

CHAPTER 7
STORMWATER MANAGEMENT

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14-701 GENERAL PROVISIONS

It is the purpose of these regulations to:

- (a) Provide a means to protect, maintain, and enhance the environment of the City of Cookeville and the public health, safety and the general welfare of the citizens of the city, by controlling discharges of pollutants into the city's stormwater system and to maintain and improve the quality of the receiving waters into which the stormwater outfalls flow, including, without limitation, lakes, rivers, streams, ponds, wetlands, and groundwater of the city.
- (b) Enable the City of Cookeville to comply with the National Pollution Discharge Elimination System permit (NPDES) and applicable regulations, 40 CFR section 122.26 for stormwater discharges.
- (c) Allow the City of Cookeville to exercise the powers granted in Tennessee Code Annotated section 68-221-1105, which provides that, among other powers municipalities have with respect to stormwater facilities, is the power by ordinance or resolution to:
 - (1) Exercise general regulation over the planning, location, construction, and operation and maintenance of stormwater facilities in the municipality, whether or not owned and operated by the municipality;
 - (2) Adopt any rules and regulations deemed necessary to accomplish the purposes of this statute, including the adoption of a system of fees for services and permits;
 - (3) Establish standards to regulate the quantity of stormwater discharged and to regulate stormwater contaminants as may be necessary to protect water quality;
 - (4) Review and approve plans and plats for stormwater management in proposed subdivisions or commercial developments;

- (5) Issue permits for stormwater discharges, due to construction or for construction, alteration, extension, or repair of stormwater facilities;
- (6) Suspend or revoke permits when it is determined that the permittee has violated any applicable ordinance, resolution, or condition of the permit; or be charged with a civil offense.
- (7) Regulate and prohibit discharges into stormwater facilities of sanitary, industrial, or commercial sewage or waters that have otherwise been contaminated; and
- (8) Expend funds to remediate or mitigate the detrimental effects of contaminated land or other sources of stormwater contamination, whether public or private.

The Public Works Department shall administer the provisions of these regulations.

14-702 DEFINITIONS

For the purpose of this chapter, the following definitions shall apply: Words used in the singular shall include the plural, and the plural shall include the singular; words used in the present tense shall include the future tense. The word "shall" is mandatory and not discretionary. The word "may" is permissive. Words not defined in this section shall be construed to have the meaning given by common and ordinary use as defined in the latest edition of Webster's Dictionary.

- (1) "*As built plans*" means drawings depicting conditions as they were actually constructed.
- (2) "*Best management practices*" or "*BMPs*" are physical, structural, and/or managerial practices that, when used singly or in combination, prevent or reduce pollution of water, that have been approved by the City of Cookeville, and that have been incorporated by reference into this ordinance as if fully set out therein. [NOTE: See section 14-704(1) for recommended BMP manual.]
- (3) "*Building Permit Applicant or Applicant*" means anyone applying for a building or grading permit.
- (4) "*Channel*" means a natural or artificial watercourse with a definite bed and banks that conducts flowing water continuously or periodically.
- (5) "*Civil penalties*" under the authority provided in Tennessee Code Annotated §68-221-1106, the City declares that any person violating the provisions of this chapter may be assessed a civil penalty by the City of not less than fifty dollars (\$50.00) and not more than five thousand dollars (\$5,000.00) per day for each day of violation. Each day of violation shall constitute a separate violation.
- (6) "*Common plan of development or sale*" is broadly defined as any announcement or documentation (including a sign, public notice or hearing, sales pitch, advertisement, drawing, permit application, zoning request, computer design, etc.) or physical demarcation (including boundary signs, lot stakes, surveyor markings, etc.) indicating construction activities may occur on a specific plot. A common plan of development or sale identifies a situation in which multiple areas of disturbance are occurring on contiguous areas. This applies because the activities may take place at different times, on different schedules, by different operators.

- (7) “*Contaminant*” means any physical, chemical, biological, or radiological substance or matter in water.
- (8) “*de minimus discharges*” are water discharges that pose insignificant threat to water quality and the environment.
- (9) “*Design storm event*” means a hypothetical storm event of a given frequency, interval and duration, used in the analysis and design of a stormwater facility. The estimated design rainfall amounts for any return period interval (i.e. 2-yr, 5-yr, 10-yr, etc.), in terms of either 24-hour depths or intensities for any duration, can be found by accessing the following NOAA National Weather Service Atlas 14 data for Tennessee: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html
- (10) “*Discharge*” means dispose, deposit, spill, pour, inject, seep, dump, leak or place by any means, or that which is disposed, deposited, spilled, poured, injected, seeped, dumped, leaked, or placed by any means including any direct or indirect entry of any solid or liquid matter into the municipal separate storm sewer system.
- (11) “*Easement*” means an acquired privilege or right of use or enjoyment that a person, party, firm, corporation, municipality or other legal entity has in the land of another.
- (12) “*Erosion*” means the removal of soil particles by the action of water, wind, ice or other geological agents, whether naturally occurring or acting in conjunction with or promoted by anthropogenic activities or effects.
- (13) “*First Flush*” means the initial or early stages of stormwater runoff from a storm event which commonly delivers a disproportionately large amount of previously accumulated pollutants due to the rapid rate of runoff. The first flush is commonly used as the Water Quality Treatment Volume (WQTV) and is defined in the City of Cookeville Stormwater Management Design Guidelines.
- (14) “*Hotspot*” (“*priority area*”) means an area where land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.
- (15) “*Illicit connections*” means illegal and/or unauthorized connections to the municipal separate stormwater system whether or not such connections result in discharges into that system.
- (16) “*Illicit discharge*” means any discharge to the municipal separate storm sewer system that is not composed entirely of stormwater and not specifically exempted under section 14-706(2).
- (17) “*Improved sinkhole*” is a natural surface depression that has been altered in order to direct fluids into the hole opening. Improved sinkhole is a type of injection well regulated under TDEC’s Underground Injection Control (UIC) program. Underground injection constitutes an intentional disposal of waste water in natural depressions, open fractures, and crevices (such as those commonly associated with weathering of limestone).
- (18) “*Inspector*” An inspector is a person that has successfully completed (has a valid certification from) the “Fundamentals of Erosion Prevention and Sediment Control Level I” course or equivalent course. An inspector performs and documents the required inspections, paying particular attention to time-sensitive

permit requirements such as stabilization and maintenance activities. An inspector may also have the following responsibilities:

