

EAST COCALICO TOWNSHIP

Lancaster County, Pennsylvania

ORDINANCE NO. 2003-01

AN ORDINANCE FOR THE MANAGEMENT OF STORM WATER RUNOFF AND EARTH DISTURBANCE ACTIVITIES IN EAST COCALICO TOWNSHIP, LANCASTER 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, TO BE KNOWN AS THE "EAST COCALICO TOWNSHIP STORM WATER MANAGEMENT AND EARTH DISTURBANCE ORDINANCE OF 2003."

ENACTED AND ORDAINED by the Supervisors of East Cocalico Township

as follows:

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ARTICLE I GENERAL PROVISIONS

SECTION 101 TITLE

This Ordinance shall be known as the East Cocalico Township Storm Water Management and Earth Disturbance Ordinance of 2003.

SECTION 102 PURPOSE AND LEGISLATIVE INTENT

The purpose of this Ordinance is to:

102.1 The purposes of this Ordinance are to promote the general health, safety, and welfare of the community; regulate the modification of the natural terrain and alterations of existing drainage from land disturbances, new subdivisions, and new land developments in order to control erosion and sedimentation of soils and preserve stream channels and water quality; and provide design, construction and maintenance, and storm drainage facilities for controlling storm water, erosion, and sedimentation and maintaining the quality of the watersheds within the Township.

102.2 In the enactment of this Ordinance, it is the legislative intent of the Township Board of Supervisors 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.

102.3 In the enactment of this Ordinance it is the further legislative intent of the Township Board of Supervisors to fulfill its obligations under Section 11(b) of the Pennsylvania Storm Water Management Act to adopt and implement ordinances and regulations as are necessary to regulate development within the Township in a manner consistent with a watershed storm water management plan approved by the Department of Environmental Protection. The Department of Environmental Protection has approved an ACT 167 Watershed Storm Water Management Plan for the Cocalico Creek watershed located within the Township. Any storm water management plan proposed within the Cocalico Creek watershed or a future ACT 167 Watershed shall comply with the respective ACT 167 Watershed Storm Water Management Plan as may be adopted by the Lancaster County Board of Commissioners and be considered as part of this ordinance.

SECTION 103 ADOPTION-AUTHORITY-APPLICABILITY

The Board of Supervisors of East Cocalico Township pursuant to the Pennsylvania Storm Water Management Act, Act No. 167 of October 4, 1978 (P.L. 864), and the Second Class Township Code, Act of May 1, 1933, P.L.103, No. 69, as reenacted and amended November 9, 1995, P.L. 350, No. 60, as amended, 53 P.S. §65101 et seq, hereby enacts and ordains this Ordinance as the East Cocalico Township Storm Water Management and Earth Disturbance Ordinance of 2003. This Ordinance shall apply to all Land Disturbance Activities as defined in Section 201 of this Ordinance.

SECTION 104 ABROGATION AND GREATER RESTRICTIONS

Within that portion of the Township 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 Township, 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 105 WAIVER OF LIABILITY

Except as specifically provided by 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., the making of any administrative decision by the Township or any of its officials or employees shall not constitute a representation, guarantee or warranty of any kind by the Township 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 Township and its officials and employees. The Board of Supervisors, by enacting this ordinance, does not waive or limit any immunity granted to the Township 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 106 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 Board of Supervisors 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 107 RIGHT-OF-ENTRY

Upon presentation of proper credentials, duly authorized representatives of East Cocalico Township may enter at reasonable times upon any property within the Township 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 Township, or its agents, access to the site of the work at all times, while under construction, for the purpose of inspecting the work.

SECTION 108. 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 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 East Cocalico Township 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 Cocalico Creek Watershed Act 167 Storm Water Management or any future "Act 167 Watershed Storm Water Management Plans" for any watersheds included in whole or in part within the municipal boundaries of East Cocalio Township, as to be adopted by the Lancaster 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.

Application for Development: Every application, required to be filed and approved prior to start of construction or development.

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.

Board of Supervisors: The Board of Supervisors of East Cocalico Township, Lancaster County, Pennsylvania.

Bulldig: 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.

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 Lancaster County Conservation District.

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

County Planning Commission: The Planning Commission of the County of Lancaster, Commonwealth of Pennsylvania.

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 100 acres.
- B. The greatest depth of water measured by upstream toe of the dam at maximum storage elevation exceeds 15 feet.
- C. The impounding capacity at maximum storage elevation exceeds 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.

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 100 acres.
- B. The greatest depth of water measured by upstream toe of dam at maximum storage elevation may not exceed 15 feet.
- C. The impounding capacity at maximum storage elevation may not exceed 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 other 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.

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

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)

Easement: A right-of-way granted for limited use of private land for a public, quasi-public, or private purpose not inconsistent with a general property right of the owner, and within which the owner of the property shall not have the right to use the land in a manner that violates the right of the grantee.

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 Township or other designated person, persons or consultant.

Engineer, Township: The East Cocalico Township Engineer or any consultant designated by the Board of Supervisors to review a Land Disturbance Plan and perform the duties of engineer on behalf of the Township.

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.

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 East Cocalico Township Municipal Building.

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 50 feet from the top of the bank of the stream.

Forestry Operations: The management of forests and timberlands when practiced in accordance with accepted silvicultural principles, through developing, cultivating, harvesting, transporting and selling trees for commercial purposes, which does not involve any land development and does not include clear cutting.

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 Board of Supervisors of East Cocalico Township, Lancaster 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.

Holding Pond: A retention or detention basin.

Impervious Surface: Those surfaces that do not absorb rain. All buildings, including roof overhangs, parking areas, driveways, roads, sidewalks, and such areas as those in concrete and asphalt shall be considered impervious surfaces within this definition. In addition, other areas determined by the Township Engineer to be impervious within the meaning of this definition will also be classed 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).

Improvements: Those physical additions and changes to the land that may be necessary to produce usable and desirable lots.

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.

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 the modification, removal, filling, or alteration of an existing storm water management facility or drainage easement.

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 10's of kilometers long usually extending to the basement below sedimentary rock.

Lot: A designated parcel, tract or area of land established by a plat or otherwise permitted by law and to be used, developed or built upon as a unit.

Maintenance Guarantee: A guarantee by the developer of the structural integrity of improvements dedicated to the Township.

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 East Cocalico Township and the Lancaster County Conservation District to provide for cooperation between the Lancaster County Conservation District and the East Cocalico Township officials, Lancaster County, to include within its ordinances, and to jointly promote conservation of natural resources within East Cocalico Township 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 East Cocalico Township.

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 East Cocalico Township, Lancaster County, Pennsylvania.

Municipal Uses: Includes public uses and semi-public uses, such as schools, parks, recreation centers, fire stations, and municipal buildings and garages.

Municipal Authority Uses: Includes wells, well pump houses, water tanks, sewage treatment plants and sewage pump stations, water booster pump stations, water treatment plants, and collection and distribution systems owned by the Township or by an Authority created by the Township or of which the Township is a member municipality. All of the foregoing except sewage treatment plants shall be considered structures and not buildings under this Ordinance.

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

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

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.

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

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

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.

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 Commission - The East Cocalico Township Planning Commission. The Planning Commission is vested with the right to review and recommend action to the Board of Supervisors for all plans submitted to the Township.

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

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

Public Grounds: Parks, playgrounds, trails, paths and other recreational areas; sites for schools, sewage treatment, refuse disposal and other publicly owned or operated facilities; publicly owned or operated scenic and historic sites.

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

Record Drawings: Set of prints of the original facilities showing those changes made during the construction process.

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

Retention Basin: A basin containing a permanent pool of water designed to store runoff for a given storm event and release it at a predetermined rate.

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.

Right-of-Way: The total width of any land reserved or dedicated as a street, alley, crosswalk or for other public or semi-public purposes.

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 sediment is deposited on stream bottoms.

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 waterway 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 — A subsurface storm water runoff detention facility 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, concrete 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 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.

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

Storm Water Management: A program of controls and measures, including BMPs, designed to 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 100 feet in length upstream to downstream which encloses a regulated water of this Commonwealth.

Street: A strip of land, including the entire right-of-way (i.e., not limited to the cartway) intended to be used by vehicular traffic or pedestrians. The word "street" includes street, avenue, boulevard, road, highway, freeway, parkway, lane, alley, viaduct and other ways used or intended to be used by vehicular traffic or pedestrians whether public or private.

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

Subdivider: Any landowner, agent of such landowner, or tenant with the permission of such landowner, who makes or causes to be made a subdivision or a land development.

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.

Supervisors: The East Cocalico Township Board of Supervisors (Governing Body).

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.

Township: East Cocalico Township, Lancaster County, Pennsylvania, as represented by the Board of Supervisors, or its duly authorized agents.

Township Engineer: See Engineer, Township.

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.

Watercourse, Exceptional Value: A watercourse that has been designated as containing Exceptional Value Waters.

Watercourse, Intermittent: A watercourse that alternately contains and is empty of water.

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.

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 a prevalence of vegetation 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 GENERAL EXEMPTIONS

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

- | | |
|-------|---|
| 302.1 | Use of land for gardening and landscaping of the property, when performed as an accessory use to the primary use of the property. |
| 302.2 | 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 Lancaster County 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 Lancaster County 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 502.4 when so adopted. |

SECTION 303 PLAN CONTENTS

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

- 303.1 The Following General Information:
- A. Proposed name or identifying title of the project.
 - 13. Name and address of the landowner and developer of the project site.
 - C. Total acreage of the project site and the tract of land on which the project site is located.
 - D. Plan date, date of latest revision, north point, graphic scale, and written scale. All plans shall be drawn at a common engineering scale.
 - E. 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 Township 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.
 - F. A note on the plan indicating any area that is not to be offered for dedication along with a statement that the Township 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.

- G. Certificate, signed and sealed by an individual 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.
- H. The following certificates when the application is not in conjunction with the submittal of a Subdivision and/or Land Development Plan:
 - 1) Certificate for approval by the Township Board of Supervisors. See form of certificate in Appendix No. 22.
 - 2) Certificate for review by the Township Planning Commission. See form of certificate in Appendix No. 23.

Certificate for review by the Township Engineer, if required by the Board of Supervisors. See form of certificate in Appendix No. 24.
- I. 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.
- J. 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.

303.2

The Following Existing Features:

- A. Tract boundaries showing distances, bearings, and curve data, as located by field survey or by deed plotting.
- B. 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.
- C. 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.
- D. 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.
- E. Soil types as designated by the USDA SCS Soil Survey of Lancaster County.
- F. Designation of limits of on-site watershed areas, including a map that shows the off-site watershed areas.
- G. Boundaries of watersheds as identified in a relevant Act 167 Watershed Storm Water Management Plan.

The Following Proposed Features:

- A. The proposed land use, the number of lots and dwelling units and the extent of commercial, industrial, or other nonresidential uses.
- B. 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.
- C. The proposed changes to land surface and vegetative cover including areas to be cut or filled.
- D. 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.
- E. 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.
- F. 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.
- G. 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 Pennsylvania Department of Environmental Protection and which shall be submitted to the Lancaster County Conservation District for review.
- H. Data concerning subsoil and rock foundation conditions and the physical properties of the materials entering into the construction of all BMPs.

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

- A. Storm water runoff calculations for both pre-development and post-development conditions for peak discharge and pollutant removal.
- B. An erosion and sedimentation control plan narrative that conforms to the requirements of the Soil Erosion and Sedimentation Control Manual of the Pennsylvania Department of Environmental Protection 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.
- C. 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:

- 1) Description of the method and extent of the maintenance requirements.
- 2) When maintained by a private entity, identification of an individual, corporation, association, or other entity responsible for ownership and maintenance.

When maintained by a private entity, a copy of the legally binding document which provides that the Township shall have the right to:

- a) Inspect the facilities at any time.
 - b) Require the private entity to take corrective measures and assign the private entity reasonable time periods for any necessary action.
 - c) Authorize maintenance to be done and lien the cost of the work against the properties of the private entity responsible for maintenance.
- 4) Establishment of suitable easements for access to storm water management facilities.

This document shall be recorded by the Township in the Lancaster County Recorder of Deeds Office upon issuance of a permit.

- D. 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.
- E. 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 Township Engineer and Township Planning Commission or Township Board of Supervisors utilized to determine the function of the basin.
- F. A Pennsylvania Department of Transportation Highway Occupancy Permit for any storm water management facility proposed within the right-of-way of a state road.
- G. Receipt of appropriate State and Federal permits for all activities in or along any bodies of water, waters of the U.S., or wetlands.
- H. Receipt of approvals or permits from the appropriate agency for the Erosion and Sedimentation Control Plan.

SECTION 304 APPLICATION AND PLAN PROCESSING PROCEDURE

- 304.1 An application for a Storm Water Management Permit may be submitted to the Township 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 Township with such information as the Township Engineer may deem necessary to determine whether the proposed activity constitutes a land disturbance activity. A decision by the authorized Township representative may be appealed to the Board of Supervisors in accordance with Section 603 herein.

