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MONITORING AND MATHEMATICAL MODELING – IMPORTANT TOOLS FOR ENVIRONMENTAL PROBLEMS

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Abstract

Analysis and debates of the scientific world and regional/local communities led to the conclusion that environmental problems are a global priority. European Union requested Member States the implementation of the Framework Directive specific for each environmental factor. In this context, Romania has pledged to achieve „good ecological status of water bodies” by the year 2015. The paper deals with the water quality monitoring of the Upper Olt River and the mathematical modeling of water pollution in the adjacent area of Sfântu Gheorghe Wastewater Treatment Plant (WWTP), Covasna County.

Analyzing water quality upstream (Micfalău monitoring section) and downstream (Ilieni monitoring section) from Sfântu Gheorghe city, it was found that the main source of the Olt River pollution is the discharge into the Sâmbrezii Brooklet (a tributary of the Olt River) wastewater partially treated at city WWTP. As a result, mathematical modeling for hydrodynamics and pollutant transport over a river reach of about 800 meters downstream of the confluence between the Olt River and Sâmbrezii Brooklet were used. The mathematical model was calibrated and validated, at least partly, based on two measurement campaigns in situ.

The paper tries to prove that for the environmental problems, water quality monitoring and mathematical modeling should be used complementary.

Key words: mathematical modeling, measured data, pollutant dispersion, water quality indicators

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