhered to in the design of grass swales:
 - a. Maximum Side Slopes = 3:1
 - b. Longitudinal Slopes = 1.0 - 4.0% (Greater slopes may be permitted with adequate lining to address the velocity of runoff; however, slopes greater than 4.0% will not be considered BMPs)
 - c. Provide velocity checks at 100-foot intervals. Longer spacing is permitted provided documentation indicates that flow velocities do not exceed 2 feet per second (fps) using the anticipated 2 year storm event flow values.
 - d. See Appendix 11, 12 and 13 for sample details.

3. Infiltration Trench and Dry Well (or Seepage Trench and Seepage Pit). Infiltration trenches are below grade facilities constructed by excavating along, narrow trench backfilled with stone aggregate material to provide a storage volume within the voids while allowing infiltration into the surrounding soil. Dry wells function in much the same manner, except the inflow is typically conveyed to and distributed throughout the system with series of pipes. The following guidelines must be adhered to in the design of infiltration trenches:

- a. Maximum drainage area = 5 acres.
- b. The bottom of the excavating trench must be a minimum of 2 feet above the seasonal high water table or bedrock. Soil sampling, test pits or auger testing must be completed in the proposed location of the facility in support of the design.
- c. Permeability data must be based on actual field tests at the lowest elevation of the system or published soil data for the site. The procedure for, or actual results of, determining the suitability for onsite sewage disposal facilities are acceptable.
- d. The required storage volume must be able to infiltrate within a 72-hour period. The minimum rate of infiltration must be 0.5 inches per hour and the maximum rate 12.0 inches per hour.
- e. If the infiltration trenches have been sized for storm water management purposes, no additional calculations are required. If the infiltration trench is provided for BMP purposes only, then follow the volume design procedure in § 407 F.1.
- f. See Appendix 14 and 15 for sample details.
- g. Sample calculation as follows:

Given: Percolation Rate = 2"/hr.

Required Storage Volume 2,500 CF

Trench Volume with 40% Stone Voids
= 2,500 - ÷ 0.40 = 6,250 CF

Drawdown Time = Trench Depth + Perc. Rate
= 36" (assumed) — 2"/hr. = 18 hrs

4. Infiltration Basin. Infiltration basins are above grade depressions created by shallow excavation for the storage of storm water. The release of collected storm water runoff is by infiltration or percolation to the ground. The following guidelines must be adhered to in the design of infiltration basin:
- a. Maximum drainage area = 5 acres.
 - b. Minimum storage volume based on the design procedure in § 407 F.1. or an alternative method of computation (see § 403) as necessary to demonstrate compliance with § 407 of this Ordinance.

- c. The bottom of the excavated trench must be a minimum of 2 feet above the seasonal high water table or bedrock. Soil sampling, test pits or auger testing must be completed in the proposed location of the facility in support of the design.
 - d. Permeability data must be based on actual field tests at the lowest elevation of the system or published soil data for the site. The procedure for, or actual results of, determining the suitability for onsite sewage disposal facilities are acceptable.
 - e. Maximum Side Slopes = 3:1
 - f. See Appendix 16 for sample detail.
5. Extending Dry Detention Basin. Extended dry detention basins are modified storm water management detention basins that have over excavated bottom areas. The required BMP storage volume is provided below the elevation of the storm water management outlet structure. The following guidelines must be adhered to in the design of extended dry detention basins:
- a. Minimum required BMP storage volume based on the design procedure in § 407 F.1.
 - b. Maximum Side Slopes = 3:1
 - c. The required storage volume shall be provided and maintained above which the 2 year storm event volume must be provided and discharged with a 24 hour to 40 hour period. The minimum outlet structure hole or orifice diameter = 1/2 inch. Drawdown or dewatering time calculations shall be based on accepted engineering practices, subject to the review and approval by the Borough.
 - d. The bottom of the excavated basin must be minimum of 2 feet above the seasonal high water table or bedrock. Soil sampling, test pits or auger testing must be completed in the proposed location of the facility in support of the design.
 - e. Permeability data must be based on actual field tests at the lowest elevation of the system or published soil data for the site. The procedure for, or actual results of, determining the suitability for onsite sewage disposal facilities are acceptable.
 - f. Within the BMP storage area, suitable vegetation (ground cover or other plantings) shall be of a water tolerant species.
 - g. The minimum length to width ratio = 2:1.
 - h. See Appendix 17 for sample detail.