- (a) Oversee the requirements of other construction-related permits, such as Aquatic Resources Alteration Permit (ARAP) or Corps of Engineers permit for construction activities in or around waters of the state;
 - (b) Update field SWPPPs;
 - (c) Conduct pre-construction inspection to verify that undisturbed areas have been properly marked and initial measures have been installed; and
 - (d) Inform the permit holder of activities that may be necessary to gain or remain in compliance with the Construction General Permit (CGP) and other environmental permits.
- (19) “*Land disturbing activity*” means any activity on property that results in a change in the existing soil cover (both vegetative and non-vegetative) and/or the existing soil topography. Land-disturbing activities include, but are not limited to, development, re-development, demolition, construction, reconstruction, clearing, grading, filling, and excavation. Excludes agricultural activities.
- (20) “*Maintenance*” means any activity that is necessary to keep a stormwater facility in good working order so as to function as designed. Maintenance shall include complete reconstruction of a stormwater facility if reconstruction is needed in order to restore the facility to its original operational design parameters. Maintenance shall also include the correction of any problem on the site property that may directly impair the functions of the stormwater facility.
- (21) “*Maintenance agreement*” means a document recorded in the land records that acts as a property deed restriction, and which provides for long-term maintenance of stormwater management practices.
- (22) “*Municipal separate storm sewer system (MS4)*” (“*Municipal separate stormwater system*”) means the conveyances owned or operated by the municipality for the collection and transportation of stormwater, including the roads and streets and their drainage systems, catch basins, curbs, gutters, ditches, man-made channels, and storm drains, and where context indicates, it means the municipality that owns the separate storm sewer system.
- (23) “*National Pollutant Discharge Elimination System permit*” (*NPDES permit*) means a permit issued pursuant to 33 U.S.C. 1342.
- (24) “*Off-site facility*” means a structural BMP located outside the subject property boundary described in the permit application for land development activity.
- (25) “*Peak flow*” means the maximum instantaneous rate of flow of water at a particular point resulting from a storm event.
- (26) “*Person*” means any and all persons, natural or artificial, including any individual, firm or association and any municipal or private corporation organized or existing under the laws of this or any other state or country.
- (27) “*Redevelopment*” is defined as land development on a previously developed site which disturbs 50% or more of the existing developed site. Redevelopment does not include ordinary maintenance activities, such as repaving existing paved areas, remodeling existing buildings, reroofing, and cosmetic changes to existing buildings.

- (28) “*Runoff*” means that portion of the precipitation on a drainage area that is discharged from the area into the municipal separate stormwater system.
- (29) “*Sediment*” means solid material, both mineral and organic, that is in suspension, is being transported, or has been moved from its site of origin by air, water, gravity, or ice and has come to rest on the earth's surface either above or below sea level.
- (30) “*Sedimentation*” means soil particles suspended in stormwater that can settle in stream beds and may disrupt the natural flow of the stream.
- (31) “*Soils Report*” means a study of soils on a subject property with the primary purpose of characterizing and describing the soils. The soils report shall be prepared by a soils engineer or geologist licensed in the State of Tennessee, who shall be directly involved in the soil characterization either by performing the investigation or by directly supervising employees.
- (32) “*Stabilization*” means providing adequate measures, vegetative and/or structural, that will prevent erosion from occurring.
- (33) “*Stormwater*” means stormwater runoff, snow melt runoff, surface runoff, street wash waters related to street cleaning or maintenance, infiltration and drainage.
- (34) “*Stormwater control measure (SCM)*” means permanent practices and measures designed to reduce the discharge or pollutants from new development or redevelopment projects.
- (35) “*Stormwater management*” means the programs to maintain quality and quantity of stormwater runoff to pre-development levels.
- (36) “*Stormwater management facilities*” means the drainage structures, conduits, ponds, ditches, combined sewers, sewers, and all device appurtenances by means of which stormwater is collected, transported, pumped, treated or disposed of.
- (37) “*Stormwater management plan*” means the set of drawings and other documents that comprise all the information and specifications for the programs, drainage systems, structures, BMPs, concepts and techniques intended to maintain or restore quality and quantity of stormwater runoff to pre-development levels.
- (38) “*Stormwater runoff*” means flow on the surface of the ground, resulting from precipitation.
- (39) “*Stormwater utility*” means the stormwater utility created by ordinance of the city to administer the stormwater management ordinance, and other stormwater rules and regulations adopted by the municipality.
- (40) “*Stream*” is a linear surface water that is not a Wet-Weather Conveyance as determined by a Qualified Hydrological Professional.
- (41) “*Structural BMPs*” means devices that are constructed to provide control of stormwater runoff.
- (42) “*Surface water*” includes waters upon the surface of the earth in bounds created naturally or artificially including, but not limited to, streams, other water courses, lakes and reservoirs.
- (43) “*Watercourse*” means a permanent or intermittent stream or other body of water, either natural or man-made, which gathers or carries surface water.
- (44) “*Water Quality Treatment Volume (WQTV)*” means a portion of the runoff generated from impervious surfaces at a new development or redevelopment project by the 1-year 24-hour design storm. The WQTV is further determined by

the type of treatment provided as defined in the City of Cookeville Stormwater Management Design Guidelines. The First Flush is commonly used as the WQTV.

- (45) *“Watershed”* means all the land area that contributes runoff to a particular point along a waterway.
- (46) *“Waters”* or *“waters of the state”* means any and all water, public or private, on or beneath the surface of the ground, which are contained within, flow through or border upon Tennessee or any portion thereof except those bodies of water confined to and retained within the limits of private property in single ownership which do not combine or effect a junction with natural surface or underground waters.
- (47) *“Wetland(s)”* means those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support a prevalence of vegetation typically adapted to life in saturated soil conditions. Wetlands include, but are not limited to, swamps, marshes, bogs, and similar areas.
- (48) *“Wet Weather Conveyance”* are man-made or natural watercourses, including natural watercourses that have been modified by channelization, that flow only in direct response to precipitation runoff in their immediate locality and whose channels are above the groundwater table and are not suitable for drinking water supplies; and in which hydrological and biological analyses indicate that, under normal weather conditions, due to naturally occurring ephemeral or low flow, there is not sufficient water to support fish or multiple populations of obligate lotic aquatic organisms whose life cycle includes an aquatic phase of at least two months.

