Evaluation of a Porous Concrete Infiltration Best Management Practice

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There is an increasing concern about the environmental impacts of urbanization. Impervious coverage such as rooftops and roadways are replacing natural wooded areas. Impervious cover prevents infiltration and creates excess runoff from storms by not allowing rainfall to come in contact with the natural soil. It is this infiltration that replenishes the groundwater which in turn provides baseflow for streams. Impervious systems like gutters and storm sewers channel rain water directly to streams and rivers. While paved areas decrease baseflow, they increase flood flows causing erosion and sedimentation downstream. Pollutant loading is also increased leading to a degradation of water quality and aquatic habitat. Innovative stormwater management practices are being developed to help mitigate these problems. Best Management Practices (BMPs) are techniques that can be both aesthetically pleasing and cost effective with the purpose of protecting and improving water resources. The focus of this study is to evaluate the effectiveness of a Porous Concrete BMP. Porous concrete is a standard concrete mix with the fines removed to create void space. In the summer of 2002, the common area between two dormitories on Villanova University's campus, which was formerly a standard asphalt paved area, was reconstructed and outfitted with three infiltration beds overlain with porous concrete. The site is designed to collect stormwater from the surrounding buildings and grass areas. The runoff is then diverted to the three infiltration beds. The site is instrumented to record rainfall, soil moisture levels, outflow, and enable water quality sampling. The site will be monitored for long-term performance. The results of this study will hopefully encourage the implementation of these BMPs.