6. Wet/Retention Basin. A wet/retention basin is a storm water management facility, which includes: a) a permanent pool of water enhancing water quality and b) additional storage volume above the pool for detaining storm water runoff. The required BMP storage volume is provided above the permanent pool elevation and released gradually.
 - a. Minimum required BMP storage volume based on the design procedure in § 407 F.1.
 - b. The minimum length to width ratio = 2:1.
 - c. Permeability data must be based on actual field tests at the lowest elevation of the system or published soil data for the site. The procedure for, or actual results of, determining the suitability for onsite sewage disposal facilities are acceptable.
 - d. The required storage volume must be able to infiltrate or discharge within a 24-hour to 40-hour period.
 - e. Drawdown or dewatering time calculations shall be based on accepted engineering practices, subject to the review and approval by the Borough.
 - f. See Appendix 18 for sample detail.
7. Wetlands. Wetlands are created when an area is inundated or saturated by surface or groundwater at a regular frequency and duration sufficient to support a prevalence of vegetation and plants adapted for life in saturated soil conditions. Wetlands can include swamp, marches and bogs. Such areas can be very effective in the removal of pollutants from storm water runoff.
 - a. For design criteria, reference the most recent publications available from the PADEP.
 - b. Inflow or supply of surface/groundwater must be greater than the infiltration rate.
 - c. Depth requirement will vary; however, the following are general guidelines:
 - 25% of the area should be at 2 to 3 feet depth near the outlet.
 - 25% of the area should be at 6-12 inches in depth.
 - 50% of the area should be at 6 inches deep near the inflow location.
8. Water Quality Inlet. A water quality inlet is a three-stage underground retention system designed for removing heavy particles and absorbed hydrocarbons from storm water runoff. These facilities should be used for small impervious areas (parking lots) where an exceptionally excessive amount of oily wastes are anticipated.
 - a. Required Volume = 200 CF per impervious acre.

- b. These facilities must be retained in private ownership; specifically the Borough will not accept dedication of these facilities.
 - c. See Appendix 19 for sample detail.
9. Other BMPs Measures. The practice of providing BMPs is in its infancy and modifications will be necessary as new methods, techniques and materials become available. Consequently, the Borough will encourage other means and methods to incorporate BMPs, subject to the review and approval of such.

H. Maintenance Considerations.

- 1. Maintenance is an essential aspect of any BMPs to ensure the successful and continued functioning of the system. Therefore, the extent of maintenance, the responsible individual or entity and the frequency of such shall be established.
- 2. At a minimum, the maintenance of BMP facilities during and after construction shall be in accordance with § 501 A. and § 501 B. of this Ordinance.
- 3. The components of a maintenance program shall include, at a minimum, the following items:
 - a. Routine Maintenance.
 - (1) Inspection.
 - (2) Vegetation control and periodic maintenance.
 - (3) Debris and litter control.
 - (4) Mechanical components maintenance.
 - b. Non-routine Maintenance.
 - (1) Embankment/dam settling and stabilization.
 - (2) Erosion control and repair.
 - (3) Sediment removal.
 - (4) Outlet structure maintenance and replacement.
- 4. Access to BMP facilities should be addressed during the design stage. Depending on the type of facility, provisions for maintenance personnel, inspections and equipment must be provided. Storm water management easements should be provided/created and the configuration/location of such must be established during the design stage. If necessary, provisions for all-weather roads suitable for heavy equipment may be required.
- 5. The use of native plants shall be considered to reduce the potential degree of maintenance required.