14-703 EXISTING LOCATIONS AND DEVELOPMENTS

- (1) Requirements for all existing locations and developments. The following requirements shall apply to all locations and developments at which land disturbing activities have occurred previous to the enactment of this ordinance:
 - (a) Denuded areas must be vegetated or covered under the standards and guidelines specified in the BMP manual and on a schedule acceptable to the Public Works Department.
 - (b) Cuts and slopes must be properly covered with appropriate vegetation and/or retaining walls constructed.
 - (c) Drainage ways shall be properly covered in vegetation or secured with rip-rap, channel lining, etc., to prevent erosion.
 - (d) Trash, junk, rubbish, etc. shall be cleared from drainage ways.
- (2) Requirements for existing problem locations. The Public Works Department shall in writing notify the owners of existing locations and developments of specific drainage, erosion or sediment problem affecting such locations and developments, and the specific actions required to correct those problems. The notice shall also specify a reasonable time for compliance.
- (3) Inspection of existing facilities. The Public Works Department may, to the extent authorized by state and federal law, establish inspection programs to verify that all stormwater management facilities, including those built before as well as after the

adoption of this ordinance, are functioning within design limits. These inspection programs may be established on any reasonable basis, including but not limited to: routine inspections; random inspections; inspections based upon complaints or other notice of possible violations; inspection of drainage basins or areas identified as higher than typical sources of sediment or other contaminants or pollutants; inspections of businesses or industries of a type associated with higher than usual discharges of contaminants or pollutants or with discharges of a type which are more likely than the typical discharge to cause violations of the municipality's NPDES stormwater permit; and joint inspections with other agencies inspecting under environmental or safety laws. Inspections may include, but are not limited to: reviewing maintenance and repair records; sampling discharges, surface water, groundwater, and material or water in drainage control facilities; and evaluating the condition of drainage control facilities and other BMPs.

- (4) Corrections of problems subject to appeal. Corrective measures imposed by the Public Works Department under this section are subject to appeal under section 14-710 of this ordinance.

14-704 STORMWATER SYSTEM DESIGN AND MANAGEMENT STANDARDS

- (1) Stormwater design or BMP manual.
- (a) Adoption. The municipality adopts as its stormwater design and best management practices (BMP) manual the following publication(s), which are incorporated by reference in this ordinance as is fully set out herein:
- (1) TDEC Sediment and Erosion Control Handbook; most current edition.
 - (2) Title 14, Chapter 7, Section 14-712
 - (3) Tennessee Permanent Stormwater Management and Design Guidance Manual; most current edition.
 - (4) Other MS4 approved BMP manuals that comply with the goals of the MS4 Permit and/or the Construction General Permit (CGP) may be chosen by the City and a current list is available from the Public Works Department.
- (b) These manuals include lists of acceptable BMPs including the specific design performance criteria and operation and maintenance requirements for each stormwater practice. These include city approved BMPs for permanent stormwater management including green infrastructure BMPs. These manuals may be updated and expanded from time to time, at the discretion of the governing body of the municipality, upon the recommendation of the Public Works Department, based on improvements in engineering, science, monitory and local maintenance experience. Stormwater facilities that are designed, constructed and maintained in accordance with these BMP criteria will be presumed to meet the minimum water quality performance standards.
- (2) General performance criteria for stormwater management. The following performance criteria shall be addressed for stormwater management at all sites:
- (a) All site designs shall control the peak flow rates of stormwater discharge associated with design storms specified in this ordinance or as specified by the

City of Cookeville Stormwater Management Design Guidelines and reduce the generation of post construction stormwater runoff to pre-construction levels. These practices should seek to utilize pervious areas for stormwater treatment and to infiltrate stormwater runoff from driveways, sidewalks, rooftops, parking lots, and landscaped areas to the maximum extent practical to provide treatment for both water quality and quantity. All stormwater management facilities that are required under Section 14-608 of the Cookeville Municipal Code, and the Cookeville Zoning Code and Subdivision Regulations and which are approved after the adoption of this ordinance shall be built to control water quality by using the best management practice outlined in this section. Other methods of controlling water quality may be approved by the Director of Public Works if valid documentation is provided which indicates an equivalent or higher level of water quality will result from the alternate method. Due to the City's NPDES MS4 permit stormwater management requirements are periodically changed, therefore specific requirements for detention and water quality will be found in the City of Cookeville Stormwater Management Guidelines.

- (b) To protect stream channels from degradation, specific channel protection criteria shall be provided as prescribed in the BMP manual.
 - (c) Stormwater discharges to critical areas with sensitive resources (i.e., cold water fisheries, swimming areas, recharge areas, water supply reservoirs) may be subject to additional performance criteria, or may need to utilize or restrict certain stormwater management practices.
 - (d) Stormwater discharges from "hot spots" may require the application of specific structural BMPs and pollution prevention practices. In addition, stormwater from hot spot land use may not be infiltrated.
 - (e) Prior to or during the site design process, Building Permit Applicants shall consult with the Public Works Department to determine if they are subject to additional stormwater design requirements.
 - (f) The calculations for determining peak flows as found in the MS4 BMP manual shall be used for sizing all stormwater facilities.
- (3) Minimum control requirements.
- (a) Stormwater designs shall meet the multi-stage storm frequency storage requirements as identified by the City of Cookeville Stormwater Management Design Guidelines, unless the Public Works Department has granted the applicant a full or partial waiver for a particular BMP under section 14-707.
 - (b) If hydrologic or topographic conditions warrant greater control than that provided by the minimum control requirements, the Public Works Department may impose any and all additional requirements deemed necessary to control the volume, timing, and rate of runoff.
- (4) Permanent Stormwater management plan requirements. The stormwater management plan shall include sufficient information to allow the Public Works Department to evaluate the environmental characteristics of the project site, the potential impacts of all proposed development of the site, both present and future, on the water resources, and the effectiveness and acceptability of the measures proposed for managing stormwater generated at the project site. To accomplish this goal the stormwater management plan shall include the following:

