

MINIMIZING NUTRIENT LEVELS IN STORMWATER

CAUTION! YOUR BMP MAY BE ADDING TO THE PROBLEM

GRASS CLIPPINGS, LEAVES, AND OTHER ORGANIC SOLIDS ARE TYPICALLY THE PRIMARY SOURCE OF NUTRIENT POLLUTION IN STORMWATER RUNOFF

Leaves from grasses and trees contain significant amounts of soluble nutrients that can be washed into storm drains and sewers (http://www.pestfacts.org/use/lawn_bmp.pdf).



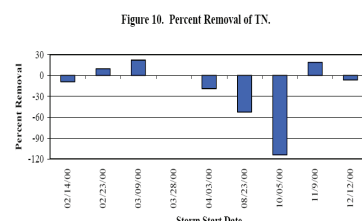
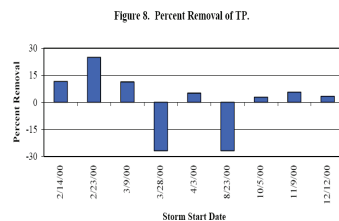
Leaves, grass clippings and organic matter from yards increase oxygen demands and may contribute nutrients to algae blooms that may result in fish kills (http://www.biocleanenvironmental.net/reports/BB/2002_January_Decomposition.pdf).



Royal and England, 1999, determined that leaves and grass leach most of their nutrients into the water within 24-72 hours after being submerged in water (<http://www.stormwaterauthority.org/assets/145BGISBTest.pdf>).



BMPs THAT CAPTURE AND STORE GRASS CLIPPINGS, LEAVES, AND OTHER ORGANICS IN STANDING WATER PROMOTE NUTRIENT LEACHING AND INCREASE DISSOLVED NUTRIENT LEVELS IN THE EFFLUENT



HAVING TO REMOVE ORGANIC DEBRIS FROM THESE BMPs RIGHT AFTER EVERY STORM EVENT IN NEITHER FEASIBLE OR PRACTICAL

In order to avoid significant leaching of most “pollutants”, it is desirable to quickly remove organic debris from collection devices that retain water (http://www.biocleanenvironmental.net/reports/BB/2002_January_Decomposition.pdf).

BMPs THAT STORE ORGANICS IN A WET STATE INCLUDE:

- MOST HYDRODYNAMIC SEPARATORS, THOUGH THERE ARE A FEW THAT SEPARATE
- MEDIA FILTER SYSTEMS, INCLUDING CARTRIDGE SYSTEMS AND UPFLOW FILTERS
- TRADITIONAL WET DETENTION PONDS AND WETLANDS

A BETTER SOLUTION WOULD BE TO USE BMPs THAT CAPTURE AND STORE THESE ORGANICS IN A DRY STATE. AVOIDING THE ABOVE PROBLEM IS THE BEST SOLUTION!

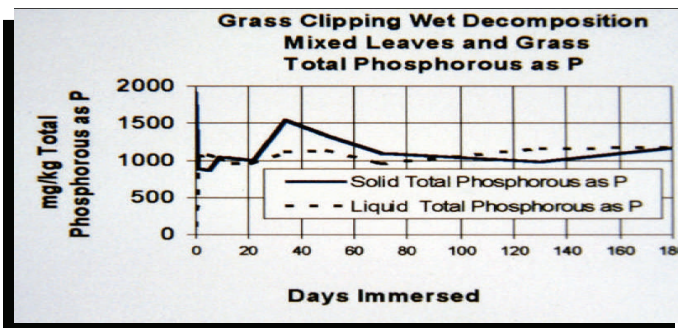
It would be best to design yard debris trap basins which retain the solids in a dry area, rather than dealing with the engineering and economic hardships of removing these released pollutants from the stormwater stream (http://www.biocleanenvironmental.net/reports/BB/2002_January_Decomposition.pdf).

BMPs THAT STORE ORGANICS IN A DRY STATE

- A FEW HYDRODYNAMIC SEPARATORS
- MOST CATCH BASIN INSERT FILTERS

Even traditional wet detention ponds or wetlands would benefit from upstream, dry, inlet devices to reduce the pollutant loadings by removing them as solids, rather than dealing with the leachate in the liquid form in the ponds (http://www.biocleanenvironmental.net/reports/BB/2002_January_Decomposition.pdf).

After day 1 solid total phosphorous dropped from 1800 mg/kg to below 100 mg/kg.



Perhaps the most dramatic illustration of the effects of leaching on mixed lawn grass and oak leaves was observed in the variations in total phosphorous as phosphorous (P) concentrations. When the grass and leaves were added, there was an 89% increase in the liquid phase total phosphorous as P concentrations (to 1,057 mg/kg) within the first day (http://www.biocleanenvironmental.net/reports/BB/2002_January_Decomposition.pdf).

After day 1 liquid total phosphorous jumped from 0 mg/kg to over 1000 mg/kg.

THE BOTTOM LINE IS, FILTERS SUCH AS CATCH BASIN INSERTS AND VAULT SYSTEMS THAT SEPARATE AND STORE ORGANICS IN A DRY STATE ARE EFFECTIVE AND FEASIBLE SOLUTIONS FOR MINIZING DISSOLVED NUTRIENT LEVELS IN STORMWATER DISCHARGE AND THESE TYPES OF BMPs SHOULD ALWAYS BE USED FOR PRETREATING SYSTEMS THAT HOLD STANDING WATER

GISBs (a catch basin insert filter) are designed to keep captured debris in a dry state, off the bottom of the inlet, thus preventing phosphates and nitrates from leaching into the stormdrain system, where much more expensive BMPs would be required to remove the dissolved nutrients (<http://www.stormwaterauthority.org/assets/145BGISBTest.pdf>).