- I. Regulatory Compliance. All BMPs that are of the size and type or in a location that would require the approval of a State or Federal agency shall require securing the appropriate permits or approvals. This would include, but not be limited to, the following:
 1. U.S. Army Corp of Engineers. Clean Water Act, §§401 and 404: related construction within the floodplain or modifying stream channels.
 2. PADEP and/or the Schuylkill Conservation District Storm water Management Act (Act No. 167); Chapter 92, National Pollution Discharge Elimination System; Chapter 93, Water Quality Standards; Chapter 102, Erosion Control; Chapter 105, Dam Safety and Waterway Management.

SECTION 408 STORM WATER MANAGEMENT DISTRICTS

The Borough shall comply with the applicable provisions of any future adopted ACT 167 Watershed Storm Water Management Plan. If the provisions of this Ordinance are sufficient to regulate development within the Borough in a manner consistent with the governing watershed storm water management plan, this Ordinance shall be deemed to satisfy the requirements of Section 11(b) of Act 167 without the necessity of reenactment.

SECTION 409 RIPARIAN BUFFER EASEMENT

- A. In order to protect the existing environmentally sensitive areas within the Borough, protect the natural resources and aid in the improvement of water quality, riparian buffer easements shall be created as part of any subdivision or land development.
- B. For any site located immediately adjacent to or encompassing a watercourse (e.g., stream, creek or other natural body of water), a riparian buffer easement measuring 35 feet in width from the centerline (on each side) of the watercourse shall be provided and maintained (for the purpose of the Section only drainage swales shall not be considered watercourses). The purpose of the riparian buffer easement shall be to protect and preserve the existing natural features and environmental resources subject to the following requirements:
 1. Preservation of Existing Buffer Plantings. Within the riparian buffer easement the existing natural tree and vegetation shall be preserved.
 2. Required Buffer Plantings. To create a riparian forested buffer, the required easement area shall be planted with additional native trees, shrubs and other plant material as determined necessary (depending on site conditions) in order to create a suitable riparian canopy and understory. For the purpose of determining the suitability of the riparian canopy and understory, new planting requirements shall be based on published practices and guidelines subject to the review, approval and satisfaction of the Borough.
 3. The riparian buffer easement shall be incorporated into the deed for the property or lot(s) and shall limit the use of the property location therein. The easement shall allow for the continued private ownership and shall count toward the minimum lot area as required by the Orwigsburg Borough Zoning Ordinance, but the easement shall restrict the land uses to the current use or to other non-damaging activities.

4. The outlet of any storm sewer piping system or storm water management facility shall not be permitted within riparian buffer easement. This will create a setback or separation distance from the receiving watercourse. In this way, a natural filter strip will be created so that the quality storm water runoff will be improved before reaching the watercourse.
5. Any activities within the riparian buffer easement shall be completed in a manner that will preserve and protect the existing limits of the 100-year floodplain and floodway.

**ARTICLE V
MAINTENANCE**

**SECTION 501 MAINTENANCE OF STORM WATER MANAGEMENT FACILITIES AND
 BMP FACILITIES**

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

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

1. Removal of silt from sediment traps when the volume is reduced from 2,000 cubic feet per tributary acre to 1,300 cubic feet per tributary acre (35%) as per the PADEP March 2000 E & S Pollution Control Manual, as amended; and sediment basins when volume is reduced from 7,000 cubic feet per tributary acre to 5,000 cubic feet per tributary acre (28%) as per the PADEP March 2000 E & S Pollution Control Manual, as amended;
2. Periodic maintenance (after each storm event) of temporary control facilities such as replacement of straw bale dikes, straw filters, silt fence or similar measures;
3. Establishment or reestablishment of vegetation by seeding and mulching or sodding of scoured areas or areas where vegetation has not successfully been established;
4. Installation of necessary controls to correct unforeseen problems caused by storm events within design frequencies; and
5. The applicant shall be responsible for removal of all temporary measures and installation of permanent measures upon completion of the project.