- (a) Topographic Base Map: A Topographic base map (2 foot contour intervals) to a suitable scale of the site which extends a minimum of 100 feet beyond the limits of the proposed development and indicates:
 - (1) Existing surface water drainage including streams, ponds, culverts, ditches, sink holes, wetlands, buffers; and the type, size, elevation, etc., of nearest upstream and downstream drainage structures. Riparian buffer zones shall meet the requirements both in accordance with the Tennessee Construction General Permit and with the Buffer Zone Ordinance for the City of Cookeville.
 - (2) Current land use including all existing structures, locations of utilities, roads, and easements;
 - (3) All other existing significant natural and artificial features;
 - (4) Proposed land use with tabulation of the percentage of surface area to be adapted to various uses; drainage patterns; locations of utilities, roads and easements; the limits of clearing and grading;
- (b) Proposed structural BMPs;
- (c) A written description of the site plan and justification of proposed changes in natural conditions may also be required.
- (d) Calculations: Hydrologic and hydraulic design calculations for the pre-development and post-development conditions for the design storms specified in the BMP manual. These calculations must show that the proposed stormwater management measures are capable of controlling runoff from the site in compliance with this ordinance and the guidelines of the BMP manual. Such calculations shall include:
 - (1) A description of the design storm frequency, duration, and intensity where applicable;
 - (2) Time of concentration;
 - (3) Soil curve numbers or runoff coefficients including assumed soil moisture conditions;
 - (4) Peak runoff rates and total runoff volumes for each watershed area;
 - (5) Infiltration rates, where applicable;
 - (6) Culvert, stormwater sewer, ditch and/or other stormwater conveyance capacities;
 - (7) Flow velocities;
 - (8) Data on the increase in rate and volume of runoff for the design storms referenced in the BMP manual; and
 - (9) Documentation of sources for all computation methods and field test results.
- (e) Soils Information: If a stormwater management control measure depends on the hydrologic properties of soils (e.g., infiltration basins), then a soils report shall be submitted. The soils report shall be based on on-site boring logs or soil pit profiles and soil survey reports. The number and location of required soil borings or soil pits shall be determined based on what is needed to determine the suitability and distribution of soil types present at the location of the control measure.
- (f) Maintenance and Repair Plan: The design and planning of all stormwater management facilities shall include detailed maintenance and repair procedures to

ensure their continued performance. These plans will identify the parts or components of a stormwater management facility that need to be maintained and the equipment and skills or training necessary. Provisions for the periodic review and evaluation of the effectiveness of the maintenance program and the need for revisions or additional maintenance procedures shall be included in the plan.

- (g) Landscaping Plan: The applicant must present a detailed plan for management of vegetation at the site after construction is finished, including who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved. Where it is required by the BMP, this plan must be prepared by a registered landscape architect licensed in Tennessee.
- (h) Maintenance Easements: The applicant must ensure access to the site for the purpose of inspection and repair by securing all the maintenance easements needed. These easements must be binding on the current property owner and all subsequent owners of the property and must be properly recorded in the land record.
- (i) Maintenance Agreement:
 - (1) Stormwater facilities on properties permitted under the requirements of this chapter are required to provide a maintenance agreement that runs with the land. The owner of property must execute an inspection and maintenance agreement that shall operate as a deed restriction binding on the current property owner and all subsequent property owners and their lessees and assigns, including but not limited to, homeowner associations or other groups or entities.
 - (2) The maintenance agreement shall:
 - (a) Assign responsibility for the maintenance and repair of the stormwater facility to the owner of the property upon which the facility is located and be recorded as such on the plat for the property by appropriate notation.
 - (b) Provide for periodic inspection by the property owner in accordance with the requirements of subsection (3) below for the purpose of documenting maintenance and repair needs and to ensure compliance with the requirements of this ordinance. The property owners will arrange for professional inspections in accordance with the requirements of subsection (3) below on a less frequent schedule, to be conducted by a professional engineer licensed or landscape architect, registered to practice in the State of Tennessee, who will submit a signed written report of the inspection to the Public Works Department. It shall also grant permission to the city to enter the property at reasonable times and to inspect the stormwater facility to ensure that it is being properly maintained.
 - (c) Provide that the minimum maintenance and repair needs include, but are not limited to: the removal of silt, litter and other debris, the cutting of grass, grass cuttings and vegetation removal, and the replacement of landscape vegetation, in detention and retention

basins, and inlets and drainage pipes and any other stormwater facilities. It shall also provide that the property owner shall be responsible for additional maintenance and repair needs consistent with the needs and standards outlined in the BMP manual.

- (d) Provide that maintenance needs must be addressed in a timely manner.
 - (e) Provide that if the property is not maintained or repaired within the prescribed schedule, the Public Works Department shall perform the maintenance and repair at its expense, and bill the same to the property owner. The maintenance agreement shall also provide that the Public Works Department's cost of performing the maintenance shall be a lien against the property.
- (3) Inspections Required for Stormwater Management Facilities that have a Recorded Maintenance Agreement – generally. The owners and/or the operators of stormwater management facilities shall:
- (a) Perform routine inspections to ensure that the BMPs are properly functioning. These inspections shall be conducted on an annual basis, at a minimum. These inspections shall be conducted by a person familiar with control measures implemented at the site. Owners or operators shall maintain documentation of these inspections. The Public Works Department may require submittal of this documentation.
 - (b) Perform comprehensive inspection of all stormwater management facilities and practices. Such inspection shall be conducted once every five years, at a minimum. Such inspections must be conducted by either a professional engineer or landscape architect, licensed in the State of Tennessee. Complete inspection reports for these five year inspections shall include:
 - (i) Facility type,
 - (ii) Inspection date,
 - (iii) Latitude and longitude and nearest street address,
 - (iv) BMP owner information (e.g. name, address, phone number, fax, and email)
 - (v) A description of BMP condition including: vegetation and soils; inlet and outlet channels and structures; embankments, slopes and safety benches; spillways, weirs, and other control structures; and any sediment and debris accumulation,
 - (vi) Photographic documentation of BMPs, and
 - (vii) Specific maintenance items or violations that need to be corrected by the BMP owner along with deadlines and re-inspection dates.
 - (c) Owners or operators shall maintain documentation of these inspections. The Public Works Department may require submittal of this documentation.

