

Hydrogeophysical Exploration in Some Quaternary Deposits of Yugoslavia

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Hydrogeophysical exploration means exploration of shallow subsurface geological formations of insignificant thickness, which requires outstanding accuracy of obtained results. Within hydrogeological exploration, geophysical methods have a significant role in solving following problems:

- possibilities of safe analyses of aquifer geometry and structural properties;
- monitoring aquifer contamination by mineral and organic deposits;
- defining relevant indications on a hanging-wall permeability characteristics and aquifer hydrodynamic parameters;
- indicating groundwater level;
- analysis of groundwater chemistry;
- determining clay facies in a complex of hanging-wall sediments;
- exploration of velocity transfer for wet front and pollutant within.

As a case history, quaternary deposits of the area of Djerdap reservoir on the Danube river (Serbia, Yugoslavia) is presented. Namely, complex geophysical exploration has been done in order to prevent and moderate a harmful influence of the performed reservoir on the environment (increased groundwater infiltration from the reservoir into surrounding rocks, permanent groundwater level raising, etc.). In that sense, a hydrogeophysical investigation was useful in delineation of the aquifer, obtaining appropriate parameters (groundwater level, groundwater chemistry, clay content, filtration characteristics and physical parameters of geological formations), as well as mapping the aquifer vulnerability. Based on the results, zoning of the study area according to the aquifer vulnerability has been done.

Then, land-use planning and development of strategy for groundwater protection and management was possible.