B. Maintenance of project after physical completion:

1. It is the purpose of this Ordinance that the Borough shall not become responsible for maintenance and supervision of developed areas. Such responsibility falls upon the party responsible for land development, which shall remain personally responsible for those areas of the development, which are subject to the requirements of this Ordinance. This responsibility may be retained or assigned to third persons as is deemed most acceptable to the party responsible for land development. In the event that any portion of land development would, but for the existence of areas requiring maintenance subject to this Ordinance, be dedicated to the Borough, the applicant may apply to the Borough Council for acceptance by the Borough of such portions of the land development. In the event that the Borough Council, by formal action, accepts such portions of land development, maintenance and responsibility for such portions shall fall upon the Borough.
2. It is the intent of this Ordinance that the purposes of the Ordinance shall be carried out through the exercise of responsibility by private parties, and therefore it is anticipated that control plans shall be developed with the view towards projects, which can effectively be contained within the tracts to be owned and maintained by

private parties. To foster this purpose, with respect to portions or parts of a project as shown on a plan of a developer or contractor, which portions will not otherwise become part of Borough property, such portions shall become the responsibility of the individual property owners on whose property such portions of a project lie including but not limited to retention ponds, detention ponds, sediment basins, energy dissipators, or grassed water-ways. Persons including contractors and developers conveying property of a development to another party, which property contains any portions of a Land Disturbance Plan, after that plan has been established, shall include a specific deed reference to such grantee's responsibility for the maintenance and care of the portions of such project as are included within said grantee's conveyed property. The deed reference to such portions shall be in the form of a deed restriction imposing responsibilities upon said property owner for the maintenance of the portions of the project within the boundary lines of said property as may be necessary for proper maintenance of the project in accordance with the terms of this Ordinance. Such maintenance shall include the following:

- a. Liming and fertilizing vegetated channels and other areas according to specifications in the "Penn State Agronomy Guide."
 - b. Reestablishment of vegetation by seeding and mulching or sodding of scoured areas or areas where vegetation has not been successfully established.
 - c. Mowing as necessary to maintain adequate stands of grass and to control weeds. No stands of grass shall be permitted to exceed eight (8) inches in height.
 - d. Removal of silt from all permanent structures, which trap silt or sediment in order to keep the material from building up in grass waterways thus reducing their capacity.
 - e. Regular inspection (four times per year) of the areas in question to assure proper maintenance and care.
 - f. Removal of silt from all permanent drainage structures, in particular BMPs, in order to maintain the design storage volumes.
3. The deed restrictions hereinabove mentioned shall also include notice that in the event the individual property owners should fail to comply with the terms of this Ordinance for the maintenance and care of the land in question, Orwigsburg Borough shall have the authority to carry out those duties hereby imposed upon individual property owners. The Borough may, after giving notice to an individual property owner that he is not properly maintaining the areas subject to this Ordinance, and by making demand that such compliance shall be made within thirty (30) days, enter upon said private property and take such actions as may be required to bring the area into compliance with this Ordinance. The Borough shall further have the right to file a municipal lien against such property for the cost of maintenance work carried out under this section. The Borough shall in addition to the filing of a municipal lien have any other remedies provided by law against any property owner who should fail to comply with the terms of this Ordinance.

