



Policy 18

UNDERGROUND STORMWATER FACILITY MAINTENANCE

This policy is for the purpose of generally specifying the types of maintenance for underground stormwater facilities. The most common types of underground stormwater facilities are oil/water separators, sand filtration units, water quality inlets, and modified catch basins. Many types of underground stormwater facilities are proprietary in nature, for which the unit manufacturer will have a recommended maintenance procedure and schedule. In general, underground stormwater detention is not allowed (per ST-08 of the *Knoxville BMP Manual*).

Underground stormwater facilities are typically constructed for new development or redevelopment projects with a potential for causing stormwater pollution, for which the developer is must obtain a Special Pollution Abatement Permit (see Chapter 7 of Knoxville BMP Manual) during the site development process. Or alternatively, the developer may be exempt from stormwater detention but is required to provide "first flush" treatment or similar stormwater quality treatment. Types of projects requiring a Special Pollution Abatement Permit are listed in Section 22.5-37 of the Knoxville Stormwater and Street Ordinance (see Appendix B).

A Special Pollution Abatement Permit typically requires a maintenance schedule, preventive maintenance program, spill protection program and other emergency measures, and any additional information needed for operation and maintenance of the underground stormwater facility. Owners of underground stormwater facilities must follow all requirements of the applicable document "Covenants for Permanent Maintenance of Stormwater Facilities" (CPMSF), to be recorded at the Knox County Register of Deeds during the plat review process.

MINIMUM MAINTENANCE REQUIREMENTS

The property owner will maintain the approved stormwater and/or water quality facilities in good working order acceptable to the City Engineering Department. Minimum maintenance of the stormwater facilities shall include the routine removal of sediment, debris, oil, hydrocarbons, and foreign materials so that the operation and capacity of the stormwater quality facility continues to function properly. The stormwater quality facility must have an ongoing inspection, maintenance, and reporting schedule. Routine inspection and maintenance must be performed on a schedule recommended by the manufacturer, required by the City Engineering Department, agreed to as part of the Site Development Permit, or as actually needed, whichever is most restrictive.

INSPECTION OF THE STORMWATER QUALITY FACILITY

Large vault-type treatment systems are typically designed to have a much greater storage capacity than the smaller catch basin inserts or filter units. Therefore the large systems may require less frequent inspections since they may be less susceptible to clogging, overflows, and flow bypasses.

In the first year of operation of a large vault system, the City of Knoxville recommends inspections at least once each quarter during spring, summer and early fall. Monthly inspections should be conducted from November through March to determine how leaf litter will impact the flow capacity of the structure.

Thereafter, the inspection schedule can be modified according to experience or to meet specific stormwater permit requirements. The City of Knoxville requires a minimum of quarterly visual inspections for large systems and more frequent inspections for smaller systems, filtration devices, and/or absorbent systems.

During routine inspections, sediment accumulation is measured with a stadia rod, trash and floating solids can be visually inspected and dipped out, and floating oil and hydrocarbons are measured with a Teflon bailer. Filters and absorbent systems may vary but most should allow some type of visual inspection. Some popular hydrocarbon absorbents will turn from white when new to black as they reach full capacity. All systems must be cleaned when any of the indicator pollutant level criteria are met or when the regular inspection schedule interval expires.

CLEANING THE STORMWATER QUALITY FACILITIES

The stormwater quality facility should be cleaned shortly after the project is complete and erosion control and vegetation has been placed. Generally, a sump-vacuum truck is the best and most convenient method of removing the captured sediment and floatables from the larger stormwater quality facilities and catch basin sumps. Floatables and oil should be removed in a separate procedure prior to the removal of the sediment. After the floatables and oil have been removed, the vacuum hose may be lowered down to remove the accumulated sediments from the bottom of the collection chamber. For systems with large storage volume, this maintenance must be done at least annually, although more frequent maintenance may be required to keep the system operating properly in areas with substantial pollution or sediment.

Filter and adsorbent systems may be maintained by manually removing the accumulated trash and sediments from the unit and replacing the filter/absorbent media. Some of this maintenance must be done at least quarterly. Filter/absorbent life will depend on the type and amount of media and the pollutant load from the contributing drainage area. Heavy use areas, such as fuel islands, may need daily maintenance to remove cigarette butts, cups, and other litter from the small storage area. The filters may require frequent replacement in high spill/drip areas. Large sand filters may only need to have the top layer of media scraped to restore capacity rather than replace the entire volume.

All manhole covers and grates shall be securely replaced following cleaning activities. All trash, sediment, oil and contaminated water must be properly disposed at an approved waste facility.

RECORDKEEPING AND REPORTING

Policy 19 in the Land Development Manual (Appendix C) further describes the requirements for recordkeeping and reporting of underground stormwater facilities. Inspections must be conducted at least quarterly, with all pertinent information recorded into an inspection log that must be kept on the site. Annually, the property owner must certify in writing that the stormwater quality facility has been inspected and the system is functioning properly. The property owner must submit the certification by January 15 of the following year. Certification will generally include a list of inspections, repairs, and maintenance conducted with any receipts and signatures.