- 304.2 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 Township in accordance with the requirements of the East Cocalico Township 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 Township shall act upon that application at the time it acts upon the application for subdivision and/or land development approval.
- 304.3 Applications for a storm water management permit which are not submitted to the Township in conjunction with an application for subdivision and/or land development approval shall adhere to the procedures in this Section 304.3.
- A. The Township staff may review the application with the Township Engineer, Township Solicitor, the Lancaster County Conservation District, and other municipal officials in order to make recommendations to the Board of Supervisors whether to approve, conditionally approve, or disapprove the application.
 - B. The Township Board of Supervisors 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. Failure of the Township to render a decision and communicate it as prescribed above shall be deemed an approval unless the time period is extended by the applicant.
 - C. A notice of disapproval shall cite the reasons for disapproval.
- 304.4 Township approval of an application for a storm water management permit 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 Township ordinance or regulation. The Township may approve a storm water management permit subject to the condition that the landowner obtain 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 Township with evidence that the landowner has obtained such other required permits or approvals.

SECTION 305 APPLICATION REQUIREMENTS

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

SECTION 306 WAIVER AND APPEAL PROCEDURE

The provisions of this Ordinance are intended as minimum standards for the protection of the public health, safety, and welfare. The Board of Supervisors 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.

Additionally, the Board of Supervisors may hear and decide appeals, in accordance with Section 603, where it is alleged that the authorized Township representative has failed to follow prescribed procedures or has misinterpreted or misapplied any provisions of the Ordinance.

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

306.1 Application Procedures (Waiver): All requests for waivers shall be processed in accordance with the following:

- A. A request for a waiver shall be submitted to the Township. The request shall be made in writing and identify (1) the specific section of the Ordinance or decision which is requested for waiver or appeal, (2) the proposed alternative to the requirement, when applicable, and (3) justifications for an approval of the waiver or appeal.
- B. The Township Secretary shall (1) schedule the request for consideration by the Board of Supervisors 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.
- C. The Board of Supervisors 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 or appeal. Failure of the Board of Supervisors to render a decision and communicate it as prescribed above shall be deemed an approval unless the time period is extended by the applicant.

SECTION 307 EXPIRATION OF A STORM WATER MANAGEMENT PERMIT

All Storm Water Management Permits shall expire twelve (12) months from the date of issuance unless an extension of time is approved. An extension of an unexpired Storm Water Management Permit shall be issued by the Board of Supervisors following the submission of a written request from the applicant if in the opinion of the Board of Supervisors, 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 308 FINANCIAL SECURITY

308.1 The Township 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 308.2 of this Ordinance.

308.2 Where required, the developer shall file with the Board of Supervisors 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 Township. 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 Board of Supervisors.

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.

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 Board of Supervisors, upon the recommendation of the Township Engineer, may refuse to accept such estimate for good cause shown. If the applicant or developer and the Township 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 Board of Supervisors 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 Township and the applicant or developer.

SECTION 309 RECORD DRAWINGS

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.

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

ARTICLE IV
ACT 167 WATERSHED STORM WATER MANAGEMENT PLANS

SECTION 401 STORM WATER MANAGEMENT DISTRICTS

The Township 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 Township 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.

ARTICLE V DESIGN CRITERIA

SECTION 501 GENERAL CRITERIA

General Criteria. The following general standards shall be to promote flow attenuation, erosion and sediment control, and flood control:

- 501.1. All storm water management plans shall be designed and certified by individuals registered in the Commonwealth of Pennsylvania and qualified to perform such duties.
- 501.2. All storm water management facilities shall employ Best Management Practices (BMP), as defined in Section 510. of this Ordinance.
- 501.3. 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 Pennsylvania Department of Environmental Protection.
- 501.4. Storm water management facilities that involve a State highway shall be subject to the approval of the Pennsylvania Department of Transportation.
- 501.5. Storm water runoff from a project site shall flow directly into a natural watercourse, into an existing storm sewer system, or onto adjacent properties in a manner similar to the runoff characteristics of the pre-development flow.
- 501.6. 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. Transfer between watersheds written Act 167 is prohibited.
- 501.7. All storm water runoff flowing over the project site shall be considered in the design of the storm water management facilities.
- 501.8. Innovative methods for the detention and control of storm water runoff may be used when approved by the Township. 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:
 - 501.8.1. Detention basins and retention basins.
 - 501.8.2. Rooftop storage.
 - 501.8.3. Parking lot ponding.
 - 501.8.4. Seepage pits, seepage trenches or other infiltration structures.
 - 501.8.5. Concrete lattice block surfaces.
 - 501.8.6. Grassed channels and vegetated strips.
 - 501.8.7. Cisterns and underground reservoirs.
 - 501.8.8. Routed flow over grass.
 - 501.8.9. Decreased impervious surface covered.
- 501.9. Runoff may be managed regionally by one or more developers, either on-site or off-site. The design and release rate of the regional facilities shall be consistent with this

Ordinance.

501.10 Prohibited discharges

501.10.1. No person in the Township shall allow or cause to allow stormwater discharges into the Township's separate storm sewer system which are not composed entirely of stormwater, except discharges allowed under a state or federal permit.

501.10.2. The Township may allow discharges under a Township NPDES permit based on a finding by the Township that the discharge (s) do not significantly contribute to pollution to surface waters of the Commonwealth. Examples of discharges which the Township 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
Dechlorinated swimming pool discharges	Discharges from firefighting activities including training

501.10.3. In the event that the Township subsequently determines that any of the discharges identified in §501.10.2. significantly contribute to pollution of waters of the Commonwealth, the Township will notify the responsible person to cease the discharge.

501.10.4. Upon notice provided by the Township the discharger will have a reasonable time to cease the discharge consistent with the degree of pollution caused by the discharge.

501.11 The following connections to the Township storm sewers or storm water drainage systems are prohibited:

501.11.1. 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.

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

501.11.3. This prohibition expressly includes, without limitation, connections made in the past, regardless of whether the connection, 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.

501.11.4. Roof drains shall not be connected to streets, sanitary or storm sewers or roadside ditches, except as provided in Section 501.11.5.

- 501.11.5 When it is more advantageous to connect directly to streets or storm sewers, connections of roof drains to streets or roadside ditches may be permitted on a case by case basis by the Township. It shall be the burden of the person seeking to make the connection to demonstrate to the Township that such connection is more advantageous and such connection shall not violate any state or federal statute, rule or regulation.
- 501.11.6 Roof drains shall discharge to infiltration areas or vegetative BMP's to the maximum extent possible.
- 501.12 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 Township'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 purpose of collection are exempted from this prohibition.

SECTION 502 METHODOLOGY

The methodology for determining required storm water controls for a regulated activity is outlined below:

- 502.1. Developments located outside of an Act 167 Storm Water Management Plan shall limit the calculated peak rate of storm water runoff from the project site after development to the peak rate of runoff from the project site before development activities. Runoff calculations for the pre-development and post-development comparison shall be provided for the 2-, 10-, 25-, 50-, and 100-year storm events.
- 502.2. Developments located within an Act 167 Storm Water Management Plan which do not fall under the exemption criteria below shall submit a Storm Water Management Site plan consistent with the Act 167 Plan to the Township for review. The following exemption criteria shall apply to the total proposed development on a parent tract, even if development is to take place in stages. Impervious cover shall include, but not be limited to, any roof, parking or driveway areas and any new streets and sidewalks. Any areas designed to initially be gravel or crushed stone shall be assumed to be impervious.
- 502.3. Exemption Criteria for Existing Developed Properties. Lands improved with existing structures may be exempted for an additional 1,000 square feet of impervious surface in all Zoning Districts, provided that flows from the site after development leave the site in the same manner as the pre-development condition, and there are no adverse effects to the adjacent property.
- 502.4. Exemption Criteria for Existing Properties in Effective Agricultural Zones and Conservation Zone. The following criteria shall apply to all existing lots in conservation zones I except in steep slope areas (25% slope or greater) and effective agriculture areas (1 lot per 20 acres or larger). All farms for which an exemption is requested shall have a Conservation Plan approved by the appropriate officials.

Total Parcel Size	Minimum Distance* (Feet)	Cumulative New Impervious Areas Exempt from Ordinance
0 - 0.5 acre	10	500 sq. ft.
0.5 - 1 acre	50	2,500 sq. ft.
1 - 2 acres	100	10,000 sq. ft.
2 - 5 acres	250	15,000 sq. ft.
> 5 acres	500	20,000 sq. ft.
*The minimum distance between the proposed impervious area and/or storm water controls/structure discharge point to the downslope property line of the parent tract. In lieu of meeting the minimum distance criteria, the applicant may provide documentation from a qualified registered professional in the State of Pennsylvania that the increased flows from the site leaves the site in the same manner as the pre-development condition, and that there will be no adverse effects to adjacent property, or the increased flows reach a natural drainage way or existing storm water management structure before affecting adjacent property.		

SECTION 503 METHODS OF CALCULATIONS

The methods to calculate runoff shall be as follows:

- 503.1. The USDA Soil Conservation Service Soil-Cover-Complex Method, as set forth in the latest edition of *Urban Hydrology for Small Watersheds, Technical Release No. 55*, as published by SCS, shall be used where the drainage area is greater than one hundred (100) acres; the time of concentration is greater than one (1) hour; or, the calculated runoff to a point-of-interest requires the combination of multiple hydrographs from multiple sub-watersheds of the study area.
- 503.2. The Rational Method of $Q=CIA$, where "Q" is the peak discharge of the watershed in cubic feet per second, "C" is the coefficient of runoff, "I" is the intensity of rainfall in inches per hour, "A" is the area of the watershed in acres.
 - 503.2.1. The Rational Method shall be used where the drainage area is less than one hundred (100) acres; the time of concentration is less than one (1) hour and represents the flow path from at least 65% of the analyzed drainage area to the point of interest; and, the calculated runoff to a point-of-interest does not require the combination of multiple hydrographs from multiple sub-watersheds of the study area.
- 503.3. If the Rational Method is used, the Pennsylvania Rainfall Intensity-Duration-Frequency Chart shown in the latest version of *Design Manual Part 2, Highway Design*, Pennsylvania Department of Transportation, shall be used to determine the rainfall intensity in inches per hour.
- 503.4. 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.
- 503.5. For the purpose of calculating pre-development, on-site peak discharges, all on-site runoff coefficients shall be based on actual land use assuming summer or good land

cover conditions. Off-site land use conditions used to determine storm flows for designing storm water facilities shall be based on actual land uses assuming winter or poor land cover conditions.

503.6. Criteria and assumptions to be used in the determination of storm water runoff and design of management facilities are as follows:

503.6.1. Runoff coefficients should be based on the following table. If the land use is not listed, runoff coefficients shall be chosen from other published documentation, and a copy of said documentation shall be submitted with the storm water management report. Higher coefficients may be required by the Township Engineer due to local soil conditions.

RUNOFF COEFFICIENTS "C" FOR RATIONAL FORMULA												
Soil Group	A			B			C			D		
Slope	0-2%	2-6%	6% +	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Land Use												
Cultivated Land winter conditions	.14	.23	.34	.21	.32	.41	.27	.37	.48	.34	.45	.56
summer conditions	.10	.16	.22	.14	.20	.28	.19	.26	.33	.23	.29	.38
Fallowed Fields poor conditions	.12	.19	.28	.17	.25	.34	.23	.33	.40	.27	.35	.45
good conditions	.08	.13	.16	.11	.15	.21	.14	.19	.26	.18	.23	.31
Forest/Woodland	.08	.11	.14	.10	.14	.18	.12	.16	.20	.15	.20	.25
Grass Areas good conditions	.10	.16	.20	.14	.19	.26	.18	.22	.30	.21	.25	.35
'average conditions	.12	.18	.22	.16	.21	.28	.20	.25	.34	.24	.29	.41
poor conditions	.14	.21	.30	.18	.28	.37	.25	.35	.44	.30	.40	.50
Impervious Areas	.90	.91	.92	.91	.92	.93	.92	.93	.94	.93	.94	.95
Weighted Residential												
lot size 1/8 acre	.29	.33	.36	.31	.35	.40	.34	.38	.44	.36	.41	.48
lot size 1/4 acre	.26	.30	.34	.29	.33	.38	.32	.36	.42	.34	.38	.46
lot size 1/3 acre	.24	.28	.31	.26	.32	.35	.29	.35	.40	.32	.36	.45
lot size 1/2 acre	.21	.25	.28	.24	.27	.32	.27	.31	.37	.30	.34	.43
lot size 1 acre	.18	.23	.26	.21	.24	.30	.24	.29	.36	.28	.32	.41

RUNOFF CURVE NUMBERS "CN" FOR SCS METHOD												
Soil Group	A			B			C			D		
Slope	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+	0-2%	2-6%	6%+
Land Use												
Cultivated Land winter conditions	48	60	65	62	73	73	68	78	79	77	88	81
summer conditions	35	51	61	48	55	70	57	65	77	64	69	80
Fallowed Fields poor conditions	45	54	76	56	63	85	64	74	90	69	77	93
good conditions	30	44	74	43	48	83	48	54	88	56	60	90
Forest/Woodland	30	40	30	42	46	55	45	50	70	50	56	77
Grass Areas good conditions	35	51	39	48	54	61	56	59	74	62	63	80
average conditions	45	53	49	52	55	69	60	63	79	65	69	84
poor conditions	48	55	68	56	67	79	66	74	86	73	81	89
Impervious Areas	96	97	98	96	97	98	96	97	98	96	97	98
Weighted Residential												
lot size 1/8 acre	71	75	77	74	76	85	78	80	90	81	83	92
lot size 1/4 acre	62	67	61	66	69	75	67	69	83	75	78	87
lot size 1/3 acre	59	65	57	64	66	72	65	66	81	74	77	86
lot size 1/2 acre	57	63	54	62	64	70	63	65	80	72	76	85
lot size 1 acre	55	62	51	61	63	68	61	64	79	71	75	84

503.6.2. Times of concentration shall be based on the following design parameters:

- 503.6.2.1. Sheet Flow. The maximum length for each reach of sheet, or overland flow before shallow concentrated or open channel flow develops, is one hundred fifty feet (150'). Sheet flow shall be determined using Worksheet 3 from the latest edition of *Urban Hydrology for Small Watersheds, Technical Release No. 55*, as published by SCS.
- 503.6.2.2. Shallow Concentrated Flow. Travel time for shallow concentrated flow shall be determined using Figure 3-1 from the latest edition of *Urban Hydrology for Small Watersheds, Technical Release No. 55*, as published by SCS.
- 503.6.2.3. Open Channel Flows. At points where sheet and shallow concentrated flows concentrate in field depressions, swales, gutters, curbs, or pipe collection systems, the travel times and downstream end of the site between these design points shall be based upon Manning's equation and/or acceptable engineering design standards, as determined by the Township Engineer.