4. Storm water management facilities existing on the effective date of this Ordinance on individual lots, which have not been accepted by the Borough or for which maintenance responsibility has not been assumed by a private entity such as a homeowners' association, shall be maintained by the individual property owners. Such maintenance shall include at a minimum those items set forth in subsection (B) above. If the Borough determines at any time that any permanent storm water management facility has been eliminated, altered, blocked through the erection of structures or the deposit of materials, or improperly maintained, the Borough may determine that such condition constitutes a nuisance and shall notify the property owner of corrective measures which are required, and provide for a reasonable period of time, not to exceed thirty (30) days, within which the landowner shall take such corrective action. If the property owner does not take the required corrective action, the Borough may either perform the work or contract for the performance of the work and bill the property owner for the cost of the work plus a penalty of ten (10%) percent of the cost of the work. If such bill is not paid by the property owner within thirty (30) days, the Borough may file a municipal claim against the property upon which the work was performed in accordance with applicable laws.
5. Where the Borough Council accepts dedication of all or some of the required storm water management facilities following completion, the Borough Council may require the posting of financial security to secure structural integrity of said facilities as well as the functioning of said facilities in accordance with the design and specifications as depicted on the approved storm water management plan for a term not to exceed eighteen (18) months from the date of acceptance of dedication. Said financial security shall be the same type as required with regard to installation of such facilities, and the amount of the financial security shall not exceed fifteen (15%) percent of the actual cost of installation of said facilities.

SECTION 502 PERMANENCE OF STORM WATER MANAGEMENT FACILITIES

- A. Permanence of Storm Water Management Facilities. No person shall modify, remove, fill, landscape or alter storm water management facilities and/or BMP facilities which may have been installed on a property unless a Storm Water Management Permit has been obtained to permit such modification, removal, filling, landscaping or alteration. No person shall place any structure, fill, landscaping or vegetation into a storm water management facility, a BMP facility or within a drainage easement.
- B. Land Disturbance Activities involving Maintenance of Linear Storm Water Management Facilities (storm water piping). Land Disturbance activities involving Linear Storm Water Management facilities that require maintenance or replacement are exempt from obtaining a Storm Water Management Permit in accordance with Appendix 26 provided such maintenance and/or replacement does not involve the prohibitions listed in 502 A.

SECTION 503 PROHIBITED DISCHARGES AND CONNECTIONS

- A. Prohibited Discharges
 1. No person in the Borough shall allow or cause to allow storm water discharges into the Borough's separate storm sewer system, which are not composed entirely of storm water, except discharges allowed under a state or federal permit.

2. If the Borough is issued a NPDES permit(s) for its storm sewer system or if any other person is issued an NPDES permit for storm water management facilities, The Borough may allow discharges under such NPDES permit based upon finding by the Borough or by PADEP that the discharge(s) do not significantly contribute to pollution to surface waters of the Commonwealth. Examples of discharges which the Borough may allow are:

- Water Line Flushing
- Discharges from potable sources
- Landscape irrigation
- Discharges from fountain drains
- Diverted stream flows
- Air Conditioning Condensation
- Rising groundwaters
- Irrigation waters
- Lawn watering
- Flows from riparian habitats and wetlands
- Street wash water
- Uncontaminated pumped groundwater
- Springs
- Water from crawl space pumps
- Individual residential car washing
- Footing drains
- De-chlorinated swimming pool discharges
- Discharges from firefighting activities including training

3. In the event that the Borough subsequently determines that any of the discharges identified in § 503 A.2. significantly contribute to pollution of the Waters of the Commonwealth, the Borough will notify the responsible person to cease the discharge.
4. Upon notice provided by the Borough the discharger will have a reasonable time to cease the discharge consistent with the degree of pollution caused by the discharge.

B. Prohibited Connections.

1. The following connections to the Borough storm sewer or storm drainage systems are prohibited:
 - a. Any drain or conveyance, whether on the surface or subsurface, which allows any non-storm water discharge including sewage, process wastewater, and washwater to enter the separate storm sewer system, and any connections to the storm drain system from indoor drains and sinks.
 - b. Any drain or conveyance 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 Borough.

2. This prohibition expressly includes, without limitation, connections made in the past, regardless of whether the connections, drain or conveyance was previously allowed, permitted, or approved by a government agency, or otherwise permissible under law or practices applicable or prevailing at the time of connection.

