



## Monitoring of urbanisation effects on water quality of Rák Stream, Sopron, Hungary

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Qualitative and quantitative hydrological conditions of urban territories can be remarkably different compared to the catchments without human impacts. Impairment of water quality has an effect to the wider environment and ecosystem, as well as leading to decreasing of biodiversity. Increasing extent of paved, impermeable surfaces, decreasing storage capacity and surface roughness intensify the water runoff. As a consequence runoff proportion and peak discharge values will grow, while time of concentration will decline. Nowadays it is very important to investigate and to handle these processes when even more extreme precipitation events are dominant and hydrological catastrophes have happened. Conditions of sedimentation can also alter in the streams through the settlements. As a result of these changes channel erosion can sporadically increase (e.g. the streambed will be deeper), or accumulation speed up at another places (e.g. at the upstream side of structures). Effects of urbanisation to the hydrological characteristics can be revealed with comparing geometry of natural streams to the changed geometry of urban stream reaches.

Adjusted monitoring of Rák Stream (Sopron, Hungary) has been started taking into account the mentioned principles and facts. Seven measuring points have been allocated from the headwaters to the lower course of Rák Stream – partly in the natural forested catchment area, partly in the urban territories. The aim is to prepare the developing of a complex model with regular field measurements, which model is able to predict not only the water quality as a result of contamination-transport processes in the water body but it takes into account the transport of organic and inorganic polluting material from their source area to the channel. (With especial regard to the detached soil after hillslope erosion as potential diffuse pollution of the streamwater.) In order to build this model the following preliminary examinations are necessary:

- Delineation of the catchment area, assessment of rainwater and sewage-water inputs to the stream;
- Estimation of urban concentration and discharge capacity of the drainage system in an experimental basin;
- Mapping of slope conditions and classifying of slope categories;
- General characterisation of each sub basins;
- General runoff data, automatic water stage recording, discharge measuring;
- Field measurement of simple physical and chemical water parameters (temperature, pH, conductivity), laboratory water analytics ( $\text{COD}$ ,  $\text{NH}_4^+$ ,  $\text{NO}_3^{2-}$ , TP,  $\text{SO}_4^{2-}$ ,  $\text{Cl}^-$ );
- Monitoring of suspended sediment concentration;
- Investigating of macro invertebrate fauna;
- Soil erosion researches, modelling and mapping.

The poster reports on the developed monitoring system and the previous results.