SECTION 504 HYDROGRAPHS

- 504.1. Pre-development hydrograph is required at the site discharge point for the required 24-hour design storm.
- 504.2. Post-development hydrograph is required at the site discharge point incorporating any "non-detention" techniques, such as pervious areas, swales, infiltration trenches, etc.

Note: Hydrographs may be obtained from SCS TR-55 method or from use of the "modified" rational formulas.

SECTION 505 CONVEYANCE FACILITIES

Storm water conveyance facilities shall be designed as follows:

- 505.1. The design of storm water management collection/conveyance systems 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.
- 505.2. All storm sewer pipes, culverts, manholes, inlets, endwalls, and end sections shall be constructed in accordance with Pennsylvania Department of Transportation *Publication 408*, as amended.
- 505.3. Storm sewer pipes, culverts, manholes, inlets, endwalls, and end-sections 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 Township construction standards.
- 505.4. Capacities. The capacities of the pipes, gutters, inlets, culverts, outlet structures, and swales shall consider all possible hydraulic conditions. The following are minimum design standards:
 - 505.4.1. Grass swales and roadside gutters shall consider both the channel velocity and stability based upon a low degree of retardant ("n" of 0.03), and the channel capacity based upon a high degree of retardant ("n" of 0.05).
 - 505.4.2. The "n" factors to be used for paved or rip-rap swales or gutters shall be based on accepted engineering design practices.
 - 505.4.3. 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.

In all cases where drainage is collected by a headwall or catch basin where inlet or outlet control may govern, the pipe shall be designed as a culvert, as outlined in *Hydraulic Engineering Design Series No. 5*, latest edition of the U.S. Department of Transportation Federal Highway Administration, Washington, DC. The allowable headwater should be determined by the specific entrance conditions and sound engineering. The capacities of pipes shall be computed from the Manning Formula judgment. The design of culverts shall not create excessive headwater depths.

The coefficient of roughness, "n" shall be as follows, unless otherwise approved by the Township.

Pipe Material	Gin),
Concrete	0.012
Corrugated Steel Annular	0.024
Corrugated Steel Helical	
15"	0.012
18"	0.014
21"	0.016
24"	0.017
30"	0.018
36"	0.019
42"-54"	0.020
larger than 54"	0.021
SLCPP	0.011

For all open channels, the coefficients shall be taken from Tables 5-6 and Figures 5-5 of *Open-Channel Hydraulics* by Ven Te Chow, Ph.D., McGraw-Hill Book Co., 1959.

505.5. Minimum Pipe Size. Storm water management pipe collection and conveyance systems shall have a minimum diameter of fifteen inches (15"), and shall be installed on sufficient slope to provide a minimum velocity of two feet (2') per second (2 fps) when flowing full. No double piping shall be permitted.

505.6. Material Specification. The following are approved for use; alternatives may be accepted, subject to approval by the Township:

505.6.1. Storm Water Pipe. The following are approved types of storm water pipe:

- 505.6.1.1. Cement concrete case in place shall conform to PennDOT standards.
- 505.6.1.2. Reinforced cement concrete, tongue and groove, shall conform to AASHTO M-170.
- 505.6.1.3. Pre-stressed concrete shall conform to PennDOT standards.
- 505.6.1.4. Corrugated polyethylene — smooth-lined (SLCPP) shall conform to AASHTO-295-851.
- 505.6.1.5. Corrugated aluminized steel Type II, helical design shall conform to AASHTO M-36.

All storm water pipes that are located within a public street, or offered for dedication to the Township, shall be in accordance with Section 505.6.1.1. through 505.6.1.4.

505.6.2. Pipe sizes with nominal diameters greater than seventy-two inches (72") shall require structural design submittals for approval.

- 505.6.3. All culverts shall have reinforced concrete precast, or cast in place, full flow inverts to limits of required endwall sections, with invert base end cut-off walls extending three feet (3') below channel flow line, including fish channels, as required by the Pennsylvania Department of Environmental Protection.
- 505.6.4. Installation of culverts will not require protective parapets when having a maximum five feet (5') vertical rise from flow channel invert to crown of street, with the required minimum 3 to 1 embankment slope from limit of right-of-way elevation of flow channel invert. All other installations shall require protective concrete parapets and approaches.
- 505.6.5. All culvert structures shall require submission of construction drawings, to assure compliance to HS-25 loading, flow design capacity, and calculated life cycle of proposed structures.
- 505.7. All storm sewer pipes and culverts shall be laid to a minimum depth of one foot (1') from subgrade of streets, access drives, driveway, or parking areas to the crown of pipe, and one foot (1') from finished grade in areas not intended for vehicular use.
- 505.8. Endwalls and end sections shall be used where storm water runoff enters or leaves the storm sewer horizontally from a natural or man-made channel.
- 505.9. Inlets shall be placed on both sides of the street at low spots, and at points where the flow in gutters exceeds three inches (3"). 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 one and one-half inches (1½"). Inlets shall be depressed one inch (1") below the grade of the gutter or ground surface. Manholes may be substituted for inlets at locations where inlets are not required to handle surface runoff.
- 505.10. Manholes shall not be spaced more than four hundred feet (400') apart for pipes that are less than thirty-six inch (36") diameter and six hundred feet (600') apart for all pipes of greater than thirty-six inch (36") diameter. Additionally, manholes shall be placed at points of abrupt changes in the horizontal or vertical direction of storm sewers and all convergence of two (2) or more storm water lines. Inlets may be substituted for manholes where they will serve a useful purpose.
- 505.11. Curves in pipes or box culverts, without an inlet or manhole, are prohibited. Tee joints, elbows and wyes are also prohibited.
- 505.12. All inlets and manholes must have poured concrete channels in order to provide unimpeded conveyance through the structure.
- 505.13. Storm water roof drains and pipes, wherever possible, shall discharge water into a storm water runoff dispersion and infiltration control device and not into storm sewers or street gutters.
- 505.14. All inlets shall be provided with bicycle — safe graters.

SECTION 506 SURFACE FLOWS

506.1. On-Street Channels. Curb, gutter and street side swale depths shall comply with the following requirements:

506.1.1. New streets without curbs shall be designed to maintain a maximum depth of flow in street side gutters or swales of three inches (3"), and a maximum depth of flow of two inches (2") along slant or vertical curbs.

506.1.2. The depth of flow across street and access drive intersections, including new street intersections with existing streets, shall be a maximum of one inch (1").

506.1.3. When possible, storm sewer crossings of streets shall be perpendicular to the street centerline.

506.2. Off-Street Channels:

506.2.1. Grass-lined channels shall be considered stable if the calculated velocity does not exceed the allowable velocities shown below:

506.2.1.1. Three feet (3') per second where only sparse vegetation can be established and maintained because of shade or soil condition.

506.2.1.2. Four feet (4') per second where normal growing conditions exist and vegetation is to be established by seeding.

506.2.1.3. Five feet (5') per second where a dense, vigorous sod can be quickly established or where water can be temporarily diverted during establishment of vegetation. Netting and mulch or other equivalent methods for establishing vegetation shall be used.

506.1.4. Six feet (6') per second where there exists a well-established sod of good quality.

506.2.2. Where swale bends occur, the allowable velocities listed above shall be divided by the following factors:

<u>Degree of Bend</u>	<u>Velocity</u>
0 to 30	1.50
30 to 60	1.75
60 to 90	2.00
90 and over	2.50

506.2.3. The above channel flows may be exceeded if the designer can provide acceptable supportive design criteria as proof of erosion prevention. Where the velocity of storm water runoff exceeds the allowable velocity, erosion protection must be provided. The method of erosion protection proposed must be supported by the appropriate design information and/or references.

506.2.4. All existing and natural watercourses, channels, drainage systems, and areas of surface water concentrate shall be maintained in their existing condition, unless the Township approves an alteration.

506.2.5. Flow velocities from any storm sewer may not result in a deflection of the receiving channel.

- 506.2.6. Energy dissipaters shall be provided at all storm sewer outlets and shall be designed in accordance with the Commonwealth of Pennsylvania, Department of Environmental Protection, Office of Water Management, *Erosion and Sediment Pollution Control Program Manual*, latest edition.
- 506.2.7. The capacities of open channels shall be computed from the Manning equation. Permissible open channel velocities and design standards shall be in accordance with good engineering practice, as documented in the *Engineering Field Manual for Conservation Practices*, USDA, SCS, or in *Design Charts for Open-Channel Flow, Hydraulic Design Series No. 3*, latest edition of the U.S. Department of Transportation, Federal Highway Administration, Washington, DC.
- 506.2.8. Protective grating must be provided at all headwalls to prevent clogging and unauthorized access to storm water facilities.
- 506.2.9. Storm facilities shall be contained in, and centered within, an easement.

SECTION 507 PHASING PLANS

When applications are submitted in phases, and if temporary facilities are required for construction of a phase, such facilities shall be included in the submitted plans and secured with an improvement guarantee. All phases of development must comply with the provisions of this Ordinance. In the event temporary measures cannot adequately handle the storm water runoff, the main outfall line shall be included as part of the construction of the proposed phase.

SECTION 508 CAPACITY IMPROVEMENTS (in areas which allow direct release)

If the developer can prove that it would be feasible to provide capacity improvements to relieve the capacity deficiency in the existing drainage network, the adequate capacity improvements could be provided by the developer in-lieu-of storm water management facilities on the development site. Any capacity improvements would be designed based on development of all areas tributary to the improvements and the capacity criteria specified in this Ordinance. The type and amount of development that the developer must consider shall be either based on the current zoning or established by the Township, whichever results in a greater amount of impervious surface. It shall be assumed that all new development upstream of a proposed capacity improvement would implement applicable storm water management techniques, consistent with this Ordinance.

SECTION 509 DETENTION AND RETENTION BASINS

Storm water management facilities shall be provided so that the peak discharge of the calculated post-development runoff to an adjacent property does not exceed the peak discharge of the calculated pre-development runoff, except as specified in Act 167, Watershed Storm Water Management Plans, as adopted by the County of Lancaster, Pennsylvania.

- 509.1 If the SCS TR-55 method is used, runoff calculations of the pre-development and post-development comparison shall be based upon the following twenty-four hour, Type II, storm frequencies:

<u>Storm Event</u>	<u>Inches of Rainfall</u>
2 Year	3.1
10 Year	4.1
25 Year	5.0
50 Year	6.2
100 Year	7.0

- 509.2. Permanent detention and retention basins shall be designed to store the storm water runoff of the one hundred (100) year post-development storm event minus the water discharged, if any, from the basin by any primary and/or secondary outlets. The storage volume shall be calculated from the beginning of the storm event until such time as the inflow rate equals the outflow rate that is discharged through outlets from the basin.
- 509.3. All basins shall be structurally sound and shall be constructed of sound and durable materials. The completed structure and the foundation of all basins shall be stable under all probable conditions of operation, and shall be capable of discharging the peak discharge of a post-development one hundred (100) year storm event through the emergency spillway facilities in a manner which will not damage the integrity of the facility or the downstream drainage areas.
- 509.3.1. Emergency spillways shall not be considered in the design of primary and secondary outlet controls. The emergency spillway minimum elevation shall be established at a minimum of one tenth (0.1) foot above the water surface elevation of the one hundred (100) year storm event when routed through the primary and secondary outlet controls. The emergency spillway shall be designed by routing the one hundred (100) year storm event through the spillway, assuming no storage below the emergency spillway elevation.
- 509.4. The effect on downstream areas, if the basin embankment fails, shall be considered in the design of all basins. Where possible, the basin shall be designed to minimize the potential damage caused by such failure of the embankment.
- 509.5. Basins which are not designed to release all storm water shall be specifically identified as retention basins or wet pond basins. All other basins shall include provisions for de-watering, particularly the bottom, and shall not create swampy and/or unmaintainable conditions. Impervious low-flow channels and/or tile fields may be used to de-water the bottom of a basin. This requirement does not apply to basins located within an Act 167 study area.
- 509.6. An outlet structure must be provided to permit draining the basin to a completely dry position as follows:
- 509.6.1. Detention volumes shall dewater in less than 24-hours.
- 509.6.2. Best Management Practices (BMP's) volume shall dewater in a minimum of 24-hours.
- 509.6.3. Recharge volumes shall dewater within 48-hours.
- 509.7. Discharge structures shall be designed to eliminate the possibility of blockage during operation (i.e., trash racks).
- 509.8. All outlet structures and emergency spillways shall include a satisfactory means of dissipating the energy of flow at its outlet to assure conveyance of flow, without endangering the safety and integrity of the basin and the downstream drainage area.
- 509.9. Detention basins and/or retention basins which are designed with earth fill dams shall incorporate the following minimum standards:
- 509.9.1. The maximum water depth shall not exceed six feet (6'), to the invert of the emergency spilling.