C. Roof Drains.

1. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches, except as provided in § 503 C.2.
2. When it is more advantageous to connect directly to streets or storm sewers, connection to roof drains to streets or roadside ditches may be permitted on a case-by-case basis by the Borough. It shall be the burden of the person seeking to make the connection to demonstrate to the Borough that such connection is more advantageous and such connection shall not violate any state or federal statute, rule or regulation.
3. Roof drains shall discharge to infiltration areas or vegetative BMPs to the maximum extent possible.

D. Waste Disposal Prohibitions.

No person shall throw, deposit, leave, maintain, keep, or permit to be thrown, deposited, left, or maintained in or upon any public or private property, driveway, parking area, street, alley, sidewalk, or other component of the Borough's separate storm sewer system, any refuse, rubbish, garbage, litter, or other discarded or abandoned objects, articles, and accumulations, so that the same may cause or contribute to pollution. Wastes deposited in streets in proper waste receptacles for the purposes of collection are exempted from this prohibition.

**ARTICLE VI
ADMINISTRATION**

SECTION 601 REMEDIES

Any person, partnership or corporation engaged in a land disturbance activity, as defined in this Ordinance, shall implement such measures consistent with the Storm Water Management Permit and this Ordinance. Any land disturbance activity conducted in violation of this Ordinance or the Storm Water Management Permit is hereby declared a public nuisance.

In the event of a violation, Orwigsburg Borough may initiate the following actions:

- A. Suspension of a Storm Water Management Permit: Any permit issued under this Ordinance may be suspended by the Borough based upon:
 - 1. The noncompliance with or failure to implement any provision of the Land Disturbance Plan, or
 - 2. A violation of any provision of this Ordinance relating to the project, or
 - 3. The creation of any condition or the commission of any act during construction which constitutes or creates a hazard or nuisance or which endangers the life or property of others.

- B. Under the suspension of a permit, only such work as the Borough so authorized may proceed. This work shall be limited to that which is necessary to correct the violation. A suspended permit shall be reinstated by the Borough when:
 - 1. The Enforcement Officer and the Borough Engineer have inspected and approved the corrections to the storm water management facilities or the elimination of the hazard or nuisance, and;
 - 2. The Enforcement Officer and the Borough Engineer are satisfied that the violation of the Ordinance has been corrected.

- C. Revocation of a Storm Water Management Permit: Based upon a report from the Borough Engineer that the existing site condition or further construction is likely to endanger property or create hazardous conditions, the Borough may:
 - 1. Revoke a permit.
 - 2. Require protective measures to be taken and assign a reasonable time period for the necessary action.
 - 3. Authorize protective measures to be done and lien all cost of the work against the property on which work is required.

A permit, which has been revoked, cannot be reinstated. The applicant may apply for a new permit in accordance with the processing procedures in Article III.

