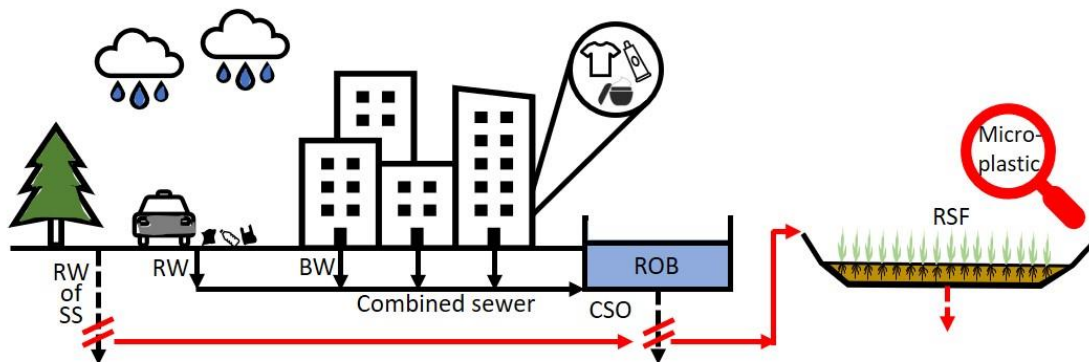


# PROJECT PROFILE

Title	Retention of microplastics in retention soil filter ( <b>ReMiRe</b> )
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Funding agency	RWTH Aachen University, Scholarships for Doctoral Students
Duration	01.12.2022 – 31.11.2025

The PhD project "ReMiRe" aims to investigate the fate and retention of plastic particles in retention soil filters (RBF). Combined sewer overflows and surface water from separate sewer systems are major emission sources for plastic particles. Although RBFs are increasingly used, little is currently known about the retention of plastic particles in these filter systems. Previous research has mainly focused on aquatic systems, with little research on the fate of plastic particles in terrestrial environments.



**Figure 1:** Scope of the PhD project (RW = rain water, SS = separate sewer, BW = black water, CSO = combined sewer overflow, ROB = rain overflow basin, RSF = retention soil filter)

In the first phase of the PhD project, the transport mechanisms of plastic particles in the RBF system will be analyzed to determine whether particles accumulate or whether the drainage serves as an emission source for plastic particles. For this purpose, a laboratory-scale model test rig will be developed in order to be able to investigate individual influencing factors under controlled conditions.

Based on this, a scale-up of the laboratory tests will be carried out in order to analyze the fate of plastic particles in a more realistic scale and environment. The results obtained should make a significant contribution to basic research on plastic particles in RBF systems and can be transferred to other terrestrial systems. In addition, further

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development of the laboratory test rig is planned in order to test optimization possibilities of the treatment process.

In parallel, the current situation of plastic particle retention is to be recorded and evaluated by monitoring a newly built large-scale RBF system at the Aachen-Soers wastewater treatment plant. The aim is to clarify to what extent combined sewer overflows and drainage outflows from RBF plants contribute to the emission of plastic particles into the environment under real conditions.