- 509.9.2. The minimum top width of all dams shall be five feet (5').
- 509.9.3. The side slopes of earth fill dams shall not be less than three (3) horizontal to one (1) vertical.
- 509.9.4. Fencing, or other acceptable devices that restrict access, shall be provided for basins with slopes greater than five (5) horizontal to one (1) vertical when the water surface area is greater than one (1) acre, and/or more than five (5) feet deep during a one hundred (100) year storm event.
- However, the Township, based upon the type and proximity of adjacent land use, may require the access restrictions to avoid a hazardous condition.
- 509.9.5. A key trench of compacted, relatively impervious material (Unified Soil Classification CL or ML) at a depth of at least two feet (2'), or extending down to stable subgrade, whichever is deeper.
- Minimum bottom widths for the key trench shall be four feet (4'). Maximum side slopes for the key trench shall be one (1) horizontal to one (1) vertical. A compacted impervious core at least eight feet (8') wide at the top, having a maximum side slope of one (1) horizontal to one (1) vertical, shall extend for the full length of the embankment, and the top elevation shall be set at the 25-year design water surface elevation.
- 509.9.6. All pipes and culverts through dams shall be reinforced concrete and have properly spaced concrete cutoff collars or anti-seep collars.
- 509.9.7. All riser pipes shall be reinforced cement concrete.
- 509.9.8. A minimum of one foot (1') freeboard shall be provided above the maximum design water surface elevation at the emergency spillway. The freeboard is required through the emergency spillway above the calculated water surface elevation for the entire one hundred (100) year post-development flow condition through the emergency spillway. The freeboard should be determined based on the calculated depth of flow through the emergency spillway in accordance with the emergency spillway calculation.
- 509.9.9. Minimum finished floor elevations for all buildings that adjoin a basin, other temporary impoundments, or open conveyance systems, shall be two feet (2') above the water surface of a one hundred (100) year storm event. If a basement is proposed below the bottom elevation of the basin, detailed calculations addressing the effects of storm water ponding on the building, and waterproofing, and/or floodproofing design information consistent with the floodplain standards in the Township Zoning Ordinance shall be submitted.
- 509.10. Storm water management basins shall not be located closer than one hundred feet (100') from the rim of sinkholes or closed depressions, nor within one hundred feet (100') from disappearing streams; nor shall these basins be located closer than fifty feet (50') from lineaments or fracture traces; nor shall these basins be located closer than twenty-five feet (25') from surface or identified subsurface pinnacles. Where retention basins, seepage pits, seepage tanks, seepage trenches and/or french drains are located in an area that is suspected to contain sinkholes, closed depressions, fracture traces, or caverns, 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.

This information shall include a seepage report containing a test pit soils analysis, prepared by a registered geologist, and percolation test results in accordance with Pennsylvania Department of Environmental Protection regulations (Chapter 73, Section 15). The bottom of the test pits shall be no less than thirty inches (30") below the elevation at which the soil/seepage interface is designed (i.e., the bottom of the trench, pit, etc.).

- 509.11. Retention basins located outside an Act 167 study area must provide enough capacity to store the entire runoff volume created by a 100-year, 24-hour storm event. If supporting documentation is provided for a reduction based upon percolation, the applicant may:
 - 509.11.1. Reduce the required volume by twenty percent (20%); or
 - 509.11.2. Determine the volume required using twenty percent (20%) of the percolation rate to perform routing calculations, whichever volume is greater.
- 509.12. Retention basins shall incorporate the following minimum design standards:
 - 509.12.1 Infiltration systems greater than three feet (3') deep shall be located no less than thirty feet (30') from basement walls or the drain field of a sanitary sewer system. Information addressing the effects of the infiltration system on the building and waterproofing shall be submitted.
 - 509.12.2. Infiltration systems designed to handle runoff from commercial or industrial impervious parking areas shall be no closer than one hundred feet (100') from any water supply well.
 - 509.12.3. Infiltration systems may not receive runoff until the entire contributory drainage area to the infiltration system has received final stabilization.
 - 509.12.4. 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.
- 509.13. A liner of impervious material must be provided in all wet ponds. Where a registered geologist determines that infiltration would be detrimental due to underlying geology. In-lieu-of an impervious liner, the applicant may supply sufficient information to the Township prepared by a registered geologist, which includes an analysis of the potential for sinkhole development, and demonstrates to the Township that sinkholes will not develop.

SECTION 510 BEST MANAGEMENT PRACTICES

All storm water management facilities shall employ Best Management Practices (BMP), as outlined in the latest edition of the handbook entitled *Pennsylvania Handbook of Best Management Practices for Developing Areas*, published by Pennsylvania Association of Conservation Society, Keystone Chapter, Soil and Water Conservation Society, Pennsylvania Department of Environmental Protection, and Natural Resources Conservation Service. The purpose of the following standards is to provide the designer with guidance to meet the minimum BMP requirements. Innovative approaches are allowed and encouraged with the appropriate documentation furnished to, and approved by, the Township.

510.1. General Provisions:

- 510.1.1. Minimize on-site impervious area. Preserve natural wooded cover and drainage-ways within the project site.
- 510.1.2. Maximize the on-site drainage areas that are directed to the BMP. Minimum accepted area is seventy percent (70%). Impervious areas shall be directed to BMP when possible.
- 510.1.3. Minimize mixing of off-site and on-site runoff, unless upstream drainage area is insignificant in size (less than 0.5 acres).
- 510.1.4. Delay construction of BMP until all other land disturbing activities are complete to minimize the potential for clogging and maintenance or remedial action.
- 510.1.5. Use water tolerant vegetation. Refer to the *Pennsylvania Handbook of Best Management Practices for Developing Areas* for guidance in choosing appropriate vegetation.
- 510.1.6. Provide a BMP, control facility with a length-to-width ratio in basins of at least 2:1 to avoid short-circuiting. Maximize the distance between inflow and outflow.
- 510.1.7. Provide proper erosion protection at all pipe outlets.
- 510.1.8. Utilize underdrains for all basins. May be used as BMP outlet if properly sized.
- 510.1.9. Infiltration trenches provided for storm water management do not require additional storage volume calculations for BMP.

510.2. Water Quality. Facilities shall be provided for water quality treatment of the storm water runoff from the first 1.2" of rainfall. The following calculation is used to determine the storage volume, WQ_v , in acre-feet of storage:

$$WQ_v = [(1.2) (R_v)(A)] / 12$$

WQ_v = Water Quality volume in acre-feet

A = Area of watershed in acres

$R_v = 0.05 \div 0.9(I)$ where I = net increase in impervious area / Area of watershed (A)

- 510.2.1. Water quality facilities shall be designed as part of a storm water management facility that incorporates water quality BMPs as a primary benefit of using that facility, in accordance with design specifications contained in *Pennsylvania Handbook of Best Management Practices for Developing Areas*. The Water Quality volume shall take a minimum of 24 hours to be discharged from the basin. Watersheds where the post-developed impervious area is equal to or less than the pre-developed impervious area shall not be required to provide Water Quality volume, unless required by NPDES Part II.
- 510.2.2. When possible, runoff from the development site shall be managed through a series of riparian corridor vegetation facilities in a manner consistent with *Pennsylvania Handbook of Best Management Practices for Developing Areas*, Riparian Forested Buffer. The priority goal of the riparian vegetation will be the reduction of thermal impacts on storm water runoff associated with impervious

areas, with a secondary goal being the protection of capacity of existing storm water conveyance channels.

- 510.3. Ground Water Recharge. Designs that incorporate ground water recharge (infiltration facilities) are encouraged to compensate for the reduction in the percolation that occurs when the ground surface runoff characteristics have been altered.

The Ground Water Recharge Volume (Rev) is the volume of storm water runoff from a property that is considered the groundwater recharge. Ground Water Recharge Volume may be part of the Water Quality volume, and is calculated on the basis of treatment and recharge by structural storm water management practices, as follows:

$$\text{Rev} = [(S) (R_v) (A)] / 12$$

Re = Recharge volume in acre-feet

A = Area of watershed in acres

$R_v = 0.05 \div 0.9(I)$ where I = net increase in impervious area / Area of watershed (A)

S is the Soil Specific Recharge factor and varies according to soil type, as follows:

<u>Hydrologic Soil Group</u>	<u>Soil Specific Recharge Factor (S)</u>
A	0.32
B	0.22
C	0.10
D	0.05

- 510.3.1. If more than one Hydrologic Soil Group (HSG) is present at a site, a composite recharge volume shall be computed based upon the proportion of total site area within each HSG.

- 510.3.2. Infiltration BMPs intended to receive runoff from developed areas shall be selected based on suitability of soils and site conditions and shall be constructed on soils that have the following characteristics:

510.3.2.1. A minimum depth of forty-eight inches (48") between the bottom of the facility and the seasonal high water table and/or bedrock (limiting zones).

510.3.2.2. An infiltration and/or percolation rate sufficient to accept the additional storm water load and drain completely, as determined by field tests conducted by the owner's professional designer.

510.3.2.3. Infiltration BMPs receiving only roof runoff may be placed in soils having a minimum depth of twenty-four inches (24") between the bottom of the facility and the limiting zone.

510.3.2.4. The recharge volume provided at the site shall be directed to the most permeable HSG available.

510.3.2.5. Structural storm water management facilities which provide treatment and recharge of the required Recharge Volume will be designed as part of a storm water management facility which incorporates groundwater recharge BMPs as a primary benefit of using that facility, in accordance with design

specifications contained in *Pennsylvania Handbook of Best Management Practices for Developing Areas*, 1998.

- 510.3.2.6. The Groundwater Recharge volume shall be infiltrated within 48 hours after the end of the design storm.
- 510.3.2.7. Watersheds where the post-developed impervious area is equal to or less than the pre-developed impervious area shall not be required to provide Ground Water Recharge volume.
- 510.3.2.8. When ground water recharge is provided, a detailed geologic evaluation shall be performed to determine the suitability of the recharge facility. The evaluation shall be performed by a registered professional geologist, and shall, at a minimum, address soil permeability, depth to bedrock, susceptibility to sinkhole formation, and subgrade stability. Where pervious pavement is proposed, construction specifications shall be noted on the Plan.

SECTION 511 SOIL EROSION AND SEDIMENTATION CONTROL

The following principles shall be applied to the design plan and construction schedule to minimize soil erosion and sedimentation:

- 511.1. Stripping of vegetation, grading or other soil disturbance shall be done in a manner, which will minimize soil erosion.
- 511.2. Natural vegetation shall be retained and protected, whenever feasible.
- 511.3. The extent of the disturbed area and the duration of its exposure shall be kept to a minimum, within practical limits.
- 511.4. Either temporary seeding, mulching or other suitable stabilization measures shall be used to protect exposed critical areas during construction.
- 511.5. Drainage provisions shall accommodate the storm water runoff, both during and after construction.
- 511.6. Soil erosion and sedimentation facilities shall be installed before any on-site grading.
- 511.7. All earthmoving activities shall be conducted in such a way as to minimize accelerated erosion and resulting sedimentation. Measures to control erosion and sedimentation shall, at a minimum, meet the standards of the Lancaster County Conservation District and Chapter 102 (Erosion Control) of Title 25, Rules and Regulations of the Pennsylvania Department of Environmental Protection.
- 511.8. The erosion and sedimentation control plan must be available at all times at the project site. When required, a permit allowing earthmoving activity shall be obtained by the developer before any construction on the project site shall begin.
- 511.9. Approval of an erosion and sedimentation control plan by the Township shall not be construed as an indication that the plan complies with the standards of any agency of the Commonwealth.
- 511.10. The erosion and sedimentation control plan shall be submitted to the Lancaster County Conservation District for its review and approval. Building permits will not

be issued and construction shall not start until an NPDES permit, where required, is received.

SECTION 512 EASEMENTS

Easements shall be provided where storm water or surface water drainage facilities are proposed, whether located within or beyond the boundaries of the property. Although normal lot grading does not require easements, swales which receive runoff from more than one other lot or from more than one-half (1/2) acre must be provided with an easement.