- (5) Sediment and Erosion Control Plans: The applicant must prepare a sediment and erosion control plan for all construction activities that Complies with section 14-704 (6) below.
- (6) Sediment and Erosion Control Plan requirements. The requirements of Cookeville Municipal Code, Title 14, Chapter 5, entitled “Erosion and Sediment Control Regulations”, shall be met.

14-705 POST CONSTRUCTION

- (1) As built plans. All applicants are required to submit actual as built plans for any structures located on-site after final construction is completed. The plan must show the final design specifications for all stormwater management facilities and must be sealed by a registered professional engineer licensed to practice in Tennessee. A certificate of occupancy shall not be granted by the Codes Department until any needed corrections to all BMPs have been made and accepted by the Public Works Department.
- (2) Landscaping and stabilization requirements.
 - (a) Any area of land from which the natural vegetative cover has been either partially or wholly cleared by development activities shall be revegetated according to a schedule approved by the Public Works Department. The following criteria shall apply to revegetation efforts:
 - (1) Reseeding must be done with an annual or perennial cover crop accompanied by placement of straw mulch or its equivalent of sufficient coverage to control erosion until such time as the cover crop is established over ninety percent (90%) of the seeded area.
 - (2) Replanting with native woody and herbaceous vegetation must be accompanied by placement of straw mulch or its equivalent of sufficient coverage to control erosion until the plantings are established and are capable of controlling erosion.
 - (3) Any area of revegetation must exhibit survival of a minimum of seventy-five percent (75%) of the cover crop throughout the year immediately following revegetation. Revegetation must be repeated in successive years until the minimum seventy-five percent (75%) survival for one (1) year is achieved.
 - (b) In addition to the above requirements, a landscaping plan must be submitted with the final design describing the vegetative stabilization and management techniques to be used at a site after construction is completed. This plan will explain not only how the site will be stabilized after construction, but who will be responsible for the maintenance of vegetation at the site and what practices will be employed to ensure that adequate vegetative cover is preserved.
- (3) Records of installation and maintenance activities. Parties responsible for the operation and maintenance of a stormwater management facility shall make records of all maintenance and repairs to the facility, and shall retain the records for at least 5 years. These records shall be made available to the Public Works Department during inspection of the facility and at other reasonable times upon request.
- (4) Failure to meet or maintain design or maintenance standards. If a responsible party fails or refuses to meet the design or maintenance standards required for stormwater facilities under this ordinance, the Public Works Department, after reasonable notice as specified in the Enforcement Response Plan, may correct a violation of the design standards or

maintenance needs by performing all necessary work to place the facility in proper working condition. In the event that the stormwater management facility becomes a danger to public safety or public health, the Public Works Department shall notify in writing the party responsible for maintenance of the stormwater management facility. Upon receipt of that notice, the responsible person shall have 14 days to effect maintenance and repair of the facility in an approved manner. In the event that corrective action is not undertaken within that time, the Public Works Department may take necessary corrective action. The cost of any action by the Public Works Department under this section shall be charged to the responsible party.

14-706 ILLICIT DISCHARGES

- (1) Scope. This section shall apply to all water generated on developed or undeveloped land which enters the municipality's separate storm sewer system.
- (2) Prohibition of illicit discharges. No person shall introduce or cause to be introduced into the municipal separate storm sewer system any discharge that is not composed entirely of stormwater or any discharge that flows from a stormwater facility that is not inspected in accordance with section 14-704 shall be an illicit discharge. Non-stormwater discharges shall include, but shall not be limited to, sanitary wastewater, car wash wastewater, radiator flushing disposal, spills from roadway accidents, carpet cleaning wastewater, effluent from septic tanks, improper oil disposal, laundry wastewater/gray water, improper disposal of auto and household toxins. The commencement, conduct or continuance of any non-stormwater discharge to the municipal separate storm sewer system is prohibited except as described as follows:
 - (a) Uncontaminated discharges from the following sources:
 - (1) Water line flushing or other potable water sources,
 - (2) Landscape irrigation or lawn watering with potable water,
 - (3) Diverted stream flows,
 - (4) Rising ground water,
 - (5) Groundwater infiltration to storm drains,
 - (6) Pumped groundwater,
 - (7) Foundation or footing drains,
 - (8) Crawl space pumps,
 - (9) Air conditioning condensation,
 - (10) Springs,
 - (11) Non-commercial washing of vehicles,
 - (12) Natural riparian habitat or wet-land flows,
 - (13) Swimming pools (if disinfected with chlorine and de-chlorinated prior to release - typically less than one PPM chlorine),
 - (14) Fire fighting activities, and
 - (15) Any other uncontaminated water source.
 - (b) Discharges specified in writing by the Public Works Department as being necessary to protect public health and safety.
 - (c) Dye testing is an allowable discharge if the Public Works Department has so specified in writing.

- (d) De minimus discharges – water discharges that pose insignificant threat to water quality and the environment.
 - (e) Discharges authorized by the Construction General Permit (CGP), which comply with section 1.2 of the same:
 - (i) dewatering of work areas of collected stormwater and ground water (filtering and chemical treatment may be necessary prior to discharge);
 - (ii) waters used to wash vehicles (of dust and soil, not process materials such as oils, asphalt or concrete) where detergents are not used and detention and/or filtering is provided before the water leaves site;
 - (iii) water used to control dust in accordance with the CGP section 5.5.3.7;
 - (iv) potable water sources including waterline flushings from which chlorine has been removed to the maximum extent practicable;
 - (v) routine external building washdown that does not use detergents or other chemicals;
 - (vi) uncontaminated ground water or spring water; and
 - (vii) foundation or footing drains where flows are not contaminated with pollutants (process materials such as solvents, heavy metals, etc.).
- (3) Prohibition of illicit connections.
- (a) The construction, use, maintenance or continued existence of illicit connections to the separate municipal storm sewer system is prohibited.
 - (b) This prohibition expressly includes, without limitation, illicit connections made in the past, regardless of whether the connection was permissible under law or practices applicable or prevailing at the time of connection.
- (4) Reduction of stormwater pollutants by the use of best management practices. Any person responsible for a property or premises, which is, or may be, the source of an illicit discharge, may be required to implement, at the person's expense, the BMPs necessary to prevent the further discharge of pollutants to the municipal separate storm sewer system. Compliance with all terms and conditions of a valid NPDES permit authorizing the discharge of stormwater associated with industrial activity, to the extent practicable, shall be deemed compliant with the provisions of this section. Discharges from existing BMPs that have not been maintained and/or inspected in accordance with this ordinance shall be regarded as illicit.
- (5) Notification of spills. Notwithstanding other requirements of law, as soon as any person responsible for a facility or operation, or responsible for emergency response for a facility or operation has information of any known or suspected release of materials which are resulting in, or may result in, illicit discharges or pollutants discharging into stormwater, the municipal separate storm sewer system, the person shall take all necessary steps to ensure the discovery, containment, and cleanup of such release. In the event of such a release of hazardous materials the person shall immediately notify emergency response agencies of the occurrence via emergency dispatch services. In the event of a release of non-hazardous materials, the person shall notify the Public Works Department in person or by telephone or facsimile no later than the next business day. Notifications in person or by telephone shall be confirmed by written notice addressed and mailed to the Public Works Department within three (3) business days of the telephone notice. If the discharge of prohibited materials emanates from a commercial or industrial establishment, the owner or operator of such establishment shall also retain an on-site written record of the

