

University of Tennessee, Knoxville

Runoff Reduction Policy

Applies to all new and/or redevelopment projects disturbing greater than or equal to 1 acre.

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POLICY

This policy provides guidelines to ensure all new and redevelopment projects that require management measures that are designed, built and maintained to infiltrate, evapotranspire, harvest and/or reuse at minimum the first inch of every rainfall event preceded by 72 hours of no measureable precipitation.

This policy establishes performance standards for reducing runoff and controlling the introduction of pollutants into the municipal separate storm sewer system (MS4) in order to comply with requirements of the State of Tennessee National Pollutant Discharge Elimination System (NPDES) permit for the University of Tennessee, Knoxville.

The objectives of this policy are:

1. To address permanent (post-construction) Stormwater runoff from new development and redevelopment projects that disturb greater than or equal to one acre, including projects less than one acre that are part of a larger common development.
2. To regulate the amount of Stormwater discharged into the MS4 by any new or redevelopment projects.
3. To regulate the contribution of pollutants to the MS4 by storm water discharges from any new or redevelopment projects.

DEFINITIONS

1. **University of Tennessee, Knoxville** – refers to the lands shown on the MS4 map located on the University of Tennessee Facilities Services Stormwater Web site, which include but are not limited to, the University of Tennessee Knoxville campus, the adjacent University of Tennessee Institute of Agriculture campus, and the University of Tennessee Space Institute.
2. **Municipal Separate Storm Sewer System (MS4)** – the system of conveyances (including, roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, or storm drains) owned and operated by The University of Tennessee and designed or used for collecting or conveying Stormwater, and that is not used for collecting or conveying sewage.
3. **National Pollutant Discharge Elimination System (NPDES) Permit** – a permit issued by the Tennessee Department of Environment and Conservation (TDEC) that authorizes the discharge of pollutants to waters of the State.
4. **Pollutant** – any substance which causes or contributes to pollution. Pollutants may include, but are not limited to: sediment, paints, varnishes and solvents, oil and other automotive fluids, non-hazardous liquid and solid wastes or yard wastes, refuse, rubbish, garbage, litter, or other discarded or abandoned objects that may cause or contribute to pollution, floatables, pesticides, herbicides and fertilizers, hazardous substances and wastes, sewage, fecal coliform and pathogens, dissolved and particulate metals, animal wastes, wasteland residues that result from constructing a building or structure, and noxious or offensive matter of any kind.

5. **Storm Drainage System** – University of Tennessee owned or publicly owned facilities by which Stormwater is collected and/or conveyed, including but not limited to any roads with drainage systems, municipal streets, gutters, curbs, inlets, piped storm drains, pumping facilities, retention and detention basins, natural and human-made or altered drainage channels, reservoirs, and other drainage structures.
6. **Stormwater** – any surface flow, runoff, and drainage consisting entirely of water from any form of natural precipitation, and resulting from such precipitation.
7. **Development/Redevelopment** – Building or rebuilding of a residential or commercial structure or structures.
8. **Infiltration** – the process by which water on the ground surface enters the soil.
9. **Evapotranspire** – the sum of evaporation and plant transpiration from the earth's land surface to atmosphere, including soil (soil evaporation).
10. **Sinkhole** – a depression or hole in the ground caused by some form of collapse of the surface layer, sometimes related to Karst topography, as is characterized as underground drainage systems.
11. **Pre-Development Infiltration Capacity** – the rate at which the soil absorbed water prior to development.
12. **Hydrology** – science associated with the properties of the Earth's water, especially its movement in relation to land.
13. **Unit** – an office, class room, conference room, laboratory, residence hall dwelling space, or multipurpose room.
14. **Maximum Extent Practicable (MEP)** – practices that approach 100% pollutant removal where site conditions allow.
15. **Stormwater Control Measure (SCM)** – means permanent practices and measures designed to reduce the discharge of pollutants from new development projects or redevelopment projects.
16. **Water Quality Treatment Volume (WQTV)** – a portion of the runoff generated from impervious surfaces at a new development or redevelopment project by the design storm

POLICY GUIDELINES

Section A: Runoff Reduction

1. The University of Tennessee Knoxville requires that Stormwater discharges from all new development and redevelopment sites be managed such that post development hydrology does not exceed the predevelopment hydrology at the site. Runoff reduction is the preferred control practice as it can achieve both volume control and pollutant removal.
2. Site design standards for all new and redevelopment sites disturbing greater to or equal to one acre require (in combination or alone) management measures that are designed, built, and maintained, to infiltrate, evapotranspire, harvest and/or reuse, the first inch of every rainfall event preceded by 72 hours of no measurable precipitation. This first inch of rainfall must be 100% managed with no Stormwater runoff being discharged to surface waters.