Easements shall have a minimum width of ten feet (10') from each side of the watercourse, waterbody, or drainage structure and shall be adequately designed to provide area for:

- 512.1. Collection and discharge of water,
- 512.2. Maintenance, repair and reconstruction of the drainage facilities, and
- 512.3. Passage of machinery for such work.
 - 512.3.1. Easements shall include a description of an ownership and maintenance program, in a recordable form, that clearly sets forth responsibility for all temporary and permanent storm water management facilities.
 - 512.3.2. Easements that are not along the centerline of a described property line shall be located by a centerline bearing and distance from a known point.

SECTION 513 MAINTENANCE OF STORM WATER MANAGEMENT FACILITIES

- 513.1. Maintenance During Development. Maintenance of storm water management facilities during development of a project site shall be the responsibility of the developer and the landowner. Maintenance shall include, but not be limited to:
 - 513.1.1. Removal of silt and debris from basins, traps or other structures and all programs stated in the approved erosion and sediment control plan. When required, clean-out shall restore the original design volume to the basin or other structure. The elevation corresponding to the maximum allowable sediment level shall be determined and stated in the design data as a distance below the top of the riser. The elevation shall be clearly marked on the riser to enable proper maintenance.
 - 513.1.2. Periodic maintenance of temporary control facilities, such as replacement of straw bale dikes, straw filters or similar measures.
 - 513.1.3. Establishment or restoration of vegetation by seeding, mulching or sodding of scoured areas, or areas where vegetation has not been successfully established.
 - 513.1.4. Installation of necessary controls to correct unforeseen problems caused by storm events within design frequencies.
 - 513.1.5. Removal of all temporary storm water management control facilities upon installation of permanent storm water management facilities at the completion of the development.

513.2. Maintenance of Facilities Not Dedicated or Accepted by Township:

- 513.2.1. The Township shall not become responsible for maintenance of storm water management facilities, unless such facilities are within a street right-of-way dedicated to, and accepted by, the Township, or unless the Township specifically grants an exception to this standard.

Maintenance of storm water facilities shall be the responsibility of the developer and may be assigned to a private entity (e.g., property owner, homeowners' association, and condominium association), when deemed acceptable to the Township.

- 513.2.2. When possible, storm water management facilities shall be owned and maintained by one (1) entity. Storm water management facilities shall be designed with consideration for facilities that can be effectively accommodated within the property of one (1) responsible private entity, and reasonably maintained by the private entity.

- 513.2.3. When maintenance of storm water management facilities are assigned to the developer and/or private entity, a legally binding agreement between the responsible parties and Township shall be recorded. Such agreement shall provide the Township with the rights established in Section 705 of the Pennsylvania Municipalities Planning Code, relating to the maintenance of common open space when a private entity fails to adequately maintain the facility.

Deeds for property that contain private maintenance of storm water management facilities shall include a specific deed reference to such grantee's responsibility for the maintenance and care of the storm water management facilities. Such deed reference shall be in the form of a deed restriction stating responsibilities of the property owner or private entity for the maintenance, as may be necessary to maintain the storm water management facility in accordance with the terms of this Ordinance. Such maintenance shall include, at a minimum, the following:

- 513.2.3.1. Re-establishment of vegetation by seeding and mulching or sodding of scoured areas or areas where vegetation has not been successfully established.
- 513.2.3.2. Liming and fertilizing vegetated channels and other areas according to specifications in *The Agronomy Guide*, Penn State University, College of Agricultural Sciences.
- 513.2.3.3. Mowing as necessary to maintain adequate stands of grass and to control weeds. Chemical weed control may be used if applicable regulations are met.
- 513.2.3.4. Removal of silt debris or any other obstruction from all facilities in order to maintain the design storage volumes.
- 513.2.3.5. Regular scheduled inspection and maintenance program.
- 513.2.4. Deed restrictions shall also include notice that, in the event that the private entity fails to comply with the terms of this Ordinance, the Township shall have the authority to carry out those duties imposed upon the private entity.
- 513.2.4.1. The Township may, after giving notice to the private entity of improper maintenance, and providing a reasonable time for compliance, enter upon

said property and take such actions as may be required to bring the area into compliance with this Ordinance.

- 513.2.4.2. The Township shall further have the right to file a municipal lien against such property for the cost of maintenance work carried out under this section, plus a penalty of ten percent (10%) of the costs of such work. The Township may, in addition to the filing of a municipal lien, pursue any other remedies provided by law against any private entity that should fail to comply with the terms of this Ordinance.

- 513.3. Maintenance of Existing Facilities. No person shall modify, remove, fill, landscape, or alter storm water management facilities, unless a storm water management plan has been approved, which authorizes such modification, removal, filling, landscaping, or alteration. No person shall place any structure, fill, landscaping, or vegetation into a storm water management facility or within a drainage easement that will limit or alter the functioning of the facility or easement in any manner.

- 513.3.1. The Township may, after giving notice to the private entity of the improper condition, and providing a reasonable time for compliance, enter upon said property and take such actions as may be required to bring the area into compliance with this Ordinance.

- 513.3..2. The Township shall further have the right to file a municipal lien against such property for the cost of maintenance work carried out under this section, plus a penalty of ten percent (10%) of the costs of such work. The Township may, in addition to the filing of a municipal lien, pursue any other remedies provided by law against any private entity that should fail to comply with the terms of this Ordinance.

- 513.4 Maintenance Guarantee. When the Township accepts dedication of storm water management facilities, the applicant shall post a financial security for the structural integrity and function of said facilities, in accordance with the approved design and specifications. The financial security shall extend for a term not to exceed eighteen (18) months from the date of acceptance of dedication. The financial security shall be the same type as required in Section 402. The amount of the financial security shall not exceed fifteen percent (15%) of the actual cost of installation of said facilities.

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, East Cocalico Township may initiate the following actions:

601.1 Suspension of a Storm Water Management Permit: Any permit issued under this Ordinance may be suspended by the Township based upon:

- A. The noncompliance with or failure to implement any provision of the Land Disturbance Plan, or
- B. A violation of any provision of this Ordinance relating to the project, or
- C. 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.

601.2 Under the suspension of a permit, only such work as the Township 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 Township when:

- A. The Enforcement Officer and the Township Engineer have inspected and approved the corrections to the storm water management facilities or the elimination of the hazard or nuisance, and;
- B. The Enforcement Officer and the Township Engineer are satisfied that the violation of the Ordinance has been corrected.

601.3 Revocation of a Storm Water Management Permit: Based upon a report from the Township Engineer that the existing site condition or further construction is likely to endanger property or create hazardous conditions, the Township may:

- A. Revoke a permit.
- B. Require protective measures to be taken and assign a reasonable time period for the necessary action.
- C. 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 DI

601.4 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 Township

shall provide written notification, by certified mail, of the violation to the landowner at the landowner's last known address. Such notification shall:

- A. Cite the specific violation, describe the requirements which have not been met, and cite the provisions of the Ordinance relied upon.
- B. Identify the specific protective measures to be taken.
- C. Assign a reasonable time period necessary for action or in the case of revocation, identify if the Township has authorized protective measures to be performed at cost to the landowner.
- D. Identify the right of the landowner to request a hearing before the Board of Supervisors if aggrieved by the suspension or revocation.

601.5 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 Township or may result in danger to the health, safety and welfare of the residents of the Township and, therefore, may constitute a nuisance. Where the Township determines that such conditions constitute a nuisance, they shall be abatable as such in accordance with the provisions of the Second Class Township Code, Act of May 1, 1933, P.L. 103, as reenacted and amended, §1529, 53 P.S. §§66529. The Township shall, in the notice of violation of approved plan forwarded in accordance with Section 304 herein, state whether the violations of the approved Land Disturbance Plan constitute a nuisance. The Township 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.

601.6 Civil Remedies:

- A. The Township 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 Township 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 Township 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 Township, County, State or Federal law or regulation, including but not limited to the District Township Zoning Ordinance.

601.7 Concurrent Remedies: The exercise of any remedy or imposition of any penalty under this Ordinance shall not prevent the Township from exercising any other remedy or penalty provided for by this Ordinance or available at law or in equity.

SECTION 602 VIOLATIONS AND PENALTIES

602.1 It shall be a violation of this Ordinance to commit or to permit any other person to commit any of the following acts:

- A. 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.

- B. To install, repair, modify, or alter storm water management facilities prior to obtaining a permit under this Ordinance or in a manner which violates the terms and conditions of any permit issued under this Ordinance.
- C. To misuse or fail to maintain any storm water management facility installed upon a property.
- D. To construct any improvements upon, grade, fill, or take any other action which will impair the proper functioning of any storm water management facility.
- E. To place intentionally false information on or intentionally omit information from an application for a permit under this Ordinance.
- F. To fail to comply with any other provisions of this Ordinance.

602.2 If the Board of Supervisors or the officer designated to enforce this Ordinance by the Board of Supervisors determines that a person has committed or permitted the commission of a violation of this Ordinance, the Board of Supervisors 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 Township 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.

602.3 If such person fails or refuses to remit the penalty to the Township within ten days from the date of the written notice of violation of this Ordinance, the Township 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 Township 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 Township in the enforcement proceedings. If the defendant neither pays nor timely appeals the judgment, the Township may enforce the judgment pursuant to the applicable rules of civil procedure.

602.4 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 Board of Supervisors 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 Board of Supervisors.

603.1 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.

603.2 If the appellant desires a hearing before the Board of Supervisors, the appellant must request a hearing in writing.

- 603.3 If a hearing is requested in writing, the Board of Supervisors shall conduct the hearing at a regular or special public meeting which occurs not less than fourteen (14) 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.
- 603.4 The Board of Supervisors shall render a decision on the appeal in accordance with the provisions of the Local Agency Law.

SECTION 604 FEES

- 604.1 The applicant shall agree in writing to reimburse the Township for all costs of administration and review of the application by the Township 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 305 of this Ordinance
- 604.2 Excluding fixed administrative costs, the applicant shall be charged only for time and materials actually expended and detailed in bills from the Township 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.
- 604.3 If actual time required of the Township Engineer or Consultant will exceed the deposited amount, the Township shall render to the applicant a preliminary statement of time and materials expended and an additional amount must be deposited with the Township prior to Plan approval.
- 604.4 Fees covering the cost of inspections shall be paid by the applicant to the Township prior to Plan approval. The amounts of these inspection fees shall be fixed by Resolution of the Board of Supervisors. If problems arise requiring more extensive involvement of the Township Engineer or Consultant during the inspection process, any resulting costs, including legal costs that exceed the initial fees will be assessed to the applicant.

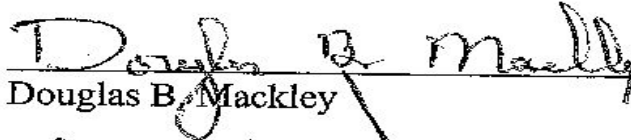
SECTION 605 ADOPTION AND EFFECTIVE DATE

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 East Cocalico Township prior to the enactment of this Ordinance.

This Ordinance shall take effect and be in force five (5) days after its enactment by the Board of Township Supervisors of East Cocalico Township as provided by law.

ENACTED AND ORDAINED this 6th day of August, 2003.

EAST COCALICO TOWNSHIP


Douglas B. Mackley


Craig A. Ebersole

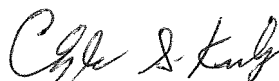

Clyde S. Kulp

CERTIFICATE

I, the undersigned, Secretary of East Cocalico Township (the "Township"), certify that: the foregoing is a true and correct copy of an Ordinance of the Board of Supervisors of East Cocalico Township which duly was enacted by affirmative vote of a majority of the members of the Board Supervisors of the Township at a meeting duly held on the 6th day of August 2003; such Ordinance duly has been recorded in the Ordinance Book of the Township; such Ordinance duly has been published as required by law; and such Ordinance remains in effect, unaltered and unamended, as of the date of this Certificate.

I further certify that the Board of Supervisors of East Cocalico Township met the advance notice requirements of Act No. 1986-84 of the General Assembly of the Commonwealth of Pennsylvania, approved July 3, 1986, by advertising said meeting and by posting prominently a notice of said meeting at the principal office of the Township or at the public building in which said meeting was held, all in accordance with such Act.

IN WITNESS WHEREOF, I set my hand and affix the official seal of the Township, this 6th day of August 2003.



SECRETARY

(TOWNSHIP SEAL)

APPENDICES

STORMWATER MANAGEMENT

185 Attachment 1

Township of East Cocalico

APPENDIX NO. 1

APPLICATION FOR A STORM WATER MANAGEMENT PERMIT

EAST COCALICO TOWNSHIP

Lancaster County, Pennsylvania

File No. _____

Date Received _____

Application is hereby made to East Cocalico Township for the issuance of a Storm Water Management Permit pursuant to the specifications herewith submitted.

