



KNOX COUNTY, TENNESSEE

STORMWATER MANAGEMENT PLAN CHECKLIST

Date: _____ Number of times reviewed (including this one): _____

Project Name: _____ Type of review requested: _____

Address: _____

Zoning Classifications: _____ Variances? (BZA, Use on Review, Co. Commission, etc.) Yes No

Nature of Variances: _____

This checklist presents the required elements of a stormwater management plan. This checklist must be submitted to Knox County Engineering along with the stormwater management plan. Each element presented in this list must be checked "Yes", as applicable to the site. Checks placed under the "No" column must be justified in a written statement attached to this checklist. Elements of the stormwater management plan that are not applicable for the site must be marked as "N/A".

GENERAL INFORMATION

- Yes No N/A
- Yes No N/A

1. Date(s) of preparation and any revision(s).

2. Seal/signature of responsible engineer.

3. Vicinity map including:

- Yes No N/A

- a. North arrow
- b. Scale
- c. Adjacent roadways
- d. Boundary lines of site
- e. Onsite and nearby watercourses
- f. Other necessary information to locate the development site

4. Maps (to scale) which clearly show:

- Yes No N/A

- a. The following lines with accurate bearings and distances:
 - Property boundaries
 - Lot lines
 - Right-of-way lines of streets and/or Joint Public Easements
 - Utility access or other easements
- b. The location of the
 - 100-year floodplain
 - 500-year floodplain
 - 100-year regulatory floodway
 - Required minimum floor elevations (MFEs)
 - ½ flood fringe line (also called the "floodplain no-fill" line)
- c. An Environmental Features Inventory, which shows the boundaries of streams (stream names must be shown if known), wetlands, sinkholes, springs, steep slopes (≥15%), forested areas and grassed areas. This requirement may be superseded where a regional conservation plan, such as the Beaver Creek Infrastructure Plan, exists. In such cases, the environmental features and protection corridors identified in the plan must be shown. Where a regional conservation plan exists, it may be possible to obtain such data from KGIS.

- Yes No N/A
- Yes No N/A
- Yes No N/A

- d. Water Quality Buffers
 - Location, width, outer boundary, and zone boundaries (on streams)
 - The statement "Water Quality Buffer. Do Not Disturb" clearly shown.
 - A description of the existing and proposed (if different from existing) vegetation in the water quality buffer areas must be included on the site plan, or as a separate description. For example, a statement on the site plan such as "undisturbed forest vegetation", or "early successional forest" is sufficient for the inner zone of a stream buffer provided that the existing vegetation, in fact, meets one of these descriptions.

- Yes No N/A
- Yes No N/A
- Yes No N/A
- Yes No N/A

- e. Dimensioned existing and proposed structures on and within 15 feet of the property boundaries
- f. Roof drainage directions
- g. Finished floor and grade at foundation elevations of all existing structures
- h. Cut and fill quantities for site work
- i. Impervious area information for the site
 - For non-residential sites, and for residential subdivisions or lots where the location and footprint of impervious surfaces are known, provide location and footprint area for all impervious surfaces, including buildings, roadways, driveways, sidewalks, parking lots, and out-buildings.



GENERAL INFORMATION (CONTINUED)

- i. Impervious area information for the site (continued)
- For residential subdivisions where the location(s) and footprint(s) for buildings are unknown, provide the impervious footprint for roadways, and the assigned % impervious value(s) for the site, or different areas of the site, as appropriate for the lot-layout. Percent impervious values are found in Volume 2, Chapter 2 of the Knox County Stormwater Management Manual. This option can only be utilized for residential sites.
5. Construction notes, specifications, and design details for any existing stormwater system components
6. Recommendations included in the soils engineering or engineering geology report incorporated in the plans and/or specifications
7. Dates and reference number of the soils report(s) together with the names, addresses and phone numbers of the firm(s) or individual(s) who prepared the report(s)
8. Established benchmark of known elevation to which every other elevation is referenced
9. Horizontal control
10. The following statement is required on all stormwater management plans:
'Adequate drainage, erosion and sediment control measures, best management practices, and/or other stormwater management facilities shall be provided and maintained at all times during construction. Damages to adjacent property and/or the construction site caused by the contractor's or property owner's failure to provide and maintain adequate drainage and erosion/sediment control for the construction area shall be the responsibility of the property owner and/or contractor.'
11. Map showing project is not in threatened species, endangered species or critical habitat areas; or a letter from TWRA giving approval for management practices.