- D. Notification of Suspension or Revocation of a Storm Water Management Permit: In the event of a suspension or revocation of a storm water management permit, the Borough shall provide written notification, by certified mail, of the violation to the landowner at the landowner's last known address. Such notification shall:
1. Cite the specific violation, describe the requirements, which have not been met, and cite the provisions of the Ordinance relied upon.
 2. Identify the specific protective measures to be taken.
 3. Assign a reasonable time period necessary for action or in the case of revocation, identify if the Borough has authorized protective measures to be performed at cost to the landowner.
 4. Identify the right of the landowner to request a hearing before the Borough Council if aggrieved by the suspension or revocation.
- E. Abatement of Nuisance Conditions: The failure to complete site work in accordance with an approved Land Disturbance Plan or in a manner which violates the approved Land Disturbance Plan may result in harm to the water quality and other natural resources of the Borough or may result in danger to the health, safety and welfare of the residents of the Borough and, therefore, may constitute a nuisance. Where the Borough determines that such conditions constitute a nuisance, they shall be abatable as such in accordance with the provisions of the Borough Code, Act of February 1, 1966, P.L. (1965) 1656, No. 581, as amended, 53 P.S. §45101 et seq. The Borough shall, in the notice of violation of approved plan forwarded in accordance with Section 601 E. herein, state whether the violations of the approved Land Disturbance Plan constitute a nuisance. The Borough shall have the right to file its actual expenses in the abatement of such nuisances plus an additional twenty-five (25%) percent of such expenses shall be filed as a municipal claim against the property.
- F. Civil Remedies:
- A. The Borough may institute any appropriate action at law or in equity for the enforcement of this Ordinance and to compel compliance with the requirements of this Ordinance.
 - B. The Borough may revoke its approval of a Storm Water Management Permit if such Storm Water Management Permit has been issued in error or if the issuance was based on any misrepresentations or errors contained in the Application or otherwise made by the Applicant. The Borough may also revoke approval of a Storm Water Management Permit if the use and/or structure proposed by such Storm Water Management Permit violates any applicable Borough, County, State or Federal law or regulation, including but not limited to the Orwigsburg Borough Zoning Ordinance.
- G. Concurrent Remedies: The exercise of any remedy or imposition of any penalty under this Ordinance shall not prevent the Borough from exercising any other remedy or penalty provided for by this Ordinance or available at law or in equity.

SECTION 602 VIOLATIONS AND PENALTIES

- A. It shall be a violation of this Ordinance to commit or to permit any other person to commit any of the following acts:
1. To commence land disturbance activities for which this Ordinance requires a permit prior to obtaining a permit or in violation of the terms or conditions of any permit issued under this Ordinance.
 2. To install, repair, modify, or alter storm water management facilities prior to obtaining a permit under this Ordinance or in a manner that violates the terms and conditions of any permit issued under this Ordinance.
 3. To misuse or fail to maintain any storm water management facility installed upon a property.
 4. To construct any improvements upon, grade, fill, or take any other action, which will impair the proper functioning of any storm water management facility.
 5. To place intentionally false information on or intentionally omit information from an application for a permit under this Ordinance.
 6. To fail to comply with any other provisions of this Ordinance.
- B. If the Borough Council or the officer designated to enforce this Ordinance by the Borough Council determines that a person has committed or permitted the commission of a violation of this Ordinance, the Borough Council or such enforcement officer shall inform such person in writing of the violation, shall notify such person to cease the violation of this Ordinance and shall inform such person that he or she must pay a civil penalty to the Borough within the range of the amounts set forth below to settle the violation. The penalty for a first offense shall be not less than Fifty (\$50.00) Dollars and not more than Six Hundred (\$600.00) Dollars; the penalty for a second offense shall not be less than One Hundred (\$100.00) Dollars and not more than Six Hundred (\$600.00) Dollars; and the penalty for a third or greater offense shall be not less than Two Hundred (\$200.00) Dollars and not more than Six Hundred (\$600.00) Dollars.
- C. If such person fails or refuses to remit the penalty to the Borough within ten days from the date of the written notice of violation of this Ordinance, the Borough may commence a civil enforcement proceeding seeking penalties and costs for the violation of this Ordinance and/or may commence an action in equity. The Borough shall seek a judgment for the penalty previously imposed together with additional daily penalties for continuing violations plus all court costs, including the reasonable attorneys' fees incurred by the Borough in the enforcement proceedings. If the defendant neither pays nor timely appeals the judgment, the Borough may enforce the judgment pursuant to the applicable rules of civil procedure.
- D. Each day that a violation continues shall constitute a separate violation, and each Section of this Ordinance, which is violated, shall constitute a separate violation.

SECTION 603 APPEALS

Appeals from any action of the Enforcement Officer under this Ordinance shall be made in writing to the Borough Council within fifteen (15) days from the date of the written determination of the Enforcement Officer. All appeals shall be accompanied by the appeal fee established by resolution or ordinance of the Borough Council.