1. Name of Property Owner(s): _____

2. Address: _____ Phone: () _____

3. Project Location: _____

4. Type of Earth Disturbance Activity: _____

A. New impervious or semi-impervious surface _____

B. Diversion or piping of natural or man-made watercourse _____ (linear ft.)

C. Installation of the following:

Culvert _____

Detention basin _____

Retention basin _____

Sediment basin _____

Other _____

D. Removal of ground cover, grading, filling, or excavation _____ (sq. ft./ac.)

5. Land disturbance plan prepared by: _____

Address: _____ Phone: () _____

6. Name of applicant (if other than owner): _____

Address: _____ Phone: () _____

The undersigned hereby represents that, to the best of his knowledge and belief, all information listed above and on the land disturbance plan herewith submitted is true, correct, and complete.

Signature of Applicant

Date

EAST COCALICO CODE

APPENDIX NO. 2

STORMWATER MANAGEMENT PERMIT

EAST COCALICO TOWNSHIP

Lancaster County, Pennsylvania

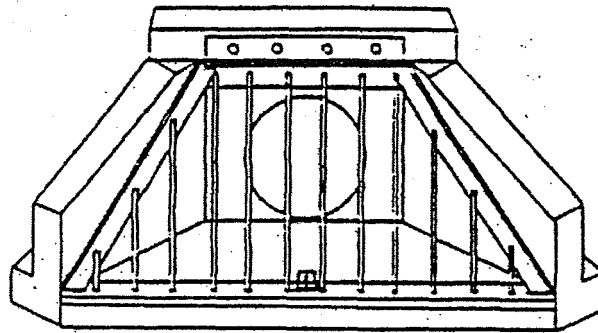
Permit No. _____

The property of _____ located
at _____ has receive approval
of the land disturbance plans dated _____. Construction may proceed in
accordance with approved plans.