discharge and the actions taken to prevent its recurrence. Such records shall be retained for at least 5 years.

- (6) No illegal dumping allowed. No person shall dump or otherwise deposit outside an authorized landfill, convenience center or other authorized garbage or trash collection point, any trash or garbage of any kind or description on any private or public property, occupied or unoccupied, inside the city.

14-707 WAIVERS

- (1) General. Every landowner shall provide for stormwater management as required by this ordinance, unless a written request is filed to waive this requirement. Requests to waive the stormwater management plan requirements shall be submitted to the Public Works Department for approval.
- (2) Conditions for waiver. The minimum requirements for stormwater management may be waived in whole or in part upon written request of the landowner, provided that at least one of the following conditions applies:
 - (a) It can be demonstrated that the proposed development is not likely to impair attainment of the objectives of this ordinance.
 - b) Alternative minimum requirements for on-site management of stormwater discharges have been established in a stormwater management plan that has been approved by the Public Works Department.
- (3) Downstream damage, etc. prohibited. In order to receive consideration, the applicant must demonstrate to the satisfaction of the Public Works Department that the proposed alternative will not lead to any of the following conditions downstream:
 - (a) Deterioration of existing culverts, bridges, dams, and other structures;
 - (b) Degradation of biological functions or habitat;
 - (c) Accelerated streambank or streambed erosion or siltation;
 - (d) Increased threat of flood damage to public health, life or property.

14-708 ENFORCEMENT

- (1) Enforcement authority. The director of the Public Works Department (hereafter referred to as director) or his designees shall have the authority to issue notices of violation and citations, and to impose the civil penalties to anyone that violates this ordinance, who violates the provisions of any permit issued pursuant to this ordinance, or who fails or refuses to comply with any lawful communication or notice to abate or take corrective action. The director's enforcement authority includes the following sections as set forth in the City's Enforcement Response Plan (ERP).
- (2) Notification of violation.
 - (a) Verbal warning. Verbal warning may be given at the discretion of the inspector when it appears the condition can be corrected by the violator within a reasonable time, which time shall be approved by the inspector.
 - (b) Written Notice. Whenever the director or his designee finds that any permittee or any other person discharging stormwater has violated or is violating this ordinance or a permit or order issued hereunder, the director may serve upon such person written notice of the violation. Within ten (10) days of this notice, an explanation of the violation and a plan for the satisfactory correction and

prevention thereof, to include specific required actions, shall be submitted to the director. Submission of this plan in no way relieves the discharger of liability for any violations occurring before or after receipt of the notice of violation.

- (c) Consent Orders. The director or his designee is empowered to enter into consent orders, assurances of voluntary compliance, or other similar documents establishing an agreement with the person responsible for the noncompliance. Such orders will include specific action to be taken by the person to correct the noncompliance within a time period also specified by the order. Consent orders shall have the same force and effect as administrative orders issued pursuant to paragraphs (d) and (e) below.
- (d) Show Cause Hearing. The director or his designee may order any person who violates this ordinance or permit or order issued hereunder, to show cause why a proposed enforcement action should not be taken. The hearing shall be before the Public Works director. Notice shall be served on the person specifying the time and place for the meeting, the proposed enforcement action and the reasons for such action, and a request that the violator show cause why this proposed enforcement action should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least ten (10) days prior to the hearing.
- (e) Compliance Order. When the director or his designee finds that any person has violated or continues to violate this ordinance or a permit or order issued thereunder, he may issue an order to the violator directing that, following a specific time period, adequate structures, devices, be installed or procedures implemented and properly operated. Orders may also contain such other requirements as might be reasonably necessary and appropriate to address the noncompliance, including the construction of appropriate structures, installation of devices, self-monitoring, and management practices.
- (f) Cease and Desist Orders. When the director or his designee finds that any person has violated or continues to violate this ordinance or any permit or order issued hereunder, the director may issue an order to cease and desist all such violations and direct those persons in noncompliance to:
 - (1) Comply forthwith; or
 - (2) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and terminating the discharge.
- (3) Conflicting standards. Whenever there is a conflict between any standard contained in this ordinance and in the BMP manual adopted by the municipality under this ordinance, the strictest standard shall prevail.