- A. The written appeal shall specify the precise action from which the appeal is taken and shall set forth in concise terms the reason for the appeal and any legal authorities supporting the appeal period.
- B. If the appellant desires a hearing before the Borough Council, the appellant must request a hearing in writing.
- C. If a hearing is requested in writing, the Borough Council shall conduct the hearing at a regular or special public meeting, which occurs not less than thirty-(30) days after receipt of the written appeal. The hearing shall be conducted in accordance with the provisions of the Local Agency Law, 2 Pa. C.S. §551 et seq.
- D. The Borough Council shall render a decision on the appeal in accordance with the provisions of the Local Agency Law.

SECTION 604 FEES

- A. The applicant shall agree in writing to reimburse the Borough for all costs of administration and review of the application by the Borough Engineer or Consultant. The amount of the required fees shall be determined by completing an Escrow Fee Calculation Form. The completed Escrow Fee Calculation Form shall be submitted along with the application and Land Disturbance Plan. The number of Escrow Fee Calculation Forms to be submitted shall correspond to the number of copies of applications required by Section 306 of this Ordinance.
- B. Excluding fixed administrative costs, the applicant shall be charged only for time and materials actually expended and detailed in bills from the Borough Engineer or Consultant. Any unexpended balance of the deposit for plan review shall be returned to the applicant following approval of the Land Disturbance Plan.
- C. If actual time required of the Borough Engineer or Consultant will exceed the deposited amount, the Borough shall render to the applicant a preliminary statement of time and materials expended and an additional amount must be deposited with the Borough prior to Plan approval.
- D. Fees covering the cost of inspections shall be paid by the applicant to the Borough prior to Plan approval. The amounts of these inspection fees shall be fixed by Resolution of the Borough Council. If problems arise requiring more extensive involvement of the Borough Engineer or Consultant during the inspection process, any resulting costs, including legal costs, that exceed the initial fees, will be assessed to the applicant.

SECTION 605 REPEALER

Except as otherwise required by law, this Ordinance is intended as a continuation of, and not a repeal of, existing regulations governing the subject matter. To the extent that this Ordinance restates regulations contained in ordinances previously enacted by the Borough Council, this Ordinance shall be considered a restatement and not a repeal of such regulations. It is the specific intent of the Borough Council that all provisions of this Ordinance shall be considered in full force and effect as of the date such regulations were initially enacted. All ordinances or parts of ordinances inconsistent with the provisions of this Ordinance are hereby repealed. It is expressly provided that the provisions of this Ordinance shall not affect any act done, contract executed or liability incurred prior to its effective date, or affect any suit or prosecution pending or to be instituted to enforce any rights, rule, regulation or ordinance, or part thereof, or to punish any violation which occurred under any prior storm water management or earth disturbance regulation or ordinance of Orwigsburg Borough, prosecution may be initiated against the alleged offender pursuant to the provisions of said prior storm water management or earth disturbance regulation or ordinance, and the provisions and penalties provided in said prior storm water management or earth disturbance regulation or ordinance shall remain effective as to said violation.

SECTION 606 ADOPTION AND EFFECTIVE DATE

Nothing in this Ordinance shall be construed to affect any suit or proceeding pending in any court, or any rights acquired or liability incurred, or any permit issued, or any cause or causes of action existing under the Zoning Ordinance or the Subdivision and Land Development Ordinance of Orwigsburg Borough prior to the enactment of this Ordinance.

This Ordinance shall take effect and be in force five (5) days after its enactment by the Borough Council of Orwigsburg Borough as provided by law.

Enacted this 11th day of August, 2010.

Attest: /s/ Sherry M. Edwards
Borough Secretary

/s/ Charles J. Sterner
President of Council

Approved this 11th day of August, 2010.

/s/ Austin Scandiber
Mayor

