

## CONTRIBUTIONS TO THE SIZING OF SANITARY PROTECTION AREAS FOR GROUNDWATER CATCHMENTS

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### Abstract

Following adequate hydro-geological conditions, water supply from local groundwater resources represents a viable solution for farms located far away from surface-water sources or from areal water supply systems, providing major economical and social advantages.

To exploit these resources safely care in order groundwater contamination with elements, substances, products and / or pathogenic microorganisms character, especially when abstraction is required to provide drinking water to be taken even in the design of water catchment, specific technical measures, one of the most important areas consisting of correct size of the protection perimeters with a strict diet and restriction diet.

This paper improves the analytical models of sizing the sanitary protection areas for water catchments through perfect wells or drains from unconfined aquifers, aiming at finding numerical solutions with a higher degree of accuracy.

The mathematical sizing models are differentiated according to the main characteristics of the aquifer and water catchment, such as container rock's type (with interstitial porosity or with cracks and/or cavities); aquifer's type (unconfined or confined) and feeding method (with or without initial dynamics); tapping with different wells and drains according to the water bed's opening (perfect/imperfect).

For a better understanding of the mathematical models mentioned above, and the technique for numerically solving, two examples there are presented in which all details items are considered in the sizing of sanitary protection zones with strict diet regime and with restrictions regime

**Key words** sanitary protection area, unconfined aquifer, initial dynamics, perfect well, perfect drain

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