Board of Supervisors _____

Date _____

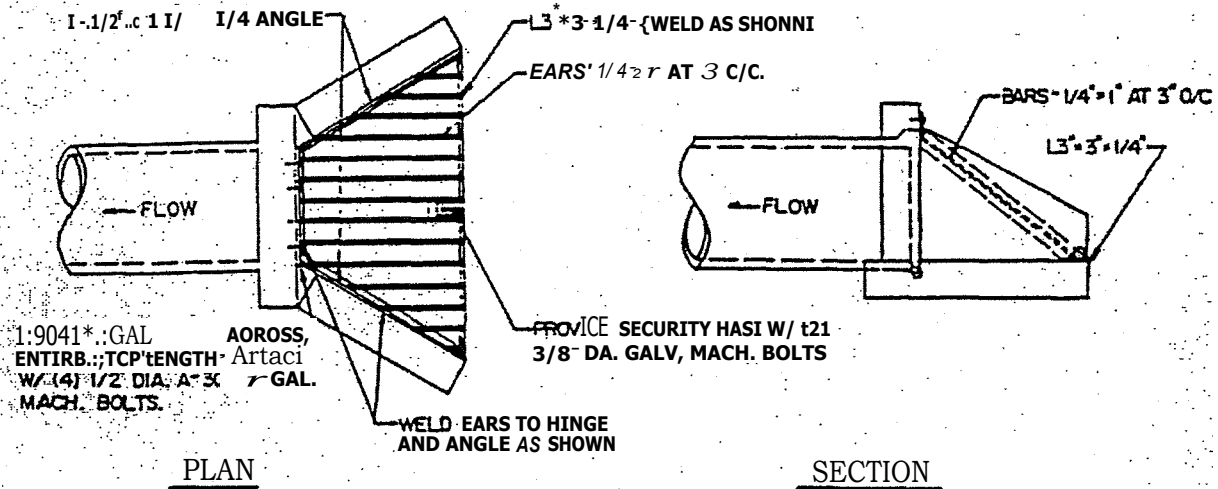
APPENDIX NO. 3



ISOMETRIC

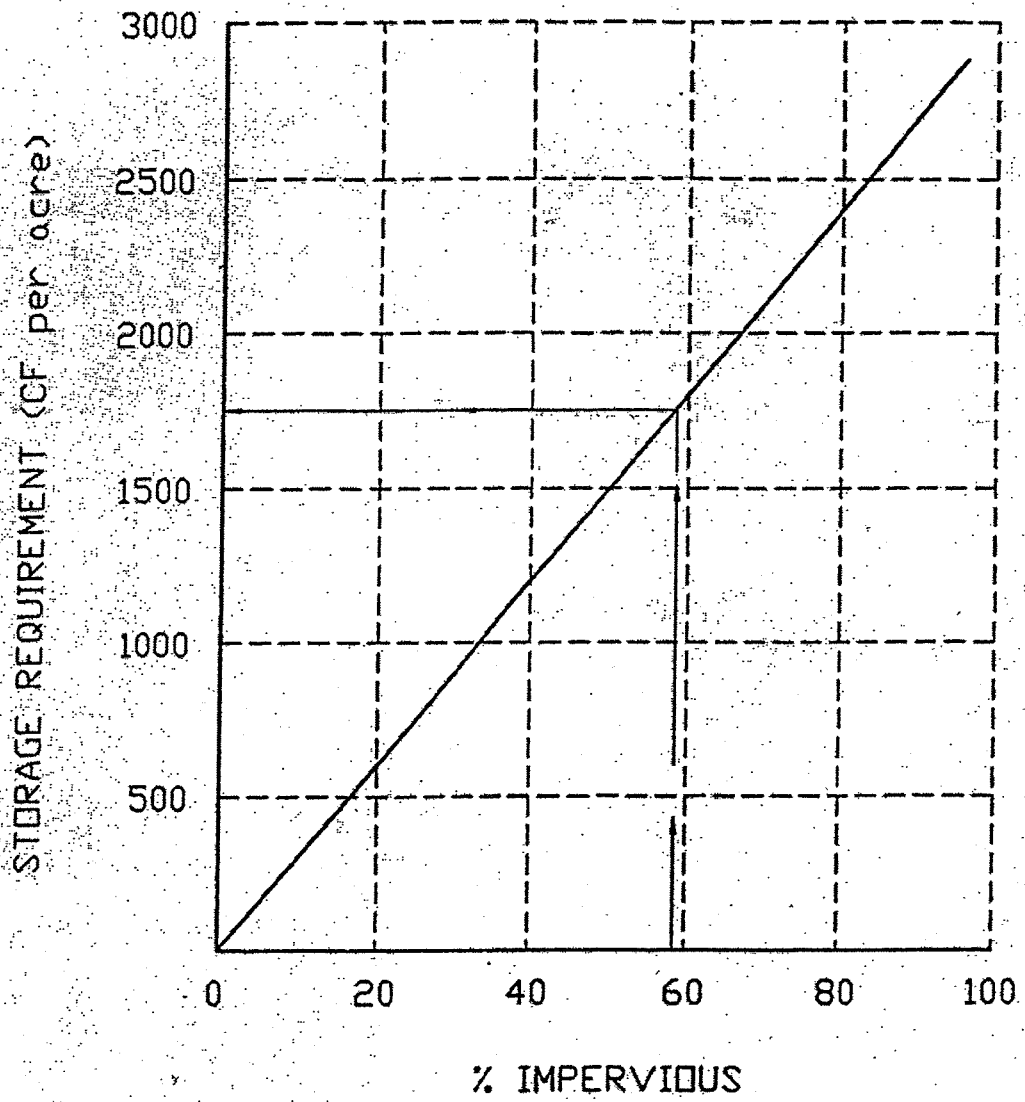
NOTES

1. MATERIAL TO BE : GALVINIZED, STEEL W/ KIST INHIBITOR, OR AUJMINUM.
2. DIMENSION APPROPRIATE7 FOR HEADWAI.1. UTILIZED.

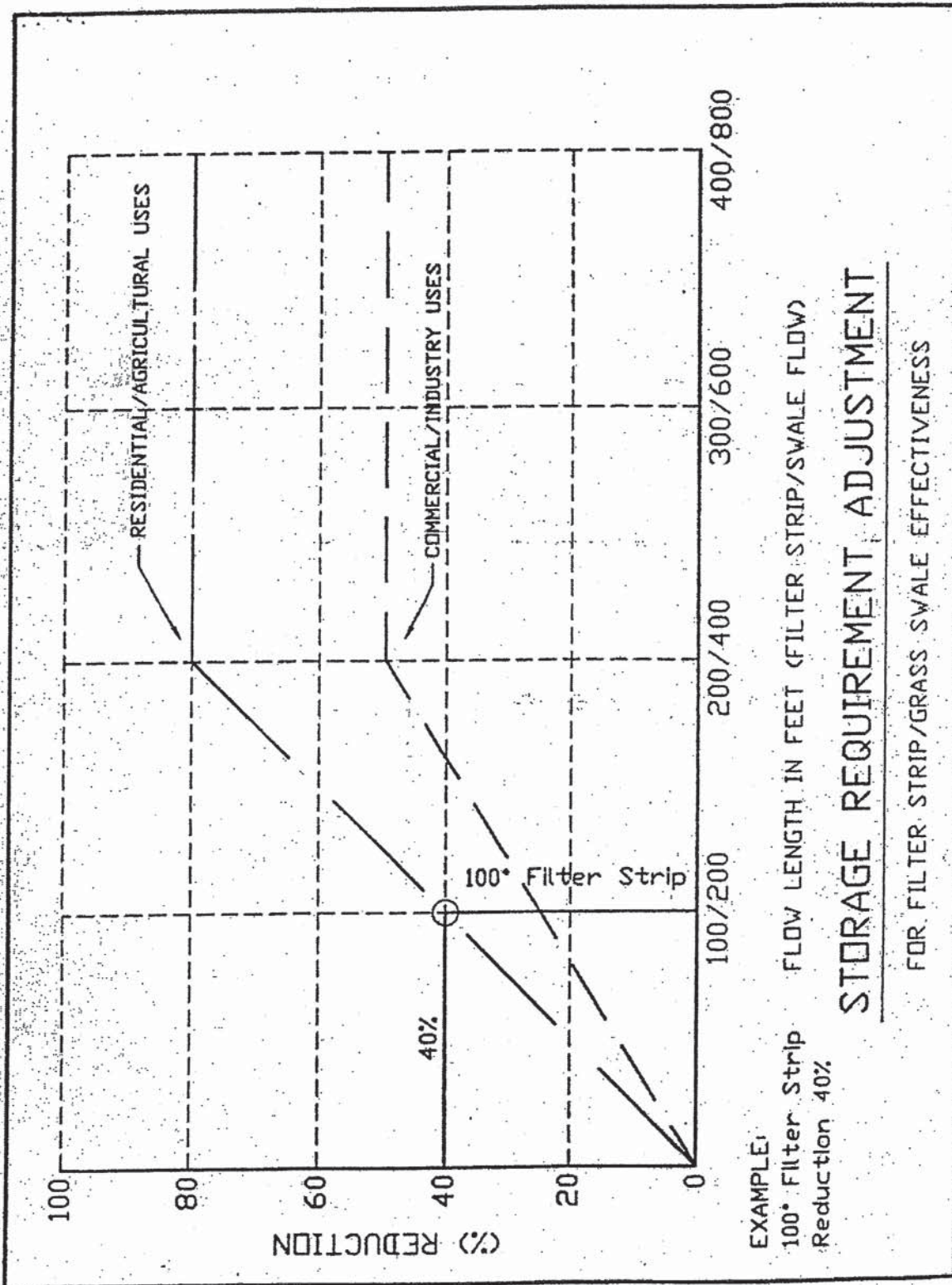


TRASH RACK DETAIL reFE 'ark' HEADNALLS ONLY
f SCALE

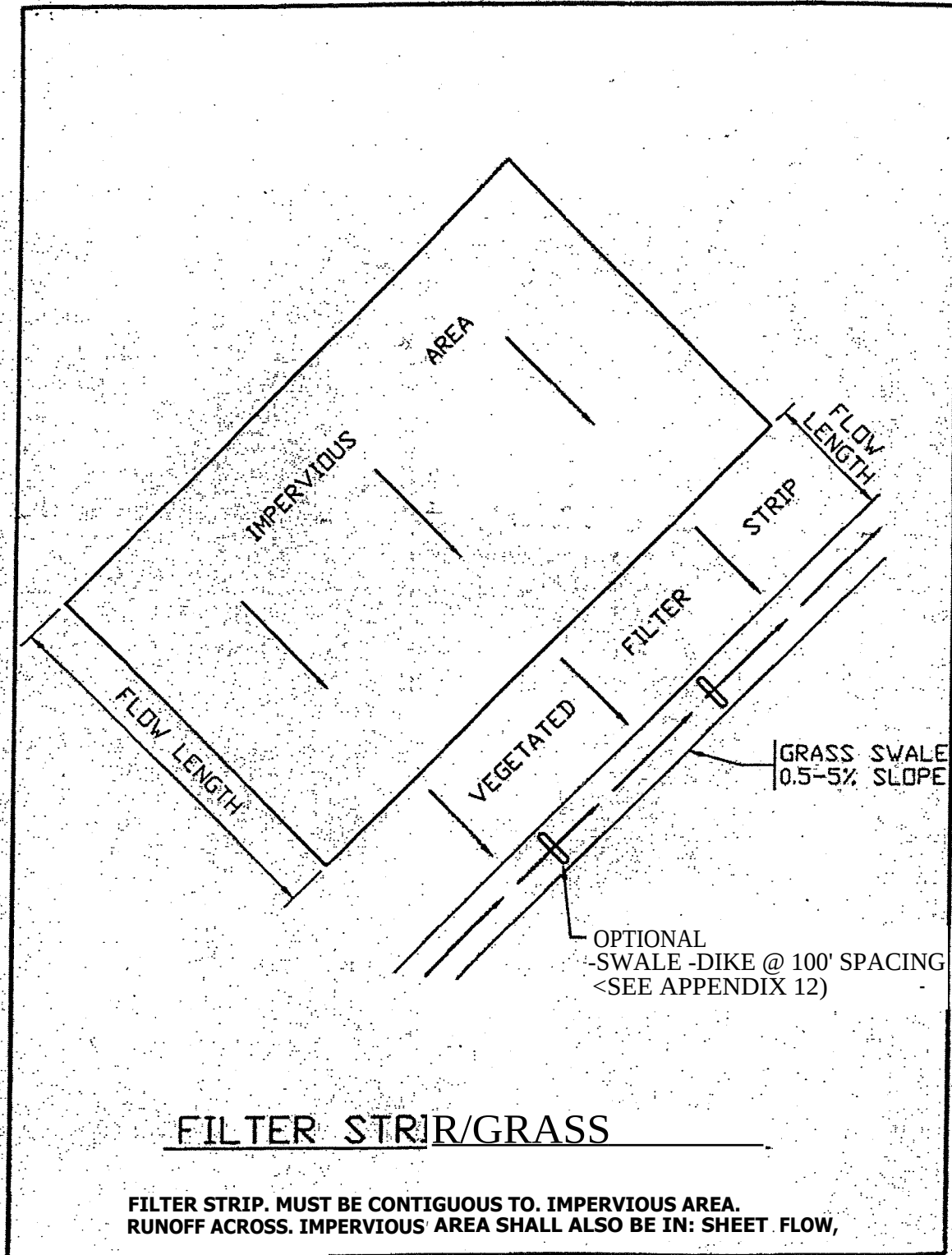
APPENDIX NO. 4



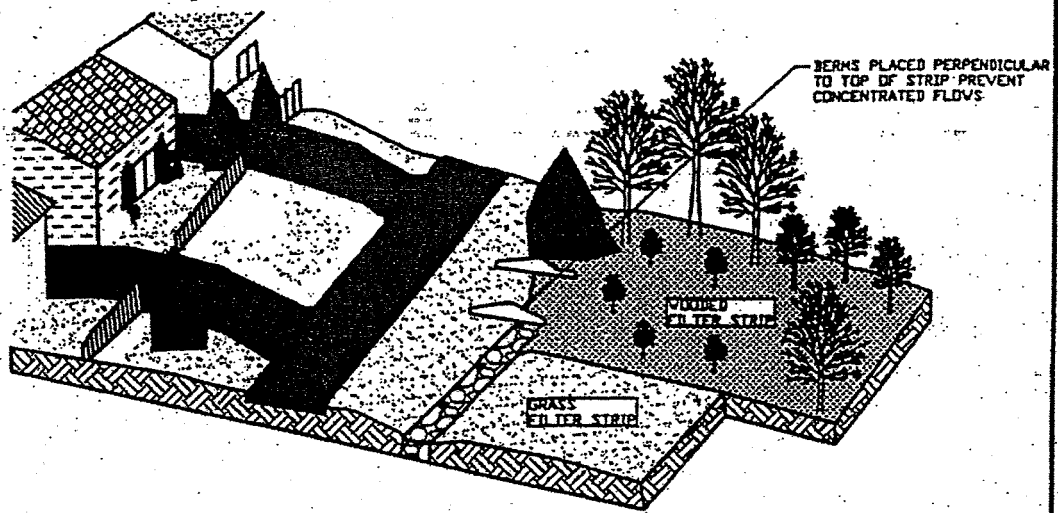
STORAGE REQUIREMENTS



APPENDIX NO. 6



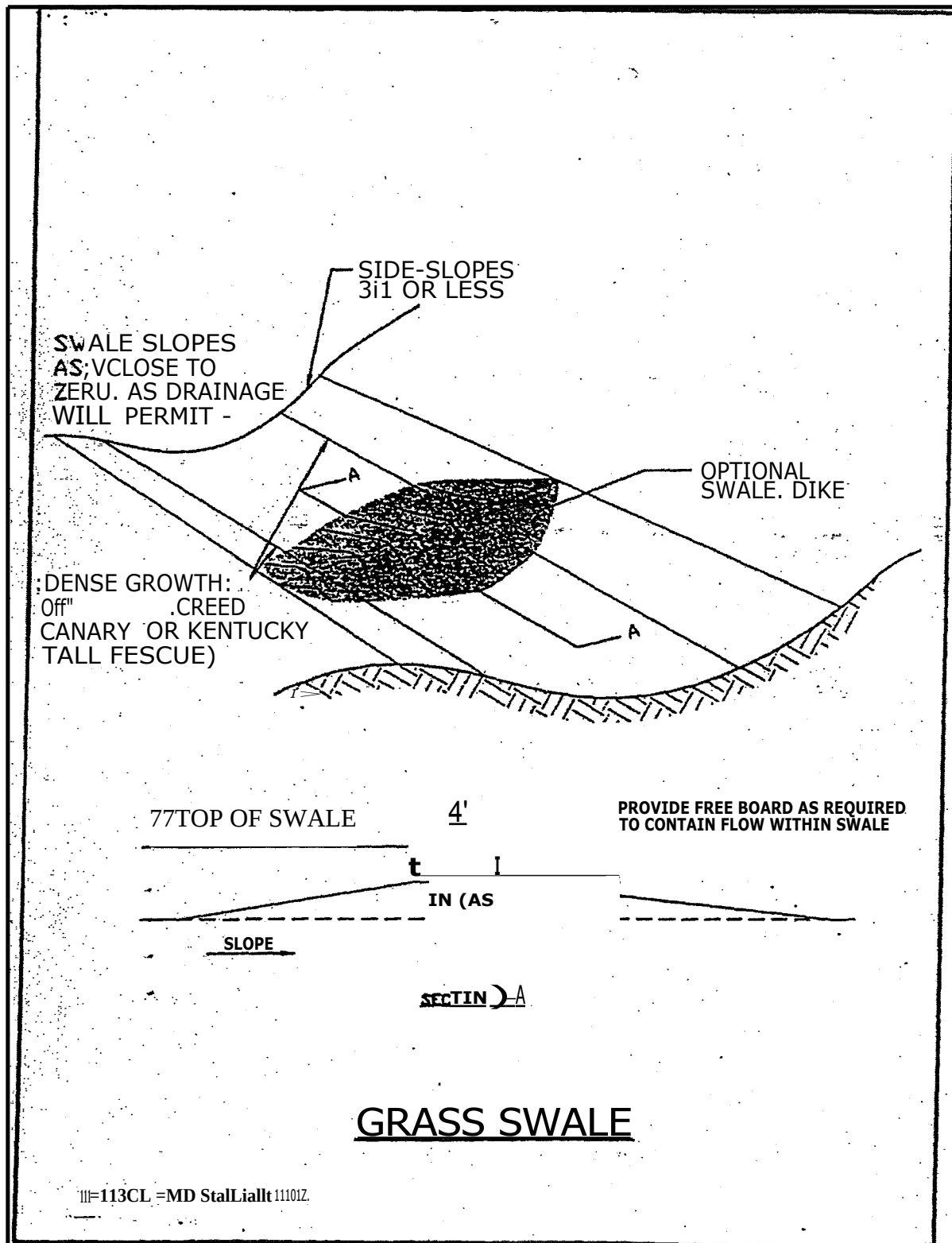
APPENDIX NO. 7



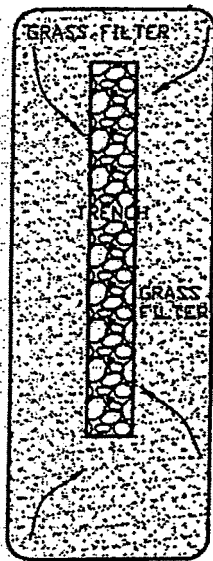
FILTER STRIP

REFERENCE SOURCE: SCHAEFER 1967.

APPENDIX NO. 8



APPENDIX NO. 9



PLAN VIEW

INFLOW •

PERMEABLE FILTER.
FABRIC. ONE FOOT
BEM./ SURFACE,
TRAPS DEBRIS

0104,21P"Te

ALIGNED WITH PERMEABLE FILTER

CLEAN WASHED STONE OR GRAVEL
(1.5-3.0 INCH)

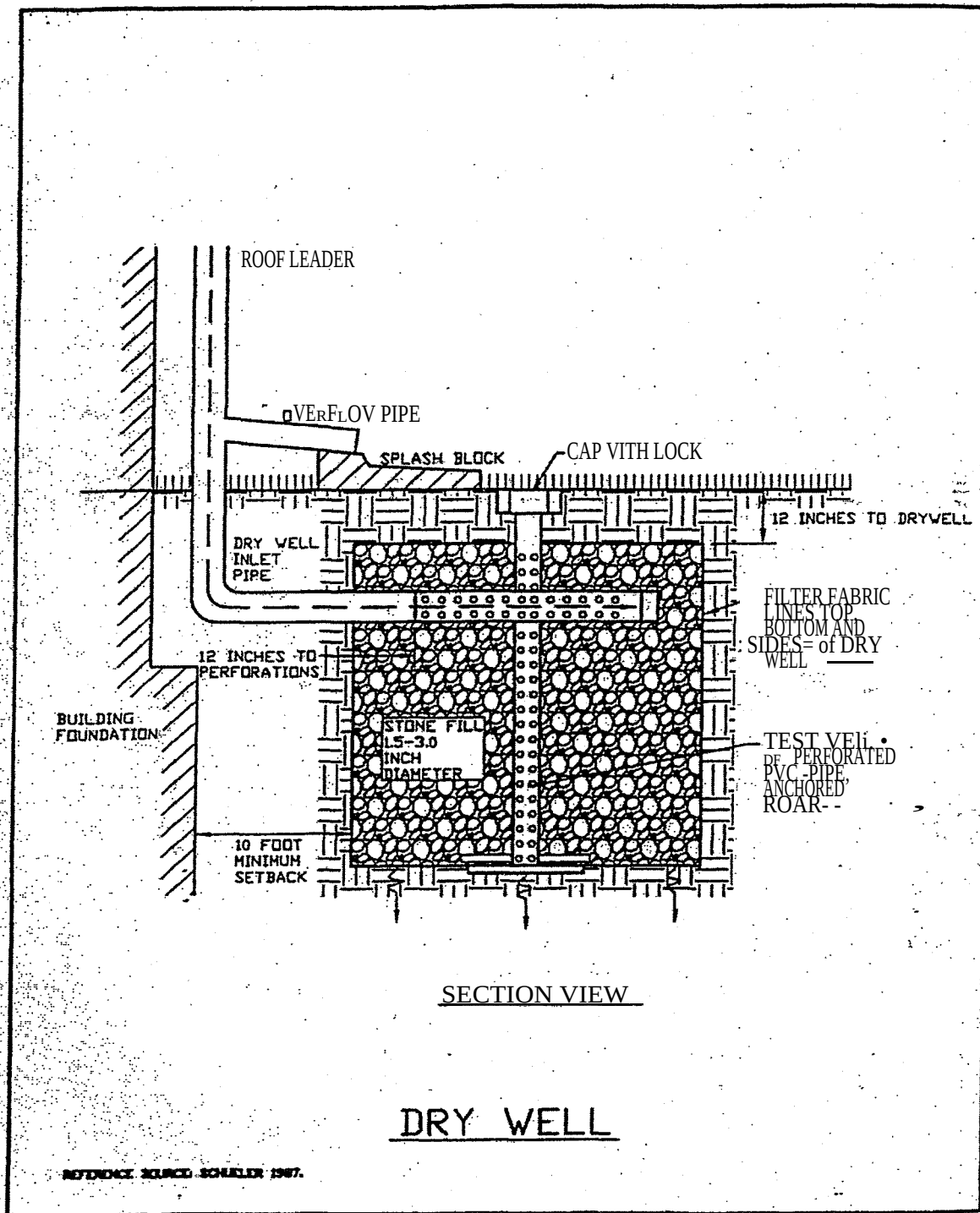
= 6-12 INCH SAND FILTER
OR PERMEABLE FILTER
CLOTH LINES BOTTOM

SECTION VIEW

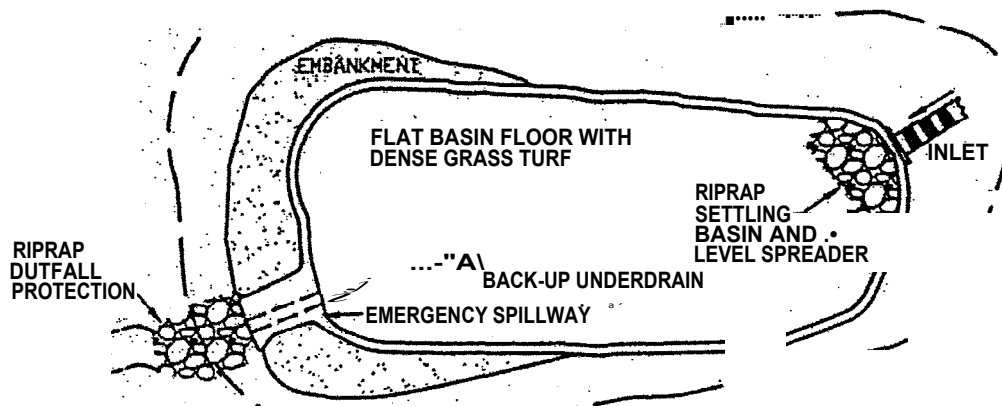
INFILTRATION TRENCH

REFERENCE SOURCE: SCHULLEN 1987.

