

PROBLEMS OF SUPEREXPLOITATION OF GROUNDWATER IN CASE OF LARGE CONCENTRATED WATER SUPPLY

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As the practice of multi-year groundwater exploitation shows (e.g. the Eastern water supply system of Moscow City and Moscow Region, