

## Regional hydro geological characteristics of complex neogen aquifer Mizian hydrogeological region (Mizian plate)

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The territory of the Mizian platform was formed aquifers and complexes with Quaternary, Neogene, Cretaceous and Jurassic age. According to the European Water Framework Directive in the Mizian platform region was separated 35 underground water bodies.

Subject of discussion in this article are underground water bodies of Neogene age. They are formed in the following lithostratigraphic units (Fig. 1.):

- Karst waters in Ruse formation BG1G0000K1b041 - presents loess, alluvial deposits and Pliocene clay, sand and limestone.
- Karst waters in Razgrad formation BG1G000K1HB050 - are represented by clay marl, marl, clayey calcareous marl with layers of sandstone to sandstone with layers of marl, limestone slab, in many places with greensand and flint cores.

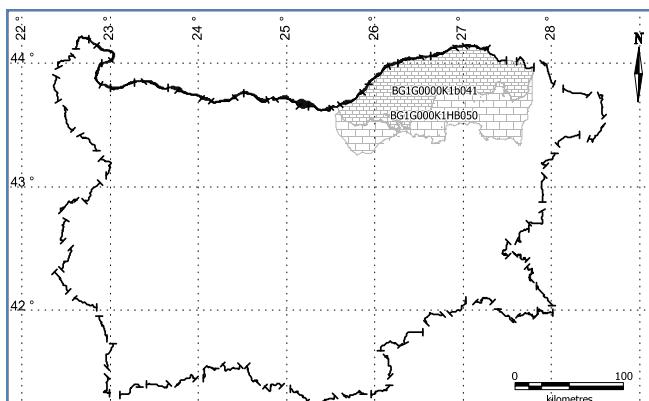


Fig. 1.: Karst waters in Ruse and Razgrad formation

Groundwater bodies under review coincide with lithostratigraphical structures formed during the geological development of the platform area, formed through the same stages of basin sedimentation in similar environments shallow marine and rifts.

Considered groundwater bodies are spatially dependent complexes of alternating Rift limestone, organogenic limestone and marl. The change of sedimentation environment in the course of geological development shallow marine basin during Cretaceous period was the reason for the separation of two lithostratigraphical structures - Ruse and Razgrad suites.

The last has the same geological age, but different lithological composition due to shallowing and frustrating at the bottom of the pool as a result of tectonic movements.

Ruse Formation was formed fracture-karst in karst type, in character-unconfined groundwater. Their movement is carried out by individual watercourses to lower waterbed, which still serve a clay or solid carbonaceous sediment at the base of the complex (the notional boundary between Razgrad and Ruse Formation). Their

direction to the hydrographic grid, but generally the northwest, north and northeast. They are fed by infiltration of rainfall and quaternary (in loess) waters.

In intensive cracking and impressive karst calcareous sediments of the Ruse suite groundwater formed common unconfined, karst aquifer representing powerful radial diverging flow with a general direction of travel from south to north, northwest and northeast - towards the River Dunav (Fig. 2.).

Quaternary sediments are widely spread in the watershed of Rusenski Lom Dobrodjanski Dunavski Rivers. They are represented by different genetic types: proluvial, delluvial, colluvial, delapsivni, alluvial and mixed type deposits and various formations aeolian formations.

Groundwater recharge is done by infiltration of rainfall and surface waters (and along the River Dunav - from river water) of Quaternary and Neogene water, and probably results from malmvalanzhinskiya aquifer. The draining is from river ravine system and from River Dunav, from different sources and flow of many pumping stations (shaft and tube wells).

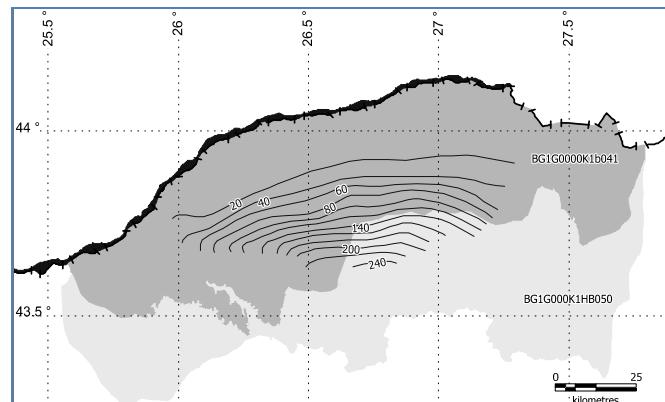


Fig. 2.: The movement of water in both underground water bodies.

The filtration coefficient is ranging 0.03-0.50 m/d to 20 m/d, while a conductivity of 1-2 m<sup>2</sup>/d to 5000 m<sup>2</sup>/d can be observed, but they are advantageously 100-600 m<sup>2</sup>/d with an average of about 450 - 500 m<sup>2</sup>/d. The transmission level is 1.105 m<sup>2</sup>/d to 2.07 m<sup>2</sup>/d, the active porosity characterized water supply is 0.05 to 0.22, and the relative flow rates from single boreholes are from 0.1 l/sm to over 100 l/sm.

General scheme for the use of water in the valleys Rusenski Lom and Dunavski Dobrudjanski reki. Volume II Dunav Region (2000) Bulg Acad Sci