

ORDINANCE NO. O-07-12-101
AN ORDINANCE FOR STORMWATER MANAGEMENT
KNOX COUNTY, TENNESSEE

TABLE OF CONTENTS

Section 1.	Title and Administration
Section 2.	Definitions
Section 3.	Authority of the Director
Section 4.	Stormwater Management Requirements
4.1	Developments Exempt from a Stormwater Management Plan
4.2	Stormwater Management Plan Requirements
4.3	Building Permit Requirements for Small Lots
4.4	Performance Bonds
4.5	Stormwater System Criteria
4.6	Special Pollution Abatement Permits
4.7	NPDES Permits
Section 5.	Floodplain Requirements
5.1	General Requirements
5.2	Administration
5.3	Floodplain Development Requirements
5.4	Flood Proofing measures
5.5	Developments Within Floodways
5.6	Developments in SFHAs Without Base Flood Elevations
5.7	Developments in Unstudied Areas
5.8	Requirements for Developments that Drain to Sinkholes
5.9	Degree of Flood Protection
Section 6.	Water Quality Buffers
6.1	General Requirements
6.2	Protection During Construction
6.3	Design Criteria
6.4	Use of Buffer Areas
6.5	Allowable Disturbances
6.6	Water Quality Buffer Enhancement
Section 7.	Erosion Prevention and Sediment Control
7.1	Off-site Sedimentation Prevention
7.2	General Requirements
Section 8.	As-Built Certifications
Section 9.	Monitoring and Inspections
9.1	Right-of-Entry
9.2	During Grading or Construction
9.3	After Construction
Section 10.	Maintenance Requirements
10.1	General
10.2	During Grading or Construction
10.3	After Construction
Section 11.	Permit Controls and Stormwater System Integrity

Section 12.	Non-Stormwater Discharges
12.1	Illicit Discharges
12.2	Prohibitions
12.3	Allowable Discharges
12.4	Notification and Monitoring Requirements
12.5	Illegal Dumping
Section 13.	Severability
Section 14.	Responsibility
Section 15.	Variances
Section 16.	Penalties and Appeals

WHEREAS, an ordinance is needed to regulate storm drainage facilities, grading, excavation, clearance, and other alteration of the land in order to limit the dangers of personal injury, property or environmental damage that may be caused by stormwater runoff; and

WHEREAS, an ordinance is needed in order to secure eligibility for flood insurance under Public Law 1016, 84th Congress, and thereby to promote the public health, safety, and general welfare of the citizens of Knox County, Tennessee;

WHEREAS, Knox County is required under the Clean Water Act to implement programs and regulations to protect and restore water quality in water bodies receiving stormwater runoff from the municipal separate storm sewer system.

BE IT ENACTED BY THE COUNTY COMMISSION OF KNOX COUNTY AS FOLLOWS:

SECTION 1. TITLE AND ADMINISTRATION

- (a) This ordinance shall be cited as the Knox County Stormwater Management Ordinance, and shall replace in entirety Chapter 3.5, adopted in April 2005. As of the date of adoption of this ordinance, all references to Chapter 3.5 or to previous stormwater management ordinances cited in other Knox County codes or regulations shall be regarded as a reference to this ordinance.
- (b) This ordinance shall apply to all areas located within the jurisdiction of Knox County.
- (c) The Director of the Knox County Department of Engineering and Public Works (the Director) and the staff under the Director's supervision shall administer the provisions of this ordinance. The Director shall, with the approval of the Knox County Mayor, establish written regulations and technical guidelines as may be necessary to enforce the terms of this ordinance. These regulations and technical guidelines shall be filed in the Department of Engineering and Public Works office, and shall be made available to the public.

SECTION 2. DEFINITIONS

Unless specifically defined in this section, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage, and to give this ordinance the most reasonable application.

1-year Frequency Storm - A storm event defined to be 2.5 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

2-year Frequency Storm - A storm event with a fifty (50) percent chance of being equaled or exceeded in a given year. Defined to be 3.3 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

5-year Frequency Storm - A storm event with a twenty (20) percent chance of being equaled or exceeded in any given year. Defined to be 4.1 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

10-year Frequency Storm - A storm event with a ten (10) percent chance of being equaled or exceeded in any given year. Defined to be 4.8 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

25-year Frequency Storm - A storm event with a four (4) percent chance of being equaled or exceeded in any given year. Defined to be 5.5 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

100-year Frequency Storm - A storm event with a one (1) percent chance of being equaled or exceeded in any given year. Defined to be 6.5 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

500-year Frequency Storm - A storm event with a one-fifth (1/5) of one (1) percent chance of being equaled or exceeded in any given year. Defined to be 7.6 inches in 24 hours or other such magnitude the Director shall establish based upon scientific and engineering information.

100-year Flood Elevation - The elevation of the 100-year flood at any given location.

500-year Flood Elevation - The elevation of the 500-year flood at any given location.

Active Channel – The area of the stream that is most subject to water flow and that includes the portion of the channel below the top-of-bank.

Aquatic Resource Alteration Permit (ARAP) - A permit issued by the Tennessee Department of Environment and Conservation for physically altering Waters (streams and wetlands) of the State.

As-Built Certification - As-built, field-verified plans signed and sealed by a registered professional engineer and/or a registered land surveyor, both licensed to practice in the State of Tennessee, which shows physical information about the development or redevelopment for purposes of verifying adherence to the approved stormwater management plan(s).

Base Flood Elevation (BFE) - The 500-year flood elevation at any given location.

Best Management Practices (BMP or BMPs) - Schedules of activities, prohibitions of practices, maintenance procedures, structural controls and other management practices designed to prevent or reduce the pollution of waters of the United States. BMPs may include structural devices or non-structural practices.

Blue-Line Stream - Any stream that is shown on a 7.5 minute USGS quadrangle map, unless determined otherwise by the Tennessee Department of Environment and Conservation.

Board of Zoning Appeals (BZA) - A group of nine citizens appointed by the County Commission to hear appeals and decide appeals and variances as authorized in section 6.60 of the Knox County Zoning Ordinance.

CFR - Code of Federal Regulations.

Channel - A natural or man-made watercourse of perceptible extent, with definite bed and banks to confine and conduct continuously or periodically flowing water.

Clearing – In the definition of discharges associated with construction activity, clearing does not refer to clearing of vegetation along roadways, highways or power lines for sight distance or other maintenance and/or safety concerns, or cold planing, milling, and/or removal of concrete and/or bituminous asphalt roadway pavement surfaces. Clearing typically refers to removal of vegetation and/or disturbance of soil prior to grading or excavation in anticipation of construction activities. Clearing may also refer to wide area land disturbance in anticipation of non-construction activities; for instance, cleared forested land in order to convert forest land to pasture for wildlife management purposes.

Commencement of Construction or Commencement of Land Disturbing Activities – The initial disturbance of soils associated with clearing, grading or excavating activities or other construction activities.

Community Waters - Any of the following waterbodies located within the unincorporated areas of Knox County are considered community waters:

- a. Streams, as defined herein;
- b. Wetlands, as defined by the any agency with authority to make legal wetland determinations (United States Army Corps of Engineers, United States Environmental Protection Agency, Tennessee Department of Environment and Conservation, United States Natural Resources Conservation Service);
- c. Ponds that have a direct hydraulic connection to other community waters; and,
- d. Lakes.

Construction – Any placement, assembly, or installation of facilities or equipment (including contractual obligations to purchase such facilities or equipment) at the premises where such equipment will be used, including preparation work at such premises.

Construction Related Wastes - Refuse or unused materials that can result from construction activities. Construction related wastes can include, but are not limited to, unused building and landscaping materials, chemicals, litter, sanitary waste, and concrete truck washout.

Conveyance - The capacity of a channel or a pipe to carry stormwater.

Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices - A legal document executed by the property owner, or a homeowners' association as owner of record, and recorded with the Knox County Register of Deeds which guarantees perpetual and proper maintenance of stormwater facilities and best management practices.

County - Knox County, Tennessee.

Cross Drain - A pipe used to convey stormwater from one side of a Knox County Road to another. A cross drain can also be called a culvert.

Development - Any land change that alters the hydrologic or hydraulic conditions of any property. Often referred to as “site development”. Development includes, but is not limited to, providing access to a site, clearing of vegetation, grading, earth moving, providing utilities, roads and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure on the land.

Director - The Director of the Knox County Department of Engineering and Public Works or designee.

Discharge - 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 stormwater system by any means intentional or otherwise.

Disturbed Area - Portion of any site that has been altered from existing conditions, including but not limited to the following: providing access to a site, clearing of vegetation, grading, earth moving, providing utilities and other services such as parking facilities, stormwater management and erosion control systems, potable water and wastewater systems, altering land forms, or construction or demolition of a structure on the land.

Drainage Basin - The area contributing stormwater runoff to a single point.

Drainage System - The system of pipes, channels, culverts, and ditches that convey stormwater from and through public and private land in Knox County.

Erosion - 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.

Excavation - A cavity or hole in the land surface that is caused by the cutting, digging, or scooping and removal of soil, rock, or other materials.

FEMA - The Federal Emergency Management Agency, which administers the National Flood Insurance Program (NFIP).

Filling - Any deposit or stockpiling of dirt, rocks, stumps, or other natural or man-made solid waste material.

Flood - Water from a river, stream, watercourse, lake or other body of standing water that temporarily overflows and inundates adjacent lands and which may affect other lands and activities through increased surface water levels, and/or increased groundwater level.

Flood Fringe - That portion of the Special Flood Hazard Area lying outside the floodway.

Flood Insurance Rate Map (FIRM) - The official map on which the Federal Emergency Management Agency has delineated both the areas of special flood hazard and the risk premium zones.

Flood Insurance Study (FIS) - The official report provided by the Federal Emergency Management Agency. The report contains elevations of the base flood, floodway widths, flood velocities, and flood profiles.

Floodplain - Any land area susceptible to being inundated by water from any source. Floodplains that have been studied for purposes of flood insurance documentation are typically assigned a recurrence interval (i.e., the 100 year floodplain) which defines the magnitude of the flood event that causes the inundation in the floodplain to a specified flood elevation. The 100 year floodplain is the area subject to inundation during the 100 year flood.

Flood Proofing - Any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures and their contents.

Floodway - The channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the 100-year flood without cumulatively increasing the water surface elevation more than one foot.

Floodway Encroachment - Any obstruction, fill, construction, improvement or other alteration that changes the hydraulic characteristics of the regulatory floodway.

Grading - Any clearing, excavating, filling or other disturbance of terrain.

Grading Permit - A permit issued by Knox County authorizing the commencement of land disturbing activities.

High Quality Waters - Surface waters of the State of Tennessee that are identified by TDEC as “high quality waters.” Characteristics of high quality waters are listed at Rule 1200-4-3-.06 of the official compilation – rules and regulations of the State of Tennessee. Characteristics include waters designated by the Water Quality Control Board as Outstanding National Resources Waters (ONRW); waters that provide habitat for ecologically significant populations of certain aquatic or semi-aquatic plants or animals; waters that provide specialized recreational opportunities; waters that possess outstanding scenic or geologic values; or waters where existing conditions are better than water quality standards. High quality waters are sometimes referred to as Tier II or Tier III (ONRW) waters.

Hotspot - An area where the land use or activities generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in stormwater.

Human Occupancy - Any portion of any enclosed structure wherein humans principally live, work, or sleep such as mobile homes, residential activities, basements, health care facilities, restaurants, office buildings, etc.

Illicit Discharge - Any discharge to the stormwater system that is not composed entirely of stormwater and not specifically exempted in section 12 of this ordinance.

Impervious Area - Impermeable surfaces which prevent the percolation of water into the soil including, but not limited to, pavement, parking areas and driveways, packed gravel or soil, or rooftops.

Lake - An inland body of standing water, usually of considerable size.

Land Disturbing Activity - Any activity on a property that results in a change in the existing soil (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, logging and/or tree chipping operations, haul roads associated with the development, and excavation.

Letter of Map Revision (LOMR) - A letter written by FEMA that officially revises the FIS and FIRM.

Municipal Separate Storm Sewer System (MS4) - A conveyance or system of conveyances (including roads with drainage systems, streets, catch basins, curbs, gutters, ditches, constructed channels, and storm drains) designed or used for collecting or conveying stormwater. However, sanitary and combined sewers are not included in the definition of the Municipal Separate Storm Sewer System.

National Pollutant Discharge Elimination System (NPDES) - The program administered by the United States Environmental Protection Agency to eliminate or reduce pollutant discharges to the waters of the United States.

Natural Resources Conservation Service (NRCS) - An organization within the U.S. Department of Agriculture that has published standard drainage procedures in the form of Technical Release No. 55. Formerly known as the Soil Conservation Service (SCS).

No Rise - A floodway encroachment that causes no increase to the Base Flood Elevation, and to the 100-year floodway width and water surface elevation.

Outfall - The terminus of a stormwater system where the contents are released into a larger public or private stormwater management system, or into a stream.

Owner or Operator - Any party associated with a construction project that meets either of the following two criteria:

- a. The party has operational control over construction plans and specifications, including the ability to authorize modifications to those plans and specifications (this will typically be the owner or developer); or
- b. The party has day-to-day operational control of those activities at a project which are necessary to ensure compliance with a stormwater pollution prevention plan (SWPPP) for the site or other permit conditions, e.g., they are authorized to direct workers at a site to carry out activities required by the SWPPP or comply with other permit conditions. (This will typically include the general contractor and would also include erosion control contractors.)

Pond - An inland body of standing water that is usually smaller than a lake.

Priority Construction Activity – Land disturbing activities that are located in a watershed that discharges to waters recognized by the State of Tennessee as impaired for siltation, or high quality waters.

Peak Discharge - The maximum instantaneous rate of flow of water at a particular point resulting from a storm event. Also, the maximum discharge computed for a given design flood event.

Person - Any individual, firm, corporation, partnership, association, organization or entity, including governmental entities, or any combination thereof.

Public Water - Stormwater runoff that originates in whole or part from or is conveyed by publicly owned facilities such as roads.

Redevelopment - The improvement of a lot or lots that have been previously developed.

Riprap - A combination of large stone, cobbles and boulders used to line channels, stabilize stream banks, and reduce runoff velocities.

Runoff - The water resulting from precipitation that is not absorbed by the soil. Also can be referred to as stormwater runoff.

Sanitary Sewer - A system of underground conduits that collects and delivers wastewater from toilets, sinks and other plumbing fixtures to a wastewater treatment plant.

Sediment - Solid material, either inorganic (mineral) or organic, that is in suspension, is being transported, or has been moved from the site of origin by wind, water, gravity, or ice as a product of erosion..

Sewage - Human wastes carried by water from residences, buildings, industrial establishments or other places, together with such industrial wastes, stormwater or other water as may be present; or any substance discharged from a sanitary sewer collection system.

Sinkhole - A depression characterized by closed contours on a topographic map. A sinkhole throat, or opening to the subsurface, may or may not be visible. Field verification may be required in areas where the depth of the depression is below the tolerance of currently available topographic mapping. The extent of the area considered to be a sinkhole is, at a minimum, the limits determined by the sinkhole floodplain elevation, assuming plugged conditions (0 cfs outflow).

Sinkhole Floodplain Elevation - The elevation at the sinkhole lip or the flood elevation expected under extreme flood conditions outlined in section 5.8.

Sinkhole Floodplain Storage Volume – The storage volume below the sinkhole floodplain elevation.

Sinkhole Lip Elevation - The elevation of the highest closed contour around a sinkhole. If the flood elevation is above the sinkhole lip, water will flow away from the sinkhole.

Small Lot - For purposes of a building permit, a small lot is a construction site that results in the disturbance of less than one (1) acre of land and is not part of a larger common plan of development or sale that would disturb one (1) acre or more.

Special Flood Hazard Area (SFHA) - An area having special flood, mudslide (i.e., mudflow) and/or flood-related erosion hazards and shown on a Flood Hazard Boundary Map or Flood Insurance Rate Map as zone A, AO, A1-30, AE, A99 or AH.

Stormwater - Runoff from rain, snow or other forms of precipitation, which results in surface runoff and drainage.

Stormwater Management Facilities - Structures and constructed features designed for the collection, conveyance, storage, treatment and disposal of stormwater runoff into and through the stormwater system. Stormwater management facilities include vegetative or structural measures, or both, to control the increased volume, rate, and quality of stormwater runoff caused by manmade changes to the land.

Stormwater Management Plan - An engineering study for the design of the drainage system for a proposed development that includes a map showing the extent of the land development

activity, an erosion prevention and sediment control plan, stormwater control plan, and may contain as-built certifications and Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices. The stormwater management plan also includes sufficient hydrologic calculations to determine the impact of the development on stormwater discharges.

Stormwater Management Manual – A document prepared and maintained by the Knox County Department of Engineering which contains design standards and criteria, technical specifications and guidelines, maintenance guidelines, methodology for engineering computations, and other supporting documentation to be used as the technical guidance for implementation of the provisions of this ordinance.

Stormwater Master Plan - An engineering and planning study for the drainage system of a watershed that consists of a plan for stormwater management in the watershed. Stormwater master plans can address flooding problems, water quality problems, potential stormwater capital improvements, land use patterns, and regulatory issues for existing and future conditions.

Stormwater System - The system of roadside drainage, roadside curbs and gutters, curb inlets, swales, catch basins, manholes, gutters, ditches, pipes, lakes, ponds, sinkholes, channels, creeks, streams, storm drains, water quality best management practices, and similar conveyances and facilities, both natural and manmade, located within Knox County which are designated or used for collecting, storing, or conveying stormwater, or through which stormwater is collected, treated, stored or conveyed, whether owned or operated by Knox County or other person..

Stream – For the specific purpose of water quality buffers, a stream is defined as a linear surface water conveyance that can be characterized with either perennial or ephemeral base flow and:

- a. has published floodplain elevations that have been computed as part of an approved flood study; or
- b. is identified as a blue line on a 7.5-minute USGS quadrangle, unless otherwise designated by TDEC; or
- c. is identified by the property owner as a stream; or
- d. is or has been identified by Knox County, USACE or TDEC as a stream.

Structure - Anything constructed or erected such that the use of it requires a more or less permanent location on or in the ground. Such construction includes, but is not limited to, objects such as buildings, towers, smokestacks, overhead transmission lines, carports and walls.

TDEC - The Tennessee Department of Environment and Conservation.

Top of Bank - The uppermost limit of the active channel of a stream containing normal flows, usually marked by a break in slope.

Total Maximum Daily Load (TMDL) - A calculation of the maximum amount of a pollutant that a waterbody can receive and still meet water quality standards, and an allocation of that amount to the source(s) of the pollutant.

Transporting - Any moving of earth materials from one place to another, other than such movement incidental to grading, as authorized on an approved plan.

USACE - United States Army Corps of Engineers.

Utility, public or private - Any agency which under public franchise or ownership, or under certification of convenience and necessity provides the public with electricity, natural gas, steam, communication, rail transportation, water, sewage collection, or other similar service.

Vegetation - Collection of plant life, including trees, shrubs, bushes, and grass.

Wastes, industrial/commercial - Liquid or other wastes resulting from any process of industry, manufacture, trade or business, or from the development of any natural resources.

Wastes, other - Decayed wood; sawdust; shavings; fallen bark; fallen leaves; lawn clippings; animal wastes; used or previously applied lime; garbage; trash; refuse, loose used paper, paper products, plastic containers, or metal containers; ashes, offal, discarded tar; discarded paint; discarded or uncontained solvents; used, discarded, or spilled petroleum products, antifreeze, motor vehicle fluids; used or discarded tires, gas tanks, or chemicals; or any other used, uncontained, or unpackaged, or disposed of materials which may discharge to or otherwise enter the stormwater system.

Waters or Waters of the State - 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.

Water Quality Buffer - A use-restricted, vegetated area that is located along the perimeter of community waters, containing natural vegetation and grasses, enhanced or restored vegetation.

Watercourse - A channel, natural depression, gully, stream, creek, pond, reservoir or lake in which stormwater runoff and floodwater flows either regularly or infrequently. This includes major drainageways for carrying urban stormwater runoff.

Watershed - A region or area bounded peripherally by a divide and draining ultimately to a particular watercourse or body of water.

Wetlands - An area that is inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances does support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetland determination shall be made by the United States Army Corps of Engineers, and/or the Tennessee Department of Environment and Conservation, and/or the Natural Resources Conservation Service.

SECTION 3. AUTHORITY OF THE DIRECTOR

(a) Knox County Department of Engineering and Public Works has the authority to promulgate rules, regulations, and guidance consistent with this ordinance in order to carry-out the meaning and intent of this ordinance in a Stormwater Management Manual. The Stormwater Management Manual, as amended, shall be implemented consistent with other provisions of this ordinance through the approval and enforcement of the stormwater management plan. Stormwater quality or quantity control methods, designs or technologies not provided in the Stormwater Management Manual, as amended, may be submitted for approval if it is proven that such methods, designs or technologies will meet or exceed the water quality and quantity control requirements set forth in the Stormwater Management Manual, as amended, and this ordinance. Knox County Department of Engineering and Public Works will revise and

append the Stormwater Management Manual to satisfy State or Federal regulatory water quality or quantity requirements, or as research and development in the area of stormwater management provides improved knowledge of new or existing stormwater quality or quantity control methods, designs or technologies. This ordinance emphasizes that the Knox County Stormwater Manual is the basis for design for all projects affecting stormwater in Knox County. A role of the Director is to enforce said design. Thus the Knox County Stormwater Manual shall be enforceable consistent with other provisions of this ordinance.

- (b) The Director shall have the authority to prepare, or have prepared, master plans for drainage basins and to establish regulations or direct capital improvements to carry out said master plans.
- (c) In the event that the Director determines that a violation of any provision of this ordinance has occurred, or that work does not have a required plan or permit, or that work does not comply with an approved plan or permit, the Director may issue a Notice of Violation to the permittee or property owner and/or any other person or entity having responsibility for construction work performed at a site development, at which time the penalty provisions of this ordinance shall be implemented.

SECTION 4. STORMWATER MANAGEMENT REQUIREMENTS

4.1 Developments Exempt from a Stormwater Management Plan

It is acknowledged that any exemptions are reviewed by the Director and should not be construed as an opportunity to circumvent the letter and spirit of the Knox County Stormwater Ordinance. It is also not the intent of Knox County Government to place undue and unreasonable hardships on individual business and property owners.

4.1.1 Responsibilities of Exempt Developments

- (a) The exemptions listed in section 4.1.2 shall not be construed as exempting these developments and redevelopments from onsite drainage improvements that may be required in accordance with building and construction codes, nor from compliance with sections 4.6, 4.7 and 12 of this ordinance, nor from providing adequate erosion prevention and sediment control measures to protect adjoining property owners and the public right-of-way.
- (b) Developments and redevelopments that conform to the criteria in section 4.1.2(a) and 4.1.2(b) are exempt from the requirements for a stormwater management plan, but must submit a small lot erosion prevention and sediment control plan, in accordance with section 4.3 of this ordinance, prior to obtaining a building permit.

4.1.2 Exemptions

The following developments and redevelopments are exempt from the requirements for a grading permit and for a stormwater management plan:

- (a) Single to two-family individual residential dwellings in any given area that conform to the following criteria:
 - (1) do not alter a drainage channel; and,
 - (2) disturb less than one (1) acre of land; and,
 - (3) are not part of a larger common plan of development or sale that would disturb one (1) acre or more;

- (4) do not alter the natural ground elevation by more than five (5) feet;
 - (5) are not located in a sinkhole, or are not located on a site where sinkholes are entirely or partially present.
- (b) Commercial or industrial development that conform to the following criteria:
 - (1) disturbs less than one (1) acre of land; and,
 - (2) is not part of a larger common plan of development or sale that would disturb one (1) acre or more; or,
 - (3) adds less than ten-thousand (10,000) square feet of impervious surface; and,
 - (4) does not alter the drainage channel; and,
 - (5) does not alter the natural ground elevation by more than five (5) feet;
 - (6) is not located in a sinkhole, or are not located on a site where sinkholes are entirely or partially present.
 - (c) Minor land disturbing activities such as home gardens and individual home repairs, landscaping, or maintenance work;
 - (d) Individual utility service connections, unless such activity is carried-out in conjunction with the clearing, grading, excavating, transporting, or filling of a lot or lots for which a grading permit would otherwise be required by the regulation;
 - (e) Installation, maintenance or repair of individual septic tank lines or drainage fields, unless such activity is carried out in conjunction with the clearing, grading, excavating, transporting, or filling of a lot or lots for which a grading permit would otherwise be required by the regulation;
 - (f) Installation of posts or poles;
 - (g) Farming activities;
 - (h) Emergency work to protect life or property, and emergency repairs, provided that the land area disturbed shall be shaped and stabilized in accordance with the requirements of this regulation as soon as practicable.

4.2 Stormwater Management Plan Requirements

4.2.1 General Requirements

- (a) The owner or operator of land development activities not exempted under section 4.1 must submit a stormwater management plan.
- (b) No building permit shall be issued until the required stormwater management plan is approved by the Department of Engineering and Public Works.
- (c) The stormwater management plan shall include the specific required elements that are listed and/or described in the Knox County Stormwater Management Manual, as amended. Additional information shall be provided as necessary to allow an adequate review of the site conditions.
- (d) Stormwater management plans, including erosion prevention and sediment control plans shall be prepared and stamped by an engineer, landscape architect, or architect competent in civil and site design and licensed to practice in the state of Tennessee with the following conditions:
 - (1) Portions of the stormwater management plan, including portions of the erosion prevention and sediment control plan, that require hydraulic or hydrology calculations

and design shall be prepared and stamped by a professional engineer competent in civil and site design and licensed to practice in the state of Tennessee.

- (2) All roads and Joint Permanent Easements that are required to be designed and built to Public Road Standards shall be prepared and stamped by a professional engineer competent in civil and site design and licensed to practice in the state of Tennessee.
- (e) The stormwater management plan shall be subject to any additional requirements set forth in the minimum subdivision regulations, zoning ordinance, or other Knox County regulations.
- (f) When existing or documented flooding problems are present, the Director has authority to condition the approval of a grading or building permit upon the compliance with additional requirements, including but not limited to detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.

4.2.2 Conformity to Plans

- (a) The approved stormwater management plan, upon which subsequent permits may be issued by Knox County, shall be adhered to during grading and construction activities. Under no circumstance is the owner or operator allowed to deviate from the approved stormwater management plan without prior approval of a plan amendment by the Director. Amendments to the approved plan must comply with this ordinance.
- (b) The Director shall require that an approved stormwater management plan be amended if it is determined that the approved plan is inadequate.

4.2.3 Additional Requirements for Grading Permits

- (a) The owner or operator of land development activities not exempted by section 4.1 of this ordinance must obtain a grading permit prior to commencing land disturbing activities.
- (b) Land disturbing activities performed in accordance with the approved plan shall commence within one year from the issue date of the grading permit, or the grading permit will become null and void and the plan must be resubmitted for approval.
- (c) The grading permit application shall contain an erosion prevention and sediment control plan, prepared as required by this ordinance and the Knox County Stormwater Management Manual, as amended. The plan can be included with the overall stormwater management plan or can be a stand-alone plan.
- (d) The owner or operator must obtain from TDEC a Notice of Coverage (NOC) under the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities, or certification that the land development activity does not require coverage under the State permit, prior to obtaining a grading permit. A copy of the NOC and the associated Stormwater Pollution Prevention Plan (SWPPP), or certification that the site does not require coverage under the State permit must be submitted with the erosion prevention and sediment control plan.
- (e) The erosion prevention and sediment control plan shall include a listing of any legally protected state or federally listed threatened or endangered species and/or critical habitat (if applicable) located in the area of land disturbing activities, and a description of the measures that will be used to protect them during grading.

- (f) The Director may request additional information as deemed necessary to protect streams and adjacent properties from erosion and off-site sedimentation.

4.2.4 Pre-Construction Meeting

- (a) Attendance at a pre-construction meeting with the Knox County Department of Engineering and Public Works prior to issuance of a grading permit is required for owners and operators of developments or redevelopments that are:
 - (1) new subdivisions or condominium developments; or
 - (2) non-residential land developments that require coverage under the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities; or
 - (3) a priority construction activity, as defined in this ordinance.
- (b) Owners and operators of land development activities not listed in section 4.2.4(a) may be required to attend a pre-construction meeting when coordination with adjacent construction activities is needed or when conditions indicate a higher than normal risk for pollutant discharges.

4.3 Building Permit Requirements for Small Lots

- (a) Prior to issuance of a building permit, the owner or operator of small lots that will disturb less than one acre shall prepare and adhere to a small lot erosion prevention and sediment control plan that identifies the erosion prevention and sediment control measures to be employed on the site. Permanent stormwater conveyance measures are not required on this plan.
- (b) The small lot erosion prevention and sediment control plans shall be prepared in accordance with the requirements stated in the Knox County Stormwater Management Manual, as amended.
- (c) The Director has the discretion to require a full stormwater management plan as set forth in section 4 of this ordinance as deemed necessary to protect streams and adjacent properties from erosion and off-site sedimentation.
- (d) Any construction related wastes, such as vehicle wash pads, construction waste materials and concrete truck washout areas, which are located on small lots shall be handled in a manner to preclude contact with stormwater and other water resources.

4.4 Performance Bonds

- (a) Prior to issuance of a grading permit, a performance bond which guarantees satisfactory completion of land disturbing activities shall be provided for construction and/or grading activities related to erosion prevention and sediment control and water quality buffers.
- (b) Prior to plat approval, a performance bond which guarantees satisfactory completion of new development or redevelopment projects shall be provided for construction work related to site roadways and the stormwater management system.
- (c) Performance bonds shall name Knox County as beneficiary and shall be guaranteed in the form of a surety bond, cashier's check, or letter of credit from an approved financial institution or insurance carrier. The surety bond, cashier's check, or letter of credit shall be provided in a form and in an amount to be determined by the Knox County Department of Engineering and Public Works. The actual amount shall be based on submission of plans and estimated construction, installation or potential maintenance and/or remediation expenses.
- (d) The Director may refuse brokers or financial institutions the right to provide a surety bond, letter of credit, or cashier's check based on past performance, ratings of the financial institution, or other appropriate sources of reference information.
- (e) A performance bond is not required for small lots, as defined by this ordinance, except when deemed necessary by the Director based on site conditions and the adverse impact on downstream conditions or other properties.

4.5 Stormwater System Criteria

4.5.1 General

- (a) The provisions set forth in this section are applicable to all developments and redevelopments not exempted from submittal of a stormwater management plan, as defined in section 4.1.
- (b) The provisions set forth in this section are not applicable to developments that have an approved stormwater management plan prior to the date of adoption of this ordinance.

- (c) Where such criteria exist, all stormwater facilities and systems, including those designed and constructed for water quality treatment, channel protection, overbank flood protection, and extreme flood protection, shall be designed and constructed in accordance with the criteria, standards, and specifications presented in this ordinance and in the Knox County Stormwater Management Manual, as amended.
- (d) The portions of the new development or redevelopment on which stormwater management facilities and systems are located shall be shown on the plat and recorded with the deed as permanent drainage or water quality easements.
- (e) Banks of all streams, channels, ditches and other earthen stormwater conveyances shall be left in a stabilized condition upon completion of the project. No actively eroding, bare or unstable vertical banks shall remain. Placement of riprap and other hard armor as the sole bank protection method on blue line streams is only allowed when vegetative bank stabilization alternatives are not technologically feasible.
- (f) The Director has the authority to require additional water quantity standards, including restrictions on peak velocity and/or runoff volumes or less frequent design events, in areas where the Director has determined, through stormwater master plans, engineering studies, and/or other regulatory water quality requirements, a history of existing or documented flooding or erosion problems, or engineering judgment, that additional restrictions are needed to limit adverse impacts of the proposed development downstream or upstream of the site.
- (g) All hydrologic and hydraulic computations utilized in the design of stormwater treatment and control facilities must be performed using the calculation methods presented in the Knox County Stormwater Management Manual, as amended, unless equivalent methods are pre-approved by the Director.
- (h) All hydrologic and hydraulic computations utilized in the design of stormwater facilities must be prepared by a registered engineer proficient in the field of hydrology and hydraulics and licensed to practice engineering in the State of Tennessee.
 - (i) The Director may waive or modify any of the stormwater system criteria provided in this section if adequate water quality treatment, and/or channel protection, and/or overbank flood protection, and/or extreme flood protection is suitably provided by a downstream or shared off-site stormwater facility.

4.5.2 Water Quality Treatment

- (a) Stormwater runoff from the development or redevelopment site must be treated to remove pollutants prior to discharge from the development or redevelopment site in accordance with the stormwater treatment standards and criteria provided in the Knox County Stormwater Management Manual, as amended.
- (b) Stormwater quality treatment must be achieved through the use of one or more structural and/or non-structural best management practices, that are designed and constructed in accordance with the design criteria, guidance, and specifications provided in the Knox County Stormwater Management Manual, as amended.
- (c) Best management practices or technologies that are not included in the Knox County Stormwater Management Manual, as amended, may be approved for the treatment of stormwater quality on a case-by-case basis provided that the following conditions are met:

- (1) The best management practice or technology, as applied to the site, meets the water quality goals published in the Knox County Stormwater Management Manual, as amended. The performance ability of the best management practice must be verified by an independent third party.
 - (2) BMPs that have unacceptably high maintenance requirements may not be installed within public rights-of way or on public property. Such judgments shall be made by the Director after review of applicable information submitted by the designer.
- (d) Additional watershed or site-specific stormwater quality requirements may be required by the Director, in order to satisfy local or State NPDES, TMDL or other regulatory water quality requirements.

4.5.3 Downstream Channel Protection

- (a) The channel protection volume (the runoff volume from the 1-year frequency, 24-hour storm) shall be captured and discharged over no less than a 24-hour period using acceptable hydrologic methods.
- (b) Downstream channel protection can be provided by an alternative approach in lieu of controlling the channel protection volume subject to prior approval by the Director. Sufficient hydrologic and hydraulic analysis that shows that the alternative approach will offer adequate channel protection from erosion must be presented.

4.5.4 Overbank and Extreme Flood Protection

- (a) Overbank flood protection shall be provided such that the calculated peak discharge of stormwater runoff resulting from the 2-year, 10-year, and 25-year return frequency, 24-hour duration storm events shall be no greater after development or redevelopment of the site than that which would result from the same 2-year, 10-year, and 25-year return frequency, 24-hour duration storms on the same site prior to development or redevelopment.
- (b) Extreme flood protection shall be provided such that the calculated peak discharge of stormwater runoff resulting from a 100-year frequency, 24-hour duration storm shall be no greater after development or redevelopment of the site than that which would result from a 100-year frequency, 24-hour duration storm on the same site prior to development or redevelopment.
- (c) A downstream hydrologic analysis shall be performed to determine if the proposed development or redevelopment causes an increase in peak discharge as compared to pre-development runoff rates for the same site, or has the potential to cause downstream channel and streambank erosion. This analysis must be done for the 2-year, 10-year, 25-year and the 100-year return frequency, 24-hour duration storm events, at the outfall(s) of the site, and at each downstream tributary junction and each public or major private downstream stormwater conveyance structure to the point(s) in the stormwater system where the area of the portion of the site draining into the system is less than or equal to 10% of the total drainage area above that point.
- (d) If peak discharge increases are identified in the 10% downstream analysis area, as defined in 4.5.4(c), downstream flood protection shall be provided such that calculated peak discharges for the 2-year, 10-year, 25-year and 100-year return frequency, 24-hour duration storm events after development or redevelopment are no greater after development or

redevelopment of the site than that which would result from the same duration storms in the same downstream analysis area prior to development or redevelopment. These criteria must be applied throughout the 10% downstream analysis area.

- (e) Downstream flood protection can be provided by downstream conveyance improvements and/or purchase of flow easements in lieu of peak discharge controls subject to prior approval by the Director and satisfaction of the following requirements:
 - (1) Sufficient hydrologic and hydraulic analysis must be presented that shows that the alternative approach will offer adequate protection from downstream flooding for all potentially affected downstream property owners.
 - (2) The applicant is responsible for submittal and approval of any necessary CLOMR prior to construction, and a LOMR upon completion of construction.
 - (3) The applicant is responsible for all State and Federal permits that may be applicable to the site including TDEC NPDES and ARAP permits, US Army Corps of Engineers section 404 permits, and TVA section 26A permits.
- (f) Developments and redevelopments that do not cause an increase in peak discharges are not exempt from conformance with water quality treatment and downstream channel protection requirements stated in sections 4.5.2 and 4.5.3, respectively.

4.5.5 Pipes, Channels, and Other Stormwater Components

- (a) The design of the stormwater system, excluding stormwater facilities for water treatment, channel protection, and overbank, extreme and downstream flood protection shall be based on the 25 year frequency storm. This criterion shall be applied to both closed conduit and open channel components. Minor systems that discharge to sinkholes must be designed to safely carry the 100-year frequency storm event.
- (b) All drainage systems shall be designed to insure that no habitable finished floor elevations are flooded for the 500-year frequency storm, and that no structures are located within the vertical projection of the 10-year floodplain line (i.e., located within the 10-year floodplain).
- (c) Pipe material specifications are as follows:
 - 1. Reinforced concrete pipe is required for pass through drainage.
 - 2. Reinforced concrete pipe is required for locations within stormwater detention or retention ponds and their outlet structures.
 - 3. Reinforced concrete pipe is required for location in public rights of way for all streets classified as "minor collectors" and above. For other pipe installations within public rights of way (ie, local, residential streets), reinforced concrete, dual wall high density polyethylene, or aluminized corrugated metal pipe may be used. Other metal pipe materials, including corrugated metal, are not permitted. At no less than thirty (30) days after the time of installation, visual inspection and deflection testing will be performed on all pipes and certified in accordance with TDOT Standard Specifications for Road and Bridge Construction including Supplemental

Specifications - Section 607.09 of the Standard Specifications for Road and Bridge Construction dated March 1, 2006 , to ensure structural integrity. All pipes with deflections greater than 5 percent of the nominal pipe diameter, undue misalignment, or poor joint construction shall be replaced by the contractor at his expense.

- (d) It shall be the responsibility of the property owner to provide all necessary design, date, and installation details for construction to ensure failure of cross drains, pipes, culvers or drainage systems will not occur, and prevent flooding or potential property damage on adjacent properties or right-of-ways.
- (e) Final pipe design specification must be indicated in the Stormwater Management Plan and approved by the Director.

4.6 Special Pollution Abatement Permits

- (a) A Special Pollution Abatement Permit shall be required for the following land uses, which are considered pollutant hotspots:
 - (1) Vehicle, truck or equipment maintenance, fueling, washing or storage areas including but not limited to: automotive dealerships, automotive repair shops, and car wash facilities;
 - (2) Parking lots over 400 spaces or parking areas greater than 120,000 square feet;
 - (3) Recycling and/or salvage yard facilities;
 - (4) Restaurants, grocery stores, and other food service facilities;
 - (5) Commercial facilities with outside animal housing areas including animal shelters, fish hatcheries, kennels, livestock stables, veterinary clinics, or zoos;
 - (6) Other producers of pollutants identified by the Director by information provided to or collected by him/her or his/her representatives, or reasonably deduced or estimated by him/her or his/her representatives from engineering or scientific study.
- (b) The Director has the authority to require a Special Pollution Abatement Permit for land uses or activities that are not identified by this ordinance as hotspot land uses, but are deemed by the Director to have the potential to generate highly contaminated runoff, with concentrations of pollutants in excess of those typically found in storm water.
- (c) Technical requirements for the permit shall be based on the provisions and guidelines set forth in the Knox County Stormwater Management Manual, as amended.
- (d) Best management practices specified in the Special Pollution Abatement Permit must be appropriate for the pollutants targeted at the site and approved by the Director for use in Knox County, as set forth in section 4.5.2(b) and 4.5.2(c).
- (e) A Special Pollution Abatement Permit will be valid for a period of five (5) years, at which point it must be renewed. At the time of renewal, any deficiency in the management method must be corrected.

4.7 NPDES Permits

Persons or entities who hold NPDES general, individual and/or multi-sector permits shall provide either a copy of such permit or the permit number assigned to them by the Tennessee

Department of Environment and Conservation to the Director no later than sixty (60) calendar days after issuance of the permit.

SECTION 5. FLOODPLAIN REQUIREMENTS

5.1 General Requirements

- (a) Uses permitted within the flood fringe shall be in accordance with Article 3.70 Flood Fringe Requirements of the Knox County Zoning Ordinance. Uses permitted within the floodway shall be in accordance with Article 5.70 Floodway Zone of the Knox County Zoning Ordinance. The regulations and controls set forth in this section shall be applied to all areas within the 500-year floodplain as designated on the adopted FEMA Flood Insurance Rate Maps (FIRM) in the jurisdiction of Knox County.
- (b) No structure or land shall hereafter be located, extended, converted, or structurally altered without full compliance with the terms of this section and other applicable regulations including the Knox County Zoning Ordinance.
- (c) This section is not intended to repeal, abrogate, or impair any existing easements, covenants, deed restrictions, or existing ordinances and regulations. However, where the provisions of this section and another regulation conflict or overlap, that provision which is more restrictive or imposes higher standards or requirements shall prevail. It is required that the Director be advised of any such regulatory conflicts upon submittal of the Stormwater Management Plan.

5.2 Administration

The Director is responsible for administering and implementing the provisions in this section. The Director shall maintain a copy of the latest Flood Insurance Study (FIS) and Flood Insurance Rate Maps (FIRM) and make these documents available for inspection.

5.3 Floodplain Development Requirements

5.3.1 General Requirements

- (a) A Floodplain Development Permit is required for any development or alteration to the natural drainage system within the 500-year floodplain in Knox County. The Director shall approve said permit based on the requirements herein and the required engineering calculations stipulated by the Director. All activities that take place within the 500-year floodplain must conform to the regulations set forth in the Knox County Flood Damage Prevention Ordinance.
- (b) Persons responsible for property developments that are determined to be in the 500-year floodplain of Knox County shall prepare and submit a Floodplain Development Permit application. A Stormwater Management Plan, as provided for in section 4 of this ordinance, may also be required. As-built elevations of all structures in the floodplain shall be certified on a FEMA elevation certificate. A registered land surveyor or professional engineer in the State of Tennessee shall certify the as-built elevations of all structures in the floodplain.
- (c) The applicant is responsible for all state and Federal permits that may be applicable to the site including State permits for the NPDES and ARAP, US Army Corps of Engineers section 404 permits, and TVA section 26A permits. Proof of permit coverage (if applicable) is a requirement for permit coverage by Knox County.

5.3.2 Flood Fringe Fill Requirements

- (a) Construction fill that alters the conveyance and storage capacity of the natural floodplain is prohibited in the flood fringe one-half the linear distance between the floodway line and the 100-year floodplain line.
- (b) The Director will authorize individual exceptions to section 5.3.2(a) only where:
- (c) a drainage study prepared by a registered professional engineer in the State of Tennessee shows a rise of less than 0.1 feet in flood elevations as a result of the fill within 0.5 miles (upstream and downstream) of the proposed development; or,
- (d) a grading plan prepared for the site shows that alteration in the storage capacity of the natural floodplain is mitigated by removal of an equal, or greater, volume of soil elsewhere in the floodplain located on the site. If this option is used, a drainage study by a registered professional engineer in the State of Tennessee is required to determine if the cut and fill activities will cause a rise in flood elevations greater than 0.1 feet within 0.5 miles (upstream and downstream) of the proposed development.
- (e) The Director has the authority to require which option shall be utilized to obtain a waiver of flood fringe fill requirements.

5.3.3 Structure Requirements

Any new or substantially improved structure proposed to be constructed in the floodplain shall meet the following special conditions:

- (a) The flood protection elevation shall be established as the existing 500-year flood elevation or the future 100-year flood elevation (if available) whichever is higher.
- (b) The minimum finished floor elevation (FFE) intended for human occupancy shall be equal to or higher than one (1) foot above the flood protection elevation. Those portions of such structures not intended for human occupancy shall be either equal to or higher than the flood protection elevation. All other related facilities thereto such as electrical equipment, water service and sanitary sewer connections shall be either equal to or higher than the flood protection elevation or shall be flood proofed to the flood protection elevation.
- (c) The Director will authorize individual exceptions to section 5.3.3(b) only where it can be shown that flood proofing is acceptable from an engineering standpoint.

5.3.4 Post Construction Requirements

The applicant must provide as-built certification for all new or substantially improved structures constructed in the 500-year floodplain. As-built certification will include, at a minimum, the lowest finished floor elevation, the lowest adjacent grade elevation, and the elevation of any electrical equipment. The Director may request more as-built information as needed. The applicant must also provide finished floor elevation certificates for all habitable structures constructed in the floodplain. A registered land surveyor or professional engineer in the State of Tennessee must certify these elevation certificates.

5.4 Flood Proofing Measures.

5.4.1 General Flood Proofing Requirements

Flood proofing measures such as the following shall be designed consistent with the 500-year flood elevation for the particular area, and flood velocities, forces and other factors associated with the 500-year flood elevation. The Director shall require that the applicant submit a plan or document certified by a registered professional engineer or architect in the State of Tennessee that the flood proofing measures are consistent with the flood protection elevation for the particular area. Flood proofing measures include:

- (1) Anchorage to resist flotation and lateral movement.
- (2) Installation of watertight doors, bulkheads and shutters.
- (3) Reinforcement of walls to resist water pressures.
- (4) Use of paints, membranes or mortars to reduce seepage of water through walls.
- (5) Addition of mass or weight to structures to resist flotation.
- (6) Installation of pumps to lower water levels in structures.
- (7) Construction of water supply and waste treatment systems to prevent the entrance of floodwaters.
- (8) Pumping facilities for subsurface drainage systems for buildings to relieve external foundation wall and basement floor pressures.
- (9) Construction to resist rupture or collapse, caused by water pressure or flotation debris.
- (10) Cutoff valves on sewer lines or the elimination of gravity flow basement drains.

5.4.2 Residential Flood Proofing

Flood proofing of new residential structures in Knox County shall be prohibited.

5.5 Developments Within Floodways

Encroachments within the floodways (floodway encroachments) shall be prohibited except where it can be shown by a registered professional engineer in the State of Tennessee that the proposed development will have “no rise” on the existing base flood elevations and floodway elevations. Floodway boundaries can be modified, with approval of the Director, through the Letter of Map Revision (LOMR) process outlined in 44 CFR Part 65.

5.6 Developments in SFHAs Without Base Flood Elevations

5.6.1 Areas Requiring Flood Studies

Persons responsible for property developments that are determined to be in the SFHAs of Knox County, but where no base flood data has been provided or where no floodways have been provided (unnumbered A zones), must prepare and submit a floodplain development permit as outlined in section 5.3. If the project is greater than 40 lots or 10 acres, the applicant shall provide base flood elevation and floodway data in accordance with FEMA Contractor Standards.

5.6.2 Floodway Data Not Available

If floodway data are not prepared, no encroachments, including fill material or structures shall be located within a distance of the stream-bank equal to five times the width of the stream at the top of bank or twenty feet on each side from top of bank, whichever is greater, unless certification by a registered professional engineer in the State of Tennessee is provided demonstrating that such encroachments shall not result in any increase in flood levels during the occurrence of the base flood discharge.

5.6.3 Base Flood Elevations Not Available

If base flood elevations are not prepared, the Director shall provide guidance on minimum FFE requirements.

5.7 Developments in Unstudied Areas

Persons responsible for property developments greater than the lesser of 40 lots or 10 acres that are outside the SFHA, but adjacent to stream channels that have a contributing drainage area of one square mile or greater, shall provide base flood elevation and floodway data according to FEMA Contractor Standards. For areas with a drainage area less than 1 square mile or smaller developments, the provisions in section 5.6.2 and 5.6.3 shall apply.

5.8 Requirements for Developments that Drain to Sinkholes

- (a) Copies of the appropriate permits from TDEC shall be required prior to approval of a stormwater management plan for developments and redevelopments on property that includes a sinkhole. After review of these permits, the Director may require additional information related to structural integrity and flood protection. If the proposed development does not require TDEC approval, a letter from TDEC stating that a TDEC permit is not required shall be submitted prior to the approval of a stormwater management plan.
- (b) For site development or redevelopment projects that must satisfy the flood protection criteria provisions in section 4.5.4 that have sinkholes located entirely within the development boundaries, calculations shall be provided showing that 100-year frequency, 24-hour design storm will not flood any structures assuming plugged conditions (0 cfs outflow) for the sinkhole. If the contributing watershed is less than 50 acres and there is documented evidence that resurgence is not a contributing factor to flood elevations, calculations shall be provided showing that there will not be a rise in the sinkhole floodplain elevation or a decrease in the sinkhole floodplain storage volume between the pre-and post-developed conditions for the 100-year frequency, 4-day duration storm (7.8 inches, over a 4 day period), assuming plugged conditions (0 cfs outflow) for the sinkhole. These calculations must include the entire contributing watershed for the sinkhole. An easement is required around the sinkhole to include an area that is a minimum of five (5) feet horizontally outside the highest closed contour.
- (c) For site development or redevelopment projects that must satisfy the flood protection criteria provisions in section 4.5.4 that have sinkholes located partially on site, calculations shall be provided showing that there will not be a rise in the sinkhole floodplain elevation or a decrease in the sinkhole floodplain storage volume between the pre- and post-developed conditions for the 100-year frequency, 24-hour duration storm, assuming plugged conditions (0 cfs outflow) for the sinkhole. If the contributing watershed is less than 50 acres and there is documented evidence that resurgence is not a contributing factor to flood elevations, calculations shall be provided showing that there will not be a rise in the sinkhole floodplain elevation or a decrease in the sinkhole floodplain storage volume between the pre-and post-developed conditions for the 100-year frequency, 4-day duration storm (7.8 inches, over a 4 day period), assuming plugged conditions (0 cfs outflow) for the sinkhole. These calculations must include the entire contributing watershed for the sinkhole. An easement is required at a minimum of five (5) feet horizontally outside the highest closed contour on the section of the sinkhole located on the developed property. A rise in the 100-year water surface elevation is allowable when no structures will be flooded and all parties with ownership of the sinkhole agree in writing to allow the rise. In this case, an easement is required around the sinkhole to include an area that is a minimum of five (5) feet horizontally outside the highest closed contour.
- (d) Retention of stormwater runoff or satisfaction of the provisions stated in section 5.8.1(c) is required for developments and redevelopments that require approval of a stormwater management plan and are located in one of the following watersheds:
 - (1) Ten Mile Creek;
 - (2) Sinking Creek;
 - (3) Harrell Hills watershed (near Cranberry Dr., Clairmont Dr., and Gaines Rd.);
 - (4) The Dead Horse Lake/Dutchtown Road sinkhole area;

- (5) Any watershed area which will drains exclusively to a sinkhole;
 - (6) Any area of known flooding where deemed necessary by the Director.
- (e) Retention facilities shall be designed so that the overflow in the 1-year, 2-year, 5-year, 10-year, 25-year and 100-year design storms meet the pre-developed discharges in addition to retaining the difference in the pre-developed and post-developed 100-year design storm. In basins or sub-basins where there is a documented historical draw down time for the sinkhole or region being drained to, it may be acceptable for a detention pond to be used instead of retention. For detention to be approvable, the draw down time of the detention pond shall be a minimum of one and a half times the draw down time for the region.
- (f) The Director has authority to condition the approval of a permit upon the compliance with additional requirements, including but not limited to measures to avoid and/or protect the sinkhole throat, detention, conveyance facilities, or other stormwater management solutions required to reduce the adverse impact of the proposed development on other properties or on the subject development.

5.9 Degree of Flood Protection

The degree of flood protection intended to be provided by this ordinance is considered reasonable for regulatory purposes, and is based on engineering and scientific methods of study. Larger floods may occur on occasions, or the flood height may be increased by man-made or natural causes, such as bridge openings restricted by debris. This ordinance does not imply that areas outside the 500-year floodplain or land uses permitted within such areas will always be totally free from flooding or flood damages. Nor shall this ordinance create a liability on the part of, or a cause of action against Knox County or any officer or employee thereof for any flood damages that may result from implementation of this ordinance.

SECTION 6. WATER QUALITY BUFFERS

6.1 General Requirements

- (a) Water quality buffers shall be established, protected and maintained along all community waters, as set forth herein and in the Knox County Stormwater Management Manual, as amended, in all new developments and redevelopments requiring a stormwater management plan and/or recording of a plat.
- (b) Developments that have received approval of a stormwater management plan, or developments for which a stormwater management plan was not required prior to the effective date of this ordinance shall be exempted from the requirements of this section.
- (c) Water quality buffer areas shall be included in the Operations and Maintenance Plan for the development, and therefore shall be covered by Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices. These documents shall be prepared in accordance with section 10 of this ordinance and the Knox County Stormwater Management Manual, as amended.
- (d) All areas of the water quality buffer, including streambanks, shall be left in a stabilized condition upon completion of construction activities. No actively eroding, bare or unstable areas shall remain, unless approved by the Director.
- (e) The Director may require permanent boundary markers, in the form of signage approved or provided by the Director. Such markers shall be installed prior to recording of the final plat,

and the issuance of a Certificate of Occupancy. The Director has the authority to require replacement of permanent boundary markers that have been removed or destroyed.

- (f) Water quality buffers shall be placed into a permanent water quality easement that is recorded with the deed. For water quality buffer areas that are not publicly owned, the easement shall be held by one of the following non-governmental entities, provided that the entity meets the minimum criteria stated in the Knox County Stormwater Management Manual, as amended:
 - (1) A viable third party such as a land trust, land management company, or utility;
 - (2) A viable homeowners association.
- (g) If neither of the entities identified in section 6.1(f) are able to provide perpetual protection of the water quality buffer, then the property owner shall assume responsibility for maintenance and protection of the buffer area.

6.2 Protection During Construction

- (a) Unless otherwise provided herein, all water quality buffer areas shall remain protected from land disturbance, vegetation removal, construction of impervious surfaces, and discharges of sediment and other construction-related wastes during development activities.
- (b) Water quality buffers shall be clearly identified on all construction drawings, and marked with the statement “Water Quality Buffer. Do not disturb.”
- (c) Water quality buffers cannot be encroached upon or disturbed during project construction, unless they are being established, restored, or enhanced in accordance with an approved Buffer Enhancement Plan.

6.3 Design Criteria

Water quality buffers shall be applied to community waters as stated in this section.

6.3.1 Streams

Water quality buffers shall be applied in the following manner to streams that are identified as community waters:

- (a) A water quality buffer having a minimum width of fifty (50) feet shall be provided along each side of a stream, as measured perpendicular from the top-of-bank of the active channel. For those streams that do not have a defined top-of-bank, the buffer shall be measured perpendicular from the centerline of the stream.
 - (1) The inner zone of the water quality buffer shall have a minimum width of 25-feet, measured perpendicular from the top-of-bank of the active channel and extending landward. For those streams that do not have a defined top-of-bank, the buffer shall be measured perpendicular from the centerline of the stream.
 - (2) The inner zone shall remain undisturbed in accordance with the policies set forth in the Knox County Stormwater Management Manual, as amended.
 - (3) The vegetative target for the inner zone is mature, moderately dense forest (i.e., trees) with woody shrubs and understory vegetation. Where forest vegetation has the potential to impact traffic safety or limit access, areas immediately surrounding approved stream

crossings and utility access areas that are located in the inner zone may be vegetated with dense grasses.

- (4) The outer zone of the water quality buffer shall be measured from the edge of the inner zone and shall extend the perpendicular distance required to obtain a total minimum buffer width of 50-feet, when combined with the width in the inner zone.
 - (5) The minimum vegetative target for the outer zone is mowed, dense grasses that cover the entire zone.
 - (6) The outer zone can be disturbed and graded, but must be revegetated in accordance with the policies set forth in the Knox County Stormwater Management Manual, as amended.
- (b) The width of water quality buffers located on streams may be modified by averaging as set forth herein, and in accordance with policies stated in the Knox County Stormwater Management Manual, as amended, provided that the following conditions are met:
- (1) The average width of the averaged buffer within the boundaries of the property to be developed must be at least fifty (50) feet; and,
 - (2) The width of the buffer shall not be less than twenty-five (25) feet at any location, except where stream crossings have been approved by the Director.
 - (3) Those areas of the buffer having a minimum width of twenty-five (25) feet (or less at approved stream crossings) can comprise no more than fifty (50) percent of the buffer length.
- (c) Buffer averaging is required for water quality buffers that have stream crossings.
- (d) Buffer width averaging is prohibited for any portion of developments that have (or will have) the land uses listed below.
- (1) Slope protection areas, as identified by the Metropolitan Planning Commission, and areas that have slopes greater than 15%, that are located within 50 feet of the stream to be buffered
 - (2) Developments or facilities that include on-site sewage disposal and treatment system drainfields (i.e., septic systems), raised septic systems, subsurface discharges from a wastewater treatment plant, or land application of biosolids or animal waste;
 - (3) Landfills (demolition landfills, permitted landfills, close-in-place landfills);
 - (4) Junkyards;
 - (5) Commercial or industrial facilities that store and/or service motor vehicles;
 - (6) Commercial greenhouses or landscape supply facilities;
 - (7) Developments or facilities that have commercial or public pools;
 - (8) Agricultural facilities, farms, feedlots, and confined animal feed operations; and,
 - (9) Animal care facilities, kennels, and commercial/business developments or facilities that provide short-term or long-term care of animals;
 - (10) Other land uses deemed by the Director to have the potential to generate higher than normal pollutant loadings.

6.3.2 Ponds and Lakes

- (a) Water quality buffers shall be applied in the following manner to ponds and lakes that are identified as community waters:

- (1) For ponds and lakes that are directly connected to other community waters, a minimum buffer of 25-feet shall be provided around the perimeter of ponds and lakes. The buffer shall be measured perpendicular from the topographic contour that defines the normal pool elevation.
 - (2) The minimum vegetative target for the pond or lake buffer is mowed, dense grasses that cover the entire zone.
 - (3) The pond or lake buffer can be disturbed and graded but must be revegetated in accordance with the policies set forth in the Knox County Stormwater Management Manual, as amended.
- (b) Water quality buffers shall not be required around the perimeter of hydraulically disconnected ponds, or ponds that are newly designed and constructed for the purposes of stormwater quality treatment.

6.3.3 Wetlands

- (a) Water quality buffers shall be applied in the following manner to wetlands that are identified as community waters:
- (1) A minimum buffer width of 25-feet shall be provided around the perimeter of a wetland, as measured from the outermost edge of the wetland as determined by USACE, NRCS, TDEC, or other qualified professional.
 - (2) The vegetative target for the wetland buffer is undisturbed, mature, moderately dense forest (i.e., trees) with woody shrubs and understory vegetation.
 - (3) The wetland buffer shall remain undisturbed in accordance with the policies set forth in the Knox County Stormwater Management Manual, as amended.
- (b) Water quality buffers are not required for wetlands designed and constructed for the purposes of stormwater quality treatment.

6.3.4 Steep Slopes

Where slopes greater than 15%, or where Slope Protection Areas as identified by the Metropolitan Planning Commission, are located within 50 feet of the community water, one of the two following conditions shall apply:

- (1) the buffer width in the steep slope areas shall be adjusted to include an additional twenty-five (25) feet, giving a total buffer width of seventy-five (75) feet; or,
- (2) the buffer in steep slope areas shall have a minimum width of fifty (50) feet and shall consist of one-zone, comprised of undisturbed, forested vegetation, as described in section 6.3.1(a)(3).

6.4 Use of Buffer Areas

- (a) The following uses are permitted in the inner zone of stream buffers and the wetland buffer:
- (1) Conservation uses, wildlife sanctuaries, nature preserves, forest preserves, fishing areas, and passive areas of parklands, provided that no impervious surfaces are created;
 - (2) Recreational trails and greenways that are either unpaved or paved with pervious materials;

- (3) Education/scientific research that does not require any of the prohibited activities identified in section 6.4(d);
 - (4) Stream restoration projects, facilities and activities, with prior approval of the Director;
 - (5) Infrastructure features such as roads, bridges, storm drainage, stormwater management facilities that are appropriate for use in a riparian zone (i.e., wetlands, buffers), and utilities, provided that they adhere to the following standards:
 - i. The width of the disturbance for the feature is the minimum required to allow for maintenance and access;
 - ii. The angle of the buffer crossing shall be perpendicular (with up to 15% deviation off perpendicular) to the stream in order to minimize clearing requirements; and,
 - iii. The number of buffer crossings is minimized, with no more than one crossing every one-thousand (1,000) linear feet. The Director has the authority to approve additional crossings if justified by traffic, safety, or access issues.
 - iv. Multiple driveway or private roadway crossings of a stream or a wetland within one development shall be prohibited, unless approved by the Director after the property owner has demonstrated that the development has been planned in such a manner that driveway and private roadway crossings have been minimized to the maximum extent possible.
- (b) Access areas for utilities (e.g., manholes) that are located in the buffer area are allowed in buffer areas. Access areas must be minimized to the maximum extent possible, and shall be located no less than every 300 feet unless warranted by valid safety, access or service issues.
- (c) The following uses are permitted in the outer zone of stream buffers and in buffers surrounding lakes and ponds:
- (1) All activities that are allowable in the inner zone of stream buffers.
 - (2) Yards, trails, greenways, picnic areas, and passive recreation areas as long as they do not have impervious surfaces. Passive recreation areas are defined as recreational activities that do not require hardened, impervious surfaces to be constructed, such as soccer fields without parking and other facilities, walking trails that are either unpaved or paved with permeable materials; bird watching; or hiking. Passive recreation areas do not include golf courses, ball fields that require the construction of impervious surfaces or the maintenance of open soil areas (such as baseball infields), picnic shelters or parking.
- (d) The following activities are prohibited within water quality buffers without prior approval of such activities by the Director:
- (1) Spraying, filling, dumping, and animal grazing;
 - (2) Use, storage, or application of pesticides, herbicides, fertilizers, or household or commercially-generated wastes;
 - (3) Concentrated animal lots or kennels;
 - (4) Use or storage of motorized vehicles, except for maintenance approved by the Director, or emergency use;
 - (5) Creation of impervious surfaces, except for those impervious surfaces that are included in approved stream crossings;
 - (6) Other uses as deemed by the Director to have the potential to generate higher than normal pollutant loadings.

6.5 Allowable Disturbances

- (a) The following disturbances are permitted in the inner zone of stream buffers and the wetland buffer:
 - (1) Limited disturbances to remove and/or plant trees or vegetation, as required to maintain the overall health of vegetation in the buffer area, performed in accordance with the requirements stated in the Knox County Stormwater Management Manual, as amended.
 - (2) Removal of individual trees that are in danger of falling, causing damage to dwellings or other structures, are dead or diseased, or have been heavily damaged by storms. The root wad or stump should be left in place, where feasible, to maintain soil stability.
 - (3) Disturbances necessary for the construction of utility access areas and approved stream crossings.
 - (4) Disturbances as required to establish and/or restore buffer areas in accordance with an approved Buffer Enhancement Plan.
- (b) The following disturbances are allowed in the outer zone of stream buffers and in buffers surrounding lakes and ponds:
 - (1) Clearing, grubbing, grading, and revegetation, performed in accordance with an approved stormwater management plan.
 - (2) Disturbances necessary for the construction of utility access areas and approved stream crossings.
 - (3) Ongoing vegetation maintenance activities such as mowing, bush-hogging, and weed-eating. No chemical applications are allowed in the outer zone.

6.6 Water Quality Buffer Enhancement

- (a) The property owner may restore or enhance vegetation within a water quality buffer with prior approval of a Buffer Enhancement Plan by the Director.
- (b) The Director shall have the authority to require a property owner to restore or enhance water quality buffers that have been disturbed or do not meet, or have the potential to meet through natural vegetative succession, the vegetative targets for buffer areas that are defined herein, and/or in the Knox County Stormwater Management Manual, as amended.
- (c) The required elements of a Buffer Enhancement Plan shall be provided in the Knox County Stormwater Management Manual, as amended.
- (d) One (1) year after completion of the restoration or enhancement activity, the portion of the drainage bond related to the buffer enhancement area can be released provided that the enhancement area has been restored or enhanced as required, that soils within the buffer area are stable and not eroding, and that buffer vegetation is healthy and growing as expected.

SECTION 7. EROSION PREVENTION AND SEDIMENT CONTROL

7.1 Off-Site Sedimentation Prevention

Adequate erosion prevention and sediment control measures shall be employed for all land disturbing activities in conformance with the provisions of this ordinance and guidance materials referenced herein to minimize erosion and prevent off-site sedimentation. Land disturbing or construction activities that do not employ erosion prevention and sediment controls in

conformance with this ordinance and that cause off-site sedimentation or sediment discharges to Waters of the State or onto adjacent properties shall be in violation of this ordinance.

7.2 General Requirements

- (a) Construction site operators shall implement appropriate erosion prevention and sediment control best management practices.
- (b) The design, installation, maintenance and inspection of erosion prevention and sediment control design standards and best management practices shall be performed in accordance with the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities, the TDEC Erosion & Sediment Control Handbook, and the Knox County Stormwater Management Manual, as amended. Where the provisions of this section, the Knox County Stormwater Management Manual, as amended, or another regulation conflict or overlap, that regulation which is more restrictive or imposes higher standards or requirements shall prevail.
- (c) Additional requirements for discharges into impaired or high quality waters that are defined in the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities shall be implemented for all priority construction activities located in Knox County, as defined by this ordinance.
- (d) The Director may require more stringent standards or best management practices than those required by the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities for priority construction activities or where deemed necessary.
- (e) Discharges from sediment basins and traps must be through a pipe or a conveyance lined with rip-rap or other stabilized spillway so that the discharge does not cause erosion.
- (f) Sediment laden water to be pumped from excavation and work areas must be held in settling basins or filtered prior to its discharge into surface waters. Water must be discharged onto a stabilized outlet point so that the discharge does not cause erosion and sedimentation.
- (g) For installation of any waste disposal systems on site, or sanitary sewer or septic system, the plan shall provide for the necessary sediment controls. Owners or operators must also comply with applicable State and/or local waste disposal, sanitary sewer or septic system regulations for such systems, to the extent that these are located within the permitted area.
- (h) Construction site operators shall control other construction related wastes, such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the construction site that may cause adverse impacts to water quality.
- (i) Construction materials buried onsite shall meet Section 4.8 of the Knox County Zoning Ordinance.
- (j) All discharges from a site shall leave the property at non-erosive velocities and volumes.
- (k) The portion of the performance bond pertaining to erosion prevention and sediment control shall be released only after all soil-disturbing activities at the site have been completed, and perennial vegetation covers seventy (70) percent or more of all unpaved areas.
- (l) The Director shall have the authority to require greater than 70 percent coverage of perennial vegetation for release of the erosion prevention and sediment control portion of the performance bond if site is a priority construction activity, has an elevated potential for erosion or off-site damages, or has caused past damages off-site due to sediment discharges.

SECTION 8. AS-BUILT CERTIFICATIONS

- (a) Prior to the release of a bond, an As-Built Certification shall be provided to the Director, showing that all drainage structures or facilities, facility volumes, size, slopes, locations, elevations, and hydraulic structures have been field verified, represent the as-built field conditions, and comply with the approved stormwater management plan(s). Features such as roadway lines, grades, cross slopes, locations, contours, and elevations shall be provided to verify approved plans as required by the Director. Other contents of the As-Built Certification must be provided, in accordance with the policies stated in the Knox County Stormwater Management Manual, as amended.
- (b) As-Built Certifications shall include sufficient design information to show that stormwater facilities will operate as approved. This shall include the existing (or before site development) peak flow discharges, the after site development peak flow discharges, and/or volumes of stormwater runoff based on the proposed site development, as well as all necessary computations used to determine the reduced peak flow rates for the design storms.
- (c) The As-Built Certification must be stamped by the appropriate design professional required to stamp the original stormwater management plan, as stated in section 4.1, and/or a registered land surveyor licensed to practice in the State of Tennessee.

SECTION 9. MONITORING AND INSPECTIONS

9.1 Right-of-Entry

- (a) The Director may enter upon any property which discharges or contributes, or is believed to discharge or contribute, to stormwater runoff or the stormwater system system, stream(s), natural drainageway(s) or via any other private or public stormwater management system during all reasonable hours to monitor, remove foreign objects or blockages, and to inspect for compliance with the provisions of this ordinance.
- (b) Failure of a property owner to allow such entry onto a property for the purposes set forth in section 9.1(a) shall be cause for the issuance of a stop work order, withholding of a certificate of occupancy, and/or civil penalties and/or damage assessments in accordance with section 16 of this ordinance.

9.2 During Grading or Construction

During grading or construction, site inspections shall be performed in accordance with following requirements:

- (a) The owner or operator shall conduct site inspections in accordance with the requirements stated in the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities. The Director has the authority to impose more stringent inspection requirements as necessary for purposes of water quality protection and public safety.
- (b) Site inspection documentation shall be maintained on-site during normal working hours by the owner or operator or designee and shall be made available for review by the Director immediately upon request.
- (c) The following areas and items must be inspected as set forth in section 9.2(a):
 - (1) all disturbed areas that are not stabilized;

- (2) any areas used for storage of materials that are exposed to precipitation;
- (3) borrow or waste areas associated with the construction activity;
- (4) temporary and permanent stormwater management facilities;
- (5) locations where vehicles enter and exit the site;
- (6) stormwater outfall locations;
- (7) erosion prevention and sediment control measures; and
- (8) structural and non-structural stormwater management facilities and best management practices.

9.3 After Construction

Once the site has been stabilized and construction has ceased, routine inspections for the stormwater management facilities and best management practices are required, based on the guidance provided in the Operations and Maintenance Plan and “Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices” for the property, as set forth in section 10 of this ordinance. Routine inspections are the responsibility of the property owner, or the owner(s) of the stormwater management facility(s) and best management practice(s).

SECTION 10. MAINTENANCE REQUIREMENTS

10.1 General

- (a) The Director may order corrective actions to erosion prevention and sediment control measures, stormwater management facilities, and/or the stormwater system as are necessary to properly maintain the stormwater systems within Knox County for the purposes of flood prevention, channel protection, water quality treatment and/or public safety. If the property owner(s) fails to perform corrective actions ordered by the Director, the Director shall have the authority to order corrective action, to be performed by the County or others. In such cases where a performance bond exists, the County shall utilize the bond to perform the corrective actions. In such cases where a performance bond does not exist, the property owner shall reimburse Knox County for double its direct and related expenses. If the property owner fails to reimburse Knox County, Knox County is authorized to file a lien for said costs against the property and to enforce the lien by judicial foreclosure proceedings.
- (b) This ordinance does not authorize access to private property by the property owner or site operator. Arrangements concerning removal of sediment on adjoining property must be settled by the owner or operator with the adjoining landowner.

10.2 During Grading or Construction

- (a) The owner or operator shall at all times properly operate and maintain all erosion prevention and sediment control measures, stormwater management facilities, and related appurtenances which are installed or used by the property owner to achieve compliance with this ordinance.
- (b) The owner or operator shall maintain erosion prevention and sediment control and construction site measures in the manner specified by the State of Tennessee General NPDES Permit for Discharges of Stormwater Associated with Construction Activities and the TDEC Erosion & Sediment Control Handbook, as amended, by qualified personnel that are

provided by the owner or operator of the land disturbing activity. Other technical guidance for site environmental controls are provided or referenced in the Stormwater Management Manual, as amended.

- (c) If sediment escapes the construction site, off-site accumulations of sediment that have not reached a stream must be removed at a frequency sufficient to minimize off-site impacts. Fugitive sediment that has escaped the construction site and has collected in a street must be removed so that it is not subsequently washed into storm sewers and streams by the next rain and/or so that it does not pose a safety hazard to users of public streets. Owners and operators shall not initiate remediation/restoration of a stream without consulting TDEC first, and such activities shall be performed in accordance with all Knox County, state, and Federal laws and regulations.

10.3 After Construction

- (a) The owner(s) of stormwater management facilities and/or best management practices shall at all times properly operate and maintain all facilities and systems of stormwater treatment and control (and related appurtenances), and all best management practices in such a manner as to maintain the full function of the facilities or best management practices which are installed or used by the property owner(s) to achieve compliance with this ordinance. Maintenance of privately-owned stormwater management facilities shall be performed at the sole cost and expense of the owner(s) of such facilities.
- (b) Prior to release of the performance bond, the property owner shall provide Knox County with an accurate As-Built Certification, a final Operations and Maintenance Plan, which shall include an executed legal document entitled “Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices”. The property owner shall record the Operations and Maintenance Plan in the Office of the Knox County Register of Deeds. The location of the stormwater facility(s) and best management practices, the recorded location of the Covenants document, and inspection and maintenance guidance that outlines the property owner’s responsibility shall be shown on a plat that is also recorded in the Office of the Knox County Register of Deeds.
- (c) Developments and redevelopments that have received approval of a stormwater management plan after the effective date of this ordinance shall maintain stormwater management facilities and best management practices in accordance with the maintenance guidance provided in the Operations and Maintenance Plan and the Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices.
- (d) The Operations and Maintenance Plan shall specify the minimum inspection and maintenance requirements to be performed at necessary intervals by the property owner(s). The Operations and Maintenance Plan shall be prepared in accordance with the requirements stated in the Knox County Stormwater Management Manual, as amended.
- (e) In order to provide access to stormwater and/or water quality facilities by personnel, vehicles and equipment, the property owner(s) shall provide an unobstructed, traversable twelve (12) foot wide access within a minimum twenty (20) foot wide easement from a public street, driveway, or Joint Permanent Easement in strict accord with the stormwater management plan and any conditions required by the Director.
- (f) The Covenants for Permanent Maintenance of Stormwater Facilities and Best Management Practices shall grant Knox County permission to enter the property to inspect any stormwater

facility or best management practices for proper functioning, maintenance and protection from disturbances (if applicable).

- (g) The removal of sediment and/or other debris from stormwater management facilities and best management practices shall be performed in accordance with all Knox County, state, and federal laws. Requirements for sediment removal and disposal are presented in the Knox County Stormwater Management Manual, as amended. The Director may stipulate additional requirements if deemed necessary for public safety.

SECTION 11. PERMIT CONTROLS AND STORMWATER SYSTEM INTEGRITY

- (a) Any alteration, improvement, or disturbance to existing drainage channels, pipes, or other stormwater systems that convey public water shall be prohibited without authorization from the Director. This does not include alterations that must be made in order to maintain the intended performance of the drainage system.
- (b) Other State and/or Federal permits that may be necessary for construction in and around streams and/or wetlands shall be approved through the appropriate lead regulatory agency prior to submittal of a stormwater management plan to Knox County.
- (c) Any non-permitted drainage system, construction or fill located within a floodplain shall, upon written notice from the Director, be removed at the property owner's expense.

SECTION 12. NON-STORMWATER DISCHARGES

12.1 Illicit Discharges

Except as hereinafter provided, all non-stormwater discharges into the Municipal Separate Storm Sewer System of Knox County are prohibited and are declared to be unlawful.

12.2 Prohibitions

No person shall:

- (a) Connect, or allow to be connected, any sanitary sewer to the stormwater system.
- (b) Cause or allow an illicit discharge to the stormwater system, or any component thereof, or onto driveways, sidewalks, parking lots, sinkholes, creek banks, or other areas draining to the stormwater system. Illicit discharges include, but are not limited to:
 - (1) Sewage discharges or overflows, including Sanitary Sewer Overflows (SSOs);
 - (2) Discharges of wash water resulting from the hosing or cleaning of gas stations, auto repair garages, or other types of automotive services facilities;
 - (3) Discharges resulting from the cleaning, repair, or maintenance of any type of equipment, machinery, or facility including motor vehicles, cement-related equipment, and port-a-potty servicing, etc.;
 - (4) Discharges of wash water from mobile operations such as mobile automobile washing, steam cleaning, power washing, and carpet cleaning, etc;
 - (5) Discharges of wash water from the cleaning or hosing of impervious surfaces in industrial and commercial areas including parking lots, streets, sidewalks, driveways, patios, plazas, work yards, and outdoor eating or drinking areas, etc.;

- (6) Discharges of runoff from material storage areas containing chemicals, fuels, grease, oil, or other hazardous materials;
- (7) Discharges of pool or fountain water containing chlorine, biocides, or other chemicals; discharges of pool or fountain filter backwash water;
- (8) Discharges of sediment, or construction-related wastes, etc.;
- (9) Discharges of food-related wastes (e.g., grease, fish processing, and restaurant kitchen mat and trash bin wash water, etc.).

12.3 Allowable Discharges

- (a) The following discharges shall not be in violation of this ordinance:
 - (1) Water line flushing;
 - (2) Landscape irrigation;
 - (3) Diverted stream flows or rising groundwater;
 - (4) Infiltration of uncontaminated groundwater [as defined at 40CFR35.2005(20)] to separate storm drains;
 - (5) Pumping of uncontaminated groundwater;
 - (6) Discharges from potable water sources, foundation drains, uncontaminated air conditioning condensation, irrigation waters, springs, water from crawl space pumps, or footing drains;
 - (7) Lawn watering;
 - (8) Individual non-commercial car washing on residential properties; or car washing of less than two (2) consecutive days in duration for a charity, non-profit fund raising, or similar non-commercial purpose;
 - (9) Flows from riparian habitats and wetlands;
 - (10) Dechlorinated swimming pool discharges;
 - (11) Incidental street wash water from street cleaning equipment designed for cleaning paved surfaces and limiting waste discharges;
 - (12) Street deicing for public safety;
 - (13) Any activity authorized by a valid NPDES permit; and
 - (14) Any flows resulting from firefighting.
- (b) Discharge due to water line flushing through a direct connection to the waters of the State of Tennessee is prohibited. Persons responsible for water line flushing activities are required to de-chlorinate discharges before such discharges come in contact with waters of the State of Tennessee.
- (c) If the Director finds that any activity, including but not limited to any of the activities listed in section 12.3, are found to cause or may cause sewage, industrial wastes, other wastes, or other non-stormwater discharges to be discharged into the stormwater system, the Director shall so notify the person performing such activities, and shall order that such activities be stopped or conducted in such a manner as to avoid the discharge of sewage, industrial wastes or other wastes into the stormwater system. The Director may require submittal of a stormwater pollution prevention plan if the activity, or actions taken to cease the activity,

have the potential to cause further releases of pollution or non-stormwater discharges to the stormwater system.

12.4 Notification and Monitoring Requirements

- (a) As soon as any person has knowledge of any illicit spills or discharges to the stormwater system in violation of this ordinance, such person shall immediately notify the Department of Engineering and Public Works of this discharge. If such person is directly or indirectly responsible for such discharge or responsible for the operation of the system or business, then such person shall also take immediate action to ensure the containment and cleanup of such discharge and shall confirm such notification with a written report to the Director within three (3) calendar days. At a minimum, the written report for any illicit discharge shall include:
- (1) Date and time of the discharge
 - (2) Location of the discharge
 - (3) Material or substance discharged
 - (4) Duration and rate of flow
 - (5) Total volume discharged
 - (6) Total volume recovered
 - (7) Cause or reason for the discharge
 - (8) Remediation and containment action taken
 - (9) Material Safety Data Sheets (MSDS) for the discharged material
 - (10) Action taken to prevent further discharges
 - (11) Description of any environmental impact
- (b) The Director may require any person engaging in any activity or owning any property, building or facility (including but not limited to a site of industrial activity) to undertake such reasonable monitoring of any discharge(s) to the stormwater system operated by the County and to furnish periodic detailed reports of such discharges.

12.5 Illegal Dumping

It shall be illegal for any person to intentionally dump liquids or solids that are considered priority pollutants by the U.S. Environmental Protection Agency (EPA) on the ground where there is potential exposure to rain or stormwater and potential for the pollutant to reach the Municipal Separate Storm Sewer System of Knox County.

SECTION 13. SEVERABILITY

- (a) Each separate provision of this ordinance is deemed independent of all other provisions herein so that if any provision or provisions of this ordinance shall be declared invalid, all other provisions thereof shall remain enforceable.
- (b) If any provisions of this ordinance and any other provisions of law impose overlapping or contradictory regulations, or contain any restrictions covering any of the same subject matter, that provision which is more restrictive or imposes higher standards or requirements shall govern.

SECTION 14. RESPONSIBILITY

Conformance with this ordinance is a minimum requirement and does not relieve the property owner, utility, facility operator, lessee, tenant, contractor, permittee, the equipment operator and/or any other person or entity doing work from applying sound judgment and taking measures which go beyond the scope of the requirements of this ordinance where necessary. Nor does this ordinance imply a warranty or the assumption of responsibility on the part of Knox County for the suitability, fitness or safety of any structure with respect to flooding, water quality, or structural integrity. This ordinance is a regulatory instrument only, and is not to be interpreted as an undertaking by Knox County to design any structure or facility.

SECTION 15. VARIANCES

- (a) Variances to the requirements of this ordinance shall be handled by the Knox County Board of Zoning Appeals as defined under section 6.60 of the Knox County Zoning Ordinance, titled Board of Zoning Appeals.
- (b) The Board of Zoning Appeals shall not approve variances that cause Knox County to be in violation of any state or Federal NPDES permit.

SECTION 16. PENALTIES AND APPEALS

- (a) Violations of this ordinance shall be cause for the requirement for corrective action(s), the issuance of a stop work order, withholding of a permit, withholding of permit inspections, withholding of a certificate of occupancy, and/or civil penalties and/or damage assessments as set forth below.
- (b) Any person who violates the provisions of this ordinance shall be subject to a civil penalty of not less than two hundred and fifty dollars (\$250.00) or more than five thousand dollars (\$5,000) per day for each day of each violation. Each day of violation may constitute a separate violation. Knox County shall give the alleged violator reasonable notice of the assessment of any civil penalty. Knox County may also recover all damages proximately caused to the County by such violations.
- (c) In assessing a civil penalty, the following factors may be considered:
 - (1) The harm done to the public health or the environment;
 - (2) Whether the civil penalty imposed will be a substantial economic deterrent to the illegal activity;
 - (3) The economic benefit gained by the violator;
 - (4) The amount of effort put forth by the violator to remedy this violation;
 - (5) Any unusual or extraordinary enforcement costs incurred by the municipality;
 - (6) The amount of penalty established by ordinance or resolution for specific categories of violations; and
 - (7) Any equities of the situation which outweigh the benefit of imposing any penalty or damage assessment.

- (d) In addition to the civil penalty in subsection (b) above, Knox County may also assess damages proximately caused by the violator to the County which may include any reasonable expenses incurred in investigating and enforcing violations of this part, or any other actual damages caused by the violation.
- (e) Notice shall be served upon the alleged violator either by personal service or certified mail. Where such methods are a known, reliable method of communication, notice may be additionally served by fax or regular mail. Upon receipt of notice from Knox County of the assessment of a civil penalty and/or damages, the alleged violator may request a meeting with the Director of Engineering and Public Works. Said request must be made in writing and received by the County within ten (10) business days after the date of the notice. The meeting shall be held within (10) business days of the request for the meeting. Within ten (10) business days after the meeting, the County shall issue a Second Notice to the alleged violator of its decision. If the alleged violator is dissatisfied with the decision of the County, the alleged violator may appeal said civil penalty or damage assessment to the Knox County Board of Zoning Appeals. Said appeal must be received by the Board within thirty (30) days after the date of the Second Notice. The appeal shall be heard by the Board at its next regularly scheduled meeting following receipt of the appeal. If a timely appeal of the Second Notice of damage assessment or civil penalty is not filed with the Board, the violator shall be deemed to have consented to the damage assessment or civil penalty and it shall become final. If the alleged violator files a timely appeal with the Board and the violator is dissatisfied with the decision of the Board, the alleged violator may appeal the decision of the Board pursuant to Tenn. Code Ann. § 27-8-101. Said appeal must be filed within thirty (30) days after the decision of the Board.
- (f) Whenever any damage assessment or civil penalty has become final because of a person's failure to appeal the damage assessment or civil penalty, Knox County may apply to the appropriate chancery court for a judgment and seek execution of such judgment. The court, in such proceedings, shall treat the failure to appeal such damage assessment or civil penalty as a confession of judgment.