

465 - AN EXPERT SYSTEM AS A SUPPORT TO THE DECISION MAKING PROCESS IN THE FIELD OF GROUNDWATER MANAGEMENT FOR ALLUVIAL GROUNDWATER BODIES IN SLOVENIA

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The expert decision support system for groundwater management in the shallow alluvial aquifers links numerical groundwater flow models with the water permits and concessions databases in a complex decision support system. The aim is to help groundwater managers to quantify groundwater reserves for a given groundwater body and provide additional information about quantity of groundwater for water rights licensing.

Stand-alone groundwater models are used in the process of the assessment of groundwater quantitative status as well as for assessing availability of groundwater resources during the period of maximum water consumption and minimum groundwater recharge. Model runs have been realized in steady state. Models are calibrated to a medium-low hydrological field conditions, because water quantities for all water rights have to be ensured in any time for several years.

The goal of the expert decision support system is therefore to provide control mechanisms in order to verify the granting of water rights for the sustainable use of groundwater resources. The system enables that the water quantity data from water permits and concessions in conjunction with the results of numerical groundwater modeling are used in the managing process of granting water rights to users in terms of their long-term access to groundwater (sufficient quantity of groundwater) and in relation to the water rights of other users (co-impact of groundwater pumping). Also, groundwater access must be managed in such a way that it does not cause unacceptable local impacts (pumping must not lower the water level for more than 2/3 of water body in the medium-low hydrological conditions).