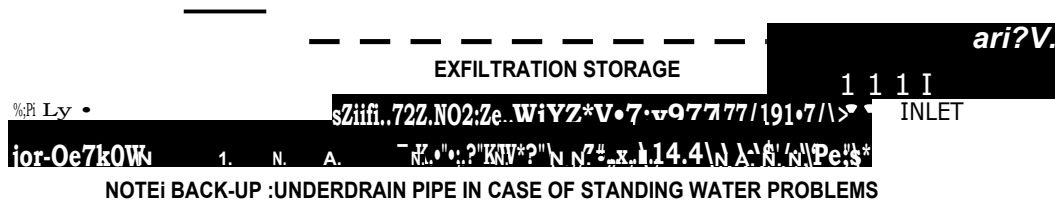
APPENDIX NO. 10



Note: an in-line sump with cleanout access shall be provided between the roof leader and the drywell/infiltration bed/leach ring or other similar infiltration facility. This is an example. Actual design, size and shape may vary as long as function is met.



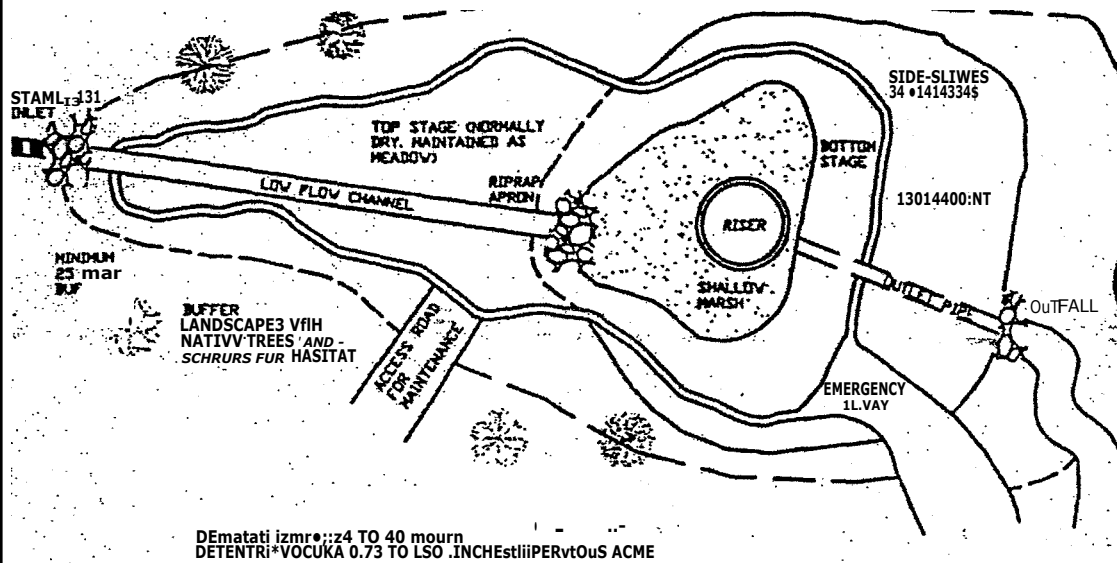
PLAN VIEW



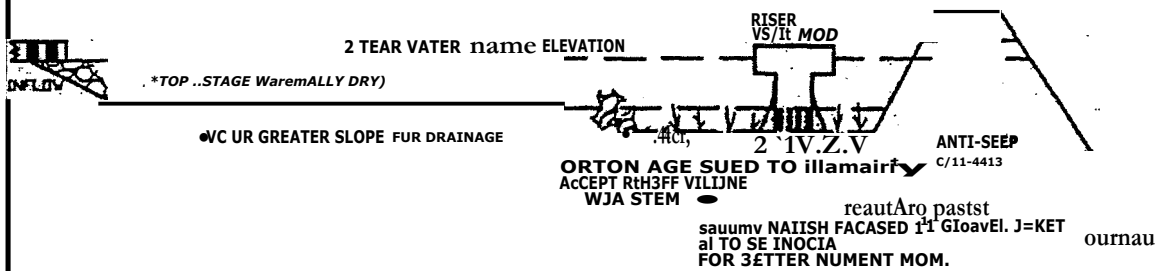
SECTION VIEW

INFILTRATION BASIN

NUDEICX ass= 300.0.21 0lt

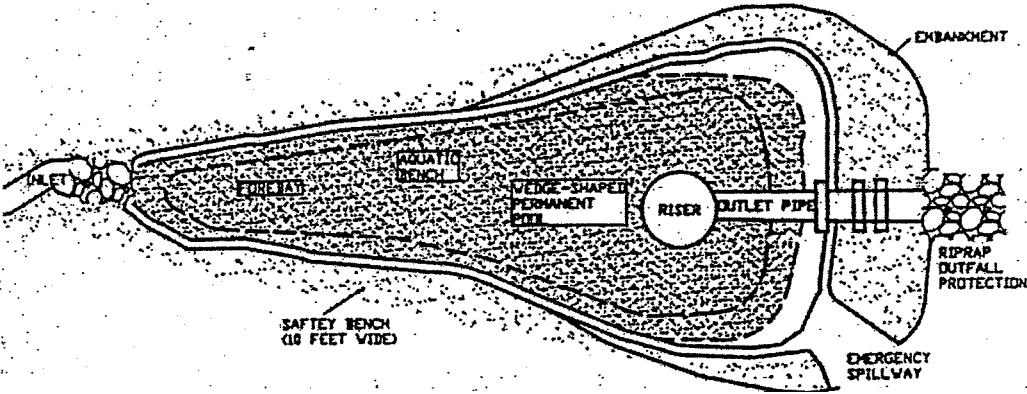


PLAN VIEW

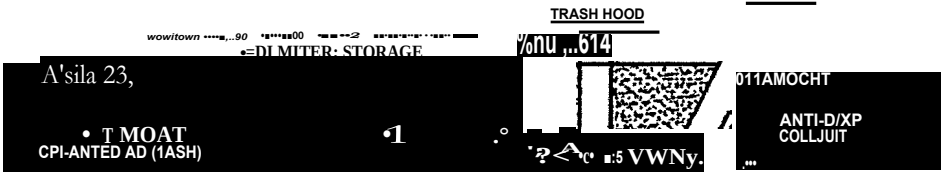


SECTMN VIEW

EXTENDED DRY DETENTION POND



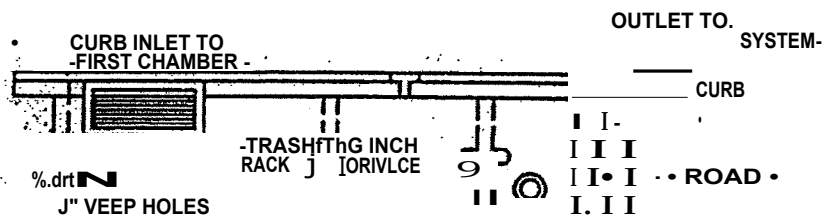
PLAN VIEW



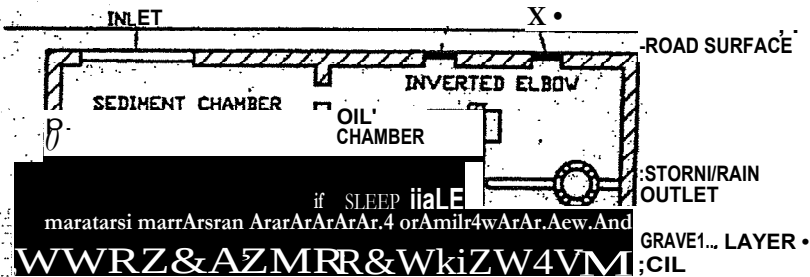
SECTION VIEW

VET POND

APPENDIX NO. 14



PLAN VIEW

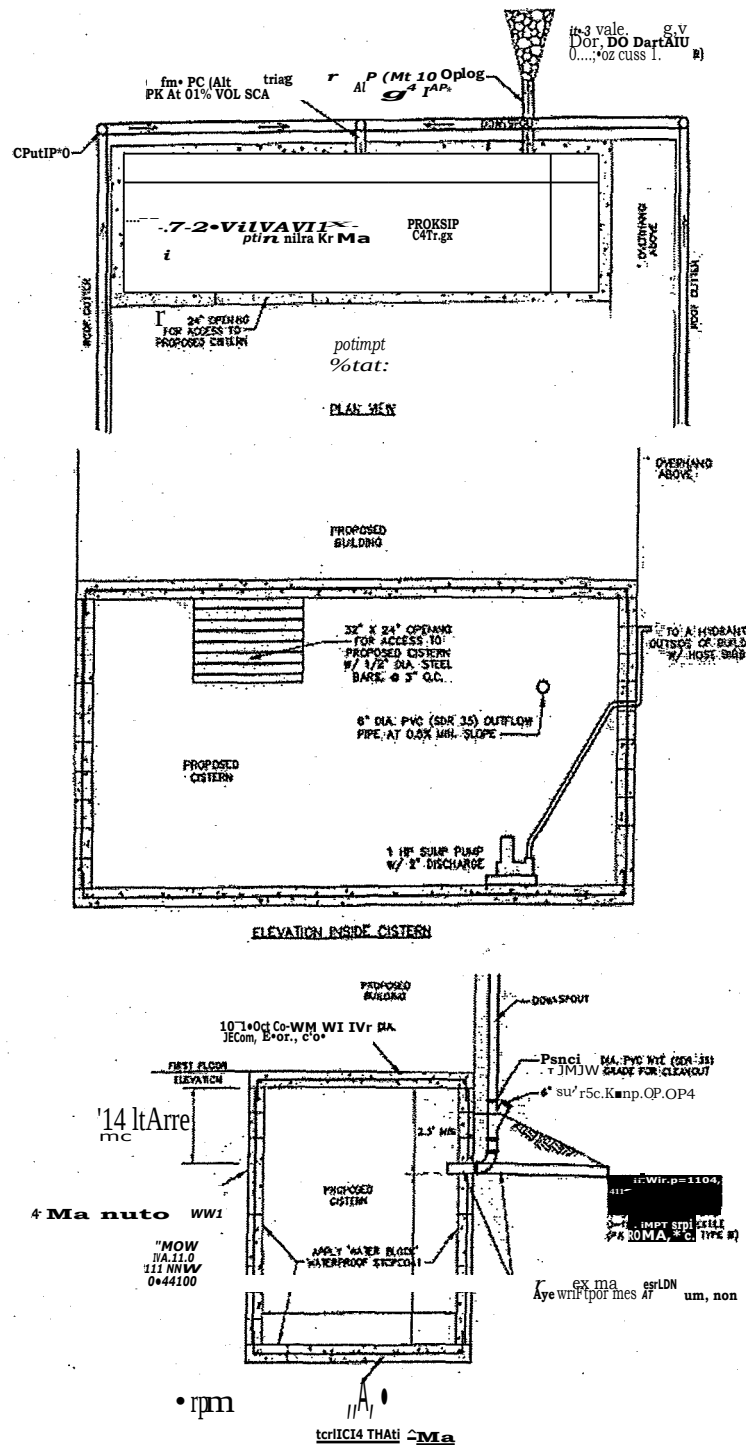


SECTION VIEW

WATER QUALITY INLET

APPENDIX NO. 15

CISTERN



Note: Actual size and shape of cistern will vary depending on required amount of storm water storage volume. This is an example. Actual design, size and shape may vary as long as function is met. External access must be provided with a lockable mechanism. All cisterns shall include structural design information for review prior to approval

APPENDIX NO. 16

CERTIFICATE FOR APPROVAL BY THE BOARD OF SUPERVISORS

Approved by the East Cocalico Township Board of Supervisors this _____ day of _____, 20____.

APPENDIX NO. 17

CERTIFICATE FOR REVIEW BY THE PLANNING COMMISSION

Reviewed by the East Cocalico Township Planning Commission this _____ day of _____, 20____.

APPENDIX NO. 18

CERTIFICATE FOR REVIEW BY THE TOWNSHIP ENGINEER
(if required by the Township)

Reviewed by the East Cocalico Township Engineer this _____ day of _____, 20____.

APPENDIX NO. 19

STORM WATER MANAGEMENT CERTIFICATION

I hereby certify that, to the best of my knowledge, the storm water management facilities shown and described hereon are designed in conformance with the East Cocalico Township Storm Water Management and Earth Disturbance Ordinance of 2003.

_____, 20____

Signature of the registered professional responsible for the preparation of the plan.

* *

** Seal of the individual