Limitations to the application of runoff reduction requirements include, but are not limited to:

- a. Lack of the available area or soil class to create the necessary infiltrative capacity;
- b. A site that is inconsistent with capture and reuse of Stormwater;
- c. A presence of contractive or expansive soils in close proximity to structures;
- d. Physical conditions that preclude the use of these practices;
- e. Where there is a potential for introducing excessive pollutants into the groundwater, unless pretreatment is provided;

- f. The presence of sinkholes or other karst features that are visible prior to construction;
- g. When pre-existing soil contamination is present in areas subject to contact with infiltrated runoff; and
- h. Extensive presence of shallow groundwater table, shallow bedrock or other restrictive layers.

A 20% reduction incentive in the Water Quality Treatment Volume (WQTV) is acceptable for any of the following types of development. These credits are additive such that the maximum reduction of 50% of the WQTV associated with the first inch of rainfall is possible for a project that meets all criteria.

- a. Redevelopment (including but not limited to brownfield redevelopment).
- b. Vertical density (floor to area ratio of at least 2, or at least 18 units per acre)
- c. Incentives as identified by the permittee, submitted to the local EFO and approved by the division in writing, and documented in the Stormwater Management Plan.

The accumulated reduction incentives may only be used to account for a reduction in the total quantity of Stormwater collected on the site.

Section B: Pollutant Removal

1. All new and redevelopment projects must be designed to remove pollutants to the Maximum Extent Practicable (MEP).
2. Stormwater Control Measures that rely on infiltration, evapotranspiration, or capture/reuse of the water quality treatment volume, are practices that approach 100% pollutant removal and constitute MEP where site specific conditions allow.
3. If the project conditions do not allow for infiltration, evapotranspiration, or capture reuse, then the site must be designed to achieve an overall treatment efficiency of 80% TSS removal.
 - a. If a water quality unit (WQU) is used to achieve this treatment efficiency, it must be designed to treat the maximum flow rate of the 1-year 24-hour design storm.
 - b. The water quality treatment volume (WQTV) depends of the type of treatment used as a permanent SCM, as shown in the table below:

Water Quality Treatment Volume and the Corresponding SCM Treatment Type for the 1-year, 24-hour design storm		
SCM Treatment Type	WQTV	Notes
Infiltration, evaporation, transpiration, and/or reuse	Runoff generated from the first 1 inch of the design storm	Examples include, but are not limited to, bioretention, stormwater wetlands, and infiltration systems
Biologically active filtration, with an underdrain	Runoff generated from the first 1.25 inches of the design storm	To achieve biologically active filtration, SCMs must provide minimum of 12 inches of internal water storage
Sand or gravel filtration, settling ponds, extended detention ponds, and wet ponds	Runoff generated from the first 75% of the design storm, which is 1.91 inches on the University of Tennessee campus	Examples include, but are not limited to, sand filters, permeable pavers, and underground gravel detention systems. Ponds must provide forebays comprising a minimum of 10% of the total design volume. Existing regional detention ponds are not subject to the forebay requirement
Hydrodynamic separation, baffle box settling, other flow-through manufactured treatment devices (MTDs), and treatment trains using MTDs	Maximum runoff generated from the entire design storm	Flow-through MTDs must provide an overall treatment efficiency of at least 80% TSS reduction. Refer to 4.2.5.20 of the Small MS4 General Permit

Section C: Stormwater Mitigation Bank

1. In the event the project cannot meet the requirements outlined above, said project may purchase credits from the Stormwater Mitigation Bank.

2. The requirements and parameters of the Bank are outlined in the University of Tennessee Stormwater Mitigation Program.
3. Calculations of required contributions are based on cumulative impervious surfaces created by the project.
4. Project must still meet or exceed required water quality discharge criteria.

Section D: Peak Discharge Rate and Volume

1. The Stormwater management system for a project's post-development discharge rate and volume should be designed to not to exceed the pre-development rate and volume.
2. Design calculations should be based on a 5-year 24-hour storm event.
3. It is acceptable to increase the discharge rate if the rate increase is directly influenced by smoothing or rehabilitating degraded grey stormwater infrastructure. This is only acceptable in the event that no additional connections to impervious surfaces are made.

Section E: Permanent Water Quality Riparian Buffer

1. All receiving streams and waterbodies that are listed as waters with unavailable parameters for siltation or habitat alteration must maintain at average buffer width of 60 feet with a minimum buffer width of 30 feet.
2. All receiving streams and waterbodies that are listed as waters with available parameters for siltation or habitat alteration or unassessed waters must maintain at average buffer width of 30 feet with a minimum buffer width of 15 feet.
3. The required buffer widths must be maintained both during and post construction.
4. Deviations of this requirement will be reviewed on a case by case basis but are strictly limited to the following: biking/walking trails, infiltration-based stormwater control measures, landscaping, habitat improvement, roadway or utility crossings, and stream bank rehabilitation projects.

Section F: Compliance

1. It is the responsibility of The University of Tennessee Department of Capital Projects and The University of Tennessee Facilities Services Design to ensure these criteria are being met on all new development and redevelopment projects disturbing greater than or equal to 1 acre.
2. The University of Tennessee may suspend or cease activities and operations that are not in full compliance with this Policy.