14-709. PENALTIES

- (1) Violations. Any person who shall commit any act declared unlawful under this ordinance, who violates any provision of this ordinance, who violates the provisions of any permit issued pursuant to this ordinance, or who fails or refuses to comply with any

- lawful communication or notice to abate or take corrective action by the Public Works Department, shall be guilty of a civil offense.
- (2) Penalties. Under the authority provided in Tennessee Code Annotated section 68-221-1106, the municipality declares that any person violating the provisions of this ordinance may be assessed a civil penalty by the Public Works Department of not less than fifty dollars (\$50.00) and not more than five thousand dollars (\$5,000.00) per day for each day of violation. Each day of violation shall constitute a separate violation.
 - (3) Measuring civil penalties. In assessing a civil penalty, the director of the Public Works Department may consider:
 - (a) The harm done to the public health or the environment;
 - (b) Whether the civil penalty imposed will be a substantial economic deterrent to the illegal activity;
 - (c) The economic benefit gained by the violator;
 - (d) The amount of effort put forth by the violator to remedy this violation;
 - (e) Any unusual or extraordinary enforcement costs incurred by the municipality;
 - (f) The amount of penalty established by ordinance or resolution for specific categories of violations; and
 - (g) Any equities of the situation which outweigh the benefit of imposing any penalty or damage assessment.
 - (4) Recovery of damages and costs. In addition to the civil penalty in subsection (2) above, the municipality may recover:
 - (a) All damages proximately caused by the violator to the municipality, which may include any reasonable expenses incurred in investigating violations of, and enforcing compliance with, this ordinance, or any other actual damages caused by the violation.
 - (b) The costs of the municipality's maintenance of stormwater facilities when the user of such facilities fails to maintain them as required by this ordinance.
 - (5) Other remedies. The municipality may bring legal action to enjoin the continuing violation of this ordinance, and the existence of any other remedy, at law or equity, shall be no defense to any such actions.
 - (6) Remedies cumulative. The remedies set forth in this section shall be cumulative, not exclusive, and it shall not be a defense to any action, civil or criminal, that one (1) or more of the remedies set forth herein has been sought or granted.
 - (7) Referral to TDEC. In accordance with the City's Enforcement Response Plan and the NPDES Permit requirements, the Public Works Department may also notify TDEC of violations.

14-710 APPEALS

Pursuant to Tennessee Code Annotated section 68-221-1106(d), any person aggrieved by the imposition of a civil penalty or damage assessment as provided by this ordinance may appeal said penalty or damage assessment to the Board of Environmental Appeals.

- (1) Appeals to be in writing. The appeal shall be in writing and filed with the City Clerk within fifteen (15) days after the civil penalty and/or damage assessment is served in any manner authorized by law.

- (2) Public hearing. Upon receipt of an appeal, the Board of Environmental Appeals shall hold a public hearing within thirty (30) days. Ten (10) days prior notice of the time, date, and location of said hearing shall be published in a daily newspaper of general circulation. Ten (10) days notice by registered mail shall also be provided to the aggrieved party, such notice to be sent to the address provided by the aggrieved party at the time of appeal.
- (3) Appealing decisions of the Board of Environmental Appeals. Any alleged violator may appeal a decision of the Board of Environmental Appeals pursuant to the provisions of Tennessee Code Annotated, Title 27, Chapter 8.
- (4) If a petition for review of such damage assessment or civil penalty is not filed within thirty (30) days after the damage assessment or civil penalty is served in any manner authorized by law, the violator shall be deemed to have consented to the damage assessment or civil penalty, and it shall become final.

14-711 BOARD OF ENVIRONMENTAL APPEALS

- (1) There is created a Board of Environmental Appeals to hear appeals filed by any person incurring a civil penalty or damage assessment imposed pursuant to Section 14-709 of these regulations.
- (2) The board may issue subpoenas requiring attendance of witnesses and production of such evidence as requested, administer oaths, and take testimony as the board deems necessary to fulfill its purpose.
- (3) The board shall be composed of five members appointed by the Cookeville City Council.
- (4) The council shall select appointees so that the board will consist of individuals with an expertise as follows:
 - (a) One licensed professional engineer with civil engineering expertise.
 - (b) One licensed professional engineer.
 - (c) One representative of the development or industrial community.
 - (d) One neighborhood representative.
 - (e) One member at large.
- (5) The professional engineers shall have at least three (3) years experience in each member's area of expertise.
- (6) Board members shall serve for a term of five (5) years. A board member shall continue to serve, however, until a successor has been appointed, or until the board member has been reappointed. The terms of the original board members shall be staggered so that the term of one member shall expire each year.
- (7) An appointment to succeed a board member who is unable to serve said member's full term shall be for the remainder of said member's term.
- (8) Board members may be reappointed, but they do not succeed themselves automatically.
- (9) Board members shall serve without compensation.
- (10) The board shall annually select one of its members to serve as chair and another member to serve as vice-chair of the board by a majority vote of all members.
- (11) The board shall keep complete and accurate records of the proceedings of all their meetings. The Department of Public Works shall designate a person to serve as secretary to the board.

- (12) No board member shall participate in the appeal of any matter in which the member has direct personal or financial interest.
- (13) Three members of the board shall constitute a quorum, and the concurrence of a majority of the board present and voting in any matter shall be required for a determination of any matter within its jurisdiction.

14-712 STORMWATER MANAGEMENT GUIDELINES

These guidelines will outline the way stormwater detention and water quality treatment will be calculated. Stormwater detention is a necessary part of most stormwater treatment BMPs and is required for most developments.

The Stormwater Ordinance of the City of Cookeville is posted at the City of Cookeville Public Works Department's website and must be read by anyone attempting to perform stormwater calculations with the City of Cookeville. It contains provisions for fees, right-of-entry, definitions, easements and penalties. A major purpose of the Stormwater Ordinance is to improve water quality, stormwater quantity as well as comply with the City's NPDES Permit for Discharges from Small Municipal Separate Storm Sewer Systems (MS4).

Stormwater Detention

Stormwater detention is required for any new development or re-development containing 5,000 square foot or more of impervious area. (Cookeville Municipal Code 14-608, Cookeville Zoning Code, Cookeville Subdivision Regulations). Where additions to the existing impervious area of the site bring the total area of impervious surface to 5,000 square foot or more, only the additional impervious area is required to provide detention.

Stormwater detention is defined as limiting the peak discharge rate for the post developed conditions to be no greater than the peak discharge rate for the predevelopment conditions. This must be accomplished using the 2-year, 5-year, and 10-year storms. The estimated design rainfall amounts for either 24-hour depths or intensities for any duration, can be found by accessing the following NOAA National Weather Service Atlas 14 data for Tennessee:

http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html

Redevelopment of property shall be evaluated using one of the following methods unless otherwise determined by the Public Works Department:

1. Rational method – evaluate the pre-development conditions using the appropriate meadow/pastureland runoff coefficient or as existing conditions, the more conservative condition shall be used.

2. USDA Technical Release Number 55 (TR-55) – evaluate the pre-development conditions as either grassland conditions or existing conditions, the more conservative conditions shall be used.

All hydrological and hydraulic computations for stormwater detention facilities must be prepared and stamped by a registered engineer (licensed in the state of Tennessee) and proficient in this field. Plans must show sufficient information to enable the builder to construct the facility as required.

A dry detention basin must have a minimum of 2% slope in the bottom of the basin in order to drain properly. Side slopes should generally be 3:1 (H:V) or flatter, unless traversable access has been designed. Detention basins and ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement.

Underground detention is the use of large underground structures to provide necessary volumes for attenuating stormwater peak flows. Underground structures generally provide little or no stormwater quality benefits. The following minimum requirements must be met before an underground storage facility will be considered for approval:

- The underground detention structure must provide adequate access for inspection from the surface. Public safety must be considered.
- The underground detention structure must be constructed of durable materials with a typical 100-year lifetime. Detention storage volume shall not include the porous space within a stone or gravel bed without soils reports stamped by a geotechnical engineer stating that infiltration into the soils should exceed ½” per hour infiltration rate.
- The underground detention structure shall be designed to have positive drainage into the receiving channel or stormwater sewer assuming there is a 10-year flood in the receiving facility.
- The underground detention structure shall not receive surface runoff directly from parking lots. Surface water shall be directed to a BMP that improves water quality such as an oil/water separator, grass filter strips (of sufficient size to filter the water quantity), or a proprietary water quality device approved by the Public Works Department.
- Design measures must be taken to trap and store sediments in locations where cleanout and maintenance can be easily performed. This generally requires that some type of water quality inlet or other stormwater treatment BMP must be installed upstream from the underground detention facility. Proprietary water quality devices must be approved by the Public Works Department using industry wide standards identified by TDEC.
- A detailed maintenance and inspection plan must be submitted and approved (including inspection schedules and guidelines). Evidence of responsibility and financial budgeting must be presented.

Stormwater Water Quality Treatment

The water quality treatment volume (WQTV) commonly referred to as the first flush volume is defined as the first portion of direct runoff from impervious surfaces at a new development or redevelopment project. The water quality treatment design storm is defined by the 1-year, 24-hour design storm event that can be found by accessing the following NOAA National Weather Service Atlas 14 data for Tennessee: http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html.

Depending on the type of permanent stormwater control measure (SCM) proposed for stormwater treatment at new development and redevelopment projects, the quantity of the WQTV or the first flush volume required to be treated is defined by the table below:

Water Quality Treatment Volume and the Corresponding SCM Treatment Type for the 1-year, 24-hour design storm		
SCM Treatment Type Proposed	WQTV Required	Notes
Infiltration, evaporation, transpiration, and/or reuse	Runoff generated from the first 1 inch of the design storm	Examples include, but not limited to, bioretention, stormwater wetlands, and infiltration systems with no underdrains
Biologically active filtration, with an underdrain	Runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage
Sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	Runoff generated from the first 2.5 inches of the design storm or the first 75% of the design storm, whichever is less	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems.
Hydrodynamic separation, baffle box settling, other flow-through manufactured treatment devices (MTDs), and treatment trains using MTDs	Maximum runoff generated from the entire design storm	Flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction.

The WQTV or first flush volume must be captured and released over a minimum of 24 hours and a maximum of 72 hours. No first flush runoff of impervious surfaces shall bypass the treatment facility. Stormwater recharge by infiltrating the first flush volume into the soil on site is the preferable method of first flush treatment. Infiltration may be accomplished by the use of Bioretention basins, rain gardens, bio swales, green parking for overflow lots, or other methods pre-approved by the Director of Public Works or his designee. Infiltration of the first flush may not be possible if the site is located on unsuitable soils. Where infiltration of stormwater is not possible or ill advised, treatment of the WQTV or first flush is defined as a practice or structure that removes 80% Total Suspended Solids (TSS) and other anticipated pollutants such as oil and grease.

To reach the required 80% TSS removal, multiple SCMs can be proposed on new development and redevelopment sites in a treatment train. Treatment train calculations must be submitted as defined by TDEC NPDES permit Section 4.2.5.2.

Site design standards for all new construction and redevelopment disturbing one acre or more are recommended to use in combination or alone, stormwater management measures that are designed, built and maintained to infiltrate, evapotranspire, harvest and/or use the first flush of every rainfall event preceded by 72 hours of no measurable precipitation. The first flush of rainfall should be 100% managed with no discharge to surface waters.

Stormwater management measures that are often referred to as green infrastructure that can infiltrate the first flush of rainfall are the goal that TDEC is aiming for that they term runoff reduction. Green infrastructure includes many practices including; rain gardens, bioretention, infiltration swales, etc.

Some sites are not suitable for infiltration methods and infiltration requirements may be set aside on such sites, with prior agreement by the Public Works Department. Limitations to using runoff reduction methods include, but are not limited to:

1. Where the potential for introducing pollutants into the ground water exists, unless pretreatment is provided;
2. Where pre-existing soil contamination is present in areas subject to contact with infiltrated runoff;
3. The presence of sinkholes or other karst features on the site or in close proximity;
4. Insufficient infiltration capacity of soils;
5. An extensive presence of shallow ground water table, shallow bedrock or other restrictive layers; and
6. Presence of contractive or expansive soils in close proximity to structures.

Pre-development infiltration capacity of the soils at the site must be taken into account in selection of runoff reduction management measures.

Incentive standards for redevelopment sites: a 10% reduction in volume of rainfall to be managed for any of the following types of development. Such credits are additive such that a maximum reduction of 50% of the standard one inch is possible for a project that meets all 5 criteria:

1. Redevelopment
2. Brownfield redevelopment
3. High density (>7 units per acre)
4. Vertical density (>18 units per acre)
5. Mixed use

For all projects that cannot meet 100% of the first flush runoff reduction requirement unless subject to the incentive standards, the remainder of the first flush rainfall must be treated prior to discharge with a practice or technology documented to remove 80% total suspended solids (TSS). The treatment practice or technology must be designed, installed and maintained to continue to meet this performance standard.

In addition to the runoff reduction requirement for the first flush rainfall, minimum volume controls are required to detain those storms greater than the 1 yr, 24 hr depth as outlined above in the Stormwater Detention section.