DRAINAGE REPORT

- 1. Cover Sheet
a. Title of report
b. Date of report completion/submittal and dates of any revisions
c. Project name, address, and Knox County Building Permit File number, if applicable
d. Name, address, email address, and phone number of applicant
e. Name, address, email address, and phone number of engineering firm responsible for report preparation
f. Seal/signature of the Tennessee Registered Professional Civil Engineer responsible for preparing the report
g. A blank box, 1.5 inches (width) x 0.5 inches (height). "For Knox County Use Only" shall be just written above or below the box.
2. Table of Contents
a. All report pages, including any appendices, shall be numbered sequentially.
b. List of all tables and illustrations
3. Introduction
a. Location map showing the project in relation to adjacent properties, streets, and nearby watercourses
b. Description of the existing and proposed land use/project, drainage patterns, natural watercourses, drainage problems, and floodplain status within the development
c. Summary of any previous hydrologic/hydraulic studies or other information which pertain to the development or property
d. Effect of proposed grading and/or construction on major drainage conveyances
4. Objectives and Procedures Section
a. Brief summary of the purpose of the report in relation to the project (e.g., subdivision, single-lot residential, single-lot non-residential, etc.)
b. Description of the methodologies, assumptions, and procedures used in preparing the report.
c. Description of all applicable development standards, policies, stormwater requirements, and floodplain regulations to which the proposed development must adhere
5. Hydrology Section
a. Drainage maps (drawn to scale) for pre- and post-development conditions which clearly depict contributing watersheds, sub-basins, runoff concentration points, site outfalls, flow patterns, measured flow lengths, and topographic elevations and contours
b. Hydrologic data sheets, for both pre- and post-development conditions for each runoff concentration point including time of concentration calculations, rainfall intensities, runoff coefficients or curve numbers, and peak discharges
c. Summary table listing all runoff concentration points, corresponding drainage areas, calculated peak discharges for pre- and post-development conditions, and differences in discharges



DRAINAGE REPORT (CONTINUED)

5. Hydrology Section (continued)

Yes No N/A

d. Summary table for the downstream hydrologic analysis, including drainage areas, calculated peak discharges for pre- and post-development conditions, and differences in discharges at the outfall(s) of the site, 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

6. Hydraulics Section

Yes No N/A

a. Open channel design and capacity computations

Yes No N/A

b. Design computations for all culverts, storm drains, inlets, and street sections. Storm drain design shall include a labeled schematic of the storm drain network, design discharges, pipe capacities, profiles, outlet velocity, and hydraulic grade line

Yes No N/A

c. All supporting data, printouts, tables, nomographs, etc., which are referenced in the report

Yes No N/A

d. Rip-rap length, width, depth, and D50 size

7. Stormwater Management System Section

Yes No N/A

a. Site plan (to scale) which clearly shows the locations and dimensions of all proposed stormwater management system components that will be constructed in order to comply with the stormwater system criteria defined in the Knox County Stormwater Management Ordinance. This includes stormwater management facilities utilized for stormwater quality treatment, channel protection, overbank flood protection, and extreme flood protection. At a minimum, the site plan shall include the following:

Yes No N/A

- Location, dimensions, elevations, contours, characteristics, cross sections, profiles, and details for all existing and proposed drainage facilities, retaining walls, cribbings, and other protective devices

Yes No N/A

- Location, size, and type(s) of inflow and outflow structures

Yes No N/A

- Cross-sections of all open channels and stormwater management facilities basins, including design water surface elevation(s)

Yes No N/A

- Stormwater Management Facility design details and cross-sections. Capacity, discharge(s), spillways, and the 100-year flood elevation for all stormwater management facilities. Shading of the area inundated by the 100-year flood elevation is recommended.

Yes No N/A

- Location and size of access facilities, including ramps, roadways and easements, if applicable

Yes No N/A

- Approximate location and size of all drainage, water quality, and other easements

Yes No N/A

- Boundaries of common areas or private "stormwater facility" easements, if applicable

Yes No N/A

- Maximum water surface elevations, limits of ponding, and typical facility cross-section(s)

Yes No N/A

- Flow arrows, drainage divides, contours, and finished grades

Yes No N/A

- Roof drainage direction(s) and finish floor elevations of all buildings

Yes No N/A

b. Description of how the overall stormwater facility design will comply with Knox County water quality, channel protection, overbank flooding, and extreme flooding design criteria

Yes No N/A

c. Water quality volume (WQv) calculations. This will include calculations of total impervious area, the WQv for the entire site before and after consideration of any applicable WQv credits, and the design WQv and percent removal of total suspended solids (% TSS) for each stormwater management facility that is designed for the purposes of water quality treatment.

Yes No N/A

d. Location, size (if applicable), and description of any WQv credits that have been included in the WQv calculation. Sufficient information must be presented for each credited area to show that the area or BMP conforms with the Design/Implementation Criteria presented for the credit in Volume II Chapter 5 of this manual. Examples of such information include, but are not limited to, a description of existing and proposed vegetation, proposed vegetation management, contributing flow path length, contributing slope percentage, level spreader design calculations, soils permeability and flow velocity.

Yes No N/A

e. Channel protection volume (CPv) calculations performed in accordance with the design criteria stated in the Knox County Stormwater Management Ordinance

Yes No N/A

f. Calculations to show compliance with overbank flood protection (Q_{p25}) and extreme flood protection (Q_{p100}) design criteria, including detention volume computations, if applicable

Yes No N/A

g. Detailed reservoir routing calculation sheets for all required design storms

Yes No N/A

h. Plotted inflow and outflow hydrographs (preferably superimposed)

Yes No N/A

i. If retaining walls are utilized, include free-body diagrams showing all forces, moments, and computations required for determining factors of safety against sliding and overturning.



DRAINAGE REPORT (CONTINUED)

8. Sinkhole Floodplain and Drainage Calculations

The following information must be shown for all sinkholes located fully or partially on-site.

- Yes No N/A a. A topographic map showing pre- and post-development contours and sinkhole floodplain elevations based on plugged sinkhole throat conditions (0 cfs outflow) for all sinkholes located on-site or partially on-site.
- Yes No N/A b. Pre- and post-development sinkhole storage volume.
- Yes No N/A c. Calculations supporting establishment of the sinkhole no-fill line, if applicable.
- Yes No N/A d. Calculations supporting establishment of the sinkhole floodplain elevation, if applicable.
- Yes No N/A e. An accounting of potential off-site drainage from surface or sinkhole overflow sources.
- Yes No N/A f. Back-up calculations for any adjustments to the sinkhole no-fill line.
- Yes No N/A g. Evidence of appropriate consideration of any relevant State or Federal permits.

9. Summary and Conclusions

- Yes No N/A a. A brief summary of the analyses and conclusions presented in the drainage report.
- Yes No N/A b. A brief description of how the proposed development and/or public improvements will adhere to applicable stormwater quality, quantity, and/or floodplain regulations and mitigate any impacts created by the development.

10. References

- Yes No N/A a. Provide a listing of pertinent sources of analysis and design procedures used.

11. Appendices

- Yes No N/A a. Appendices may be used for hydrologic, hydraulic, reservoir-routing calculations, etc., and other material not suited for inclusion in the main body of the report.

WATER QUALITY BUFFER ENHANCEMENT PLAN

When water quality buffers must be disturbed or a landowner/developer wants to enhance an existing buffer, a water quality buffer enhancement plan will be required. These plans must contain the following information, at a minimum:

- Yes No N/A 1. Basic application information, including a description of the need for the buffer enhancement; the dates of the development of the buffer enhancement plan and date of any revisions; location map showing the property in relation to adjacent properties, streets, and nearby watercourses; name, address, email address, and phone number of property owner; name, address, email address, and phone number of the applicant, if different from the property owner.
- Yes No N/A 2. If submitting as a component of a stormwater management plan, a drawing or plan that shows the location of the buffer in relation to the existing or planned development and to any community waters. The plan should display the area proposed for restoration or enhancement, showing the limits of disturbance, grubbing, and grading (if permitted).
- Yes No N/A 3. Best management practices for erosion prevention and sediment control during the vegetation restoration or enhancement.
- Yes No N/A 4. Any existing or proposed stream crossings or buffer encroachments. Copies of state and/or federal permits allowing the crossing or encroachment, if applicable.
- Yes No N/A 5. Description and/or drawings indicating the species and density of proposed vegetation, in accordance with the vegetation requirements stated in Volume 2, Chapter 6 of the Knox County Stormwater Management Manual.
- Yes No N/A 6. Descriptions and/or drawings indicating the planting practices that will be utilized.
- Yes No N/A 7. A maintenance and monitoring plan for one full growing season, including specification of proposed watering plans and schedule.
- Yes No N/A 8. An implementation schedule for buffer enhancement activities.

PRELIMINARY OPERATIONS & MAINTENANCE PLAN

- Yes No N/A 1. A map that accurately identifies the stormwater system location and components (e.g., stormwater pond, micropool extended detention pond, pipes, ditches, water quality buffers, etc.) that are located on the property. This map also must show the locations of drainage and access easements. The language used to identify each BMP in the map must be consistent with the BMP names used in Knox County Stormwater Management Manual and on any inspection checklists included in the O&M Plan.
- Yes No N/A 2. "Inspection Checklist and Maintenance Guidance" sheet(s) for each type of BMP that is located on the property. At a minimum, the appropriate template checklist(s) provided in Volume 2 of the Knox County Stormwater Management Manual must be utilized for the O&M Plan. However, site designers may modify the templates to include inspections and maintenance elements as needed and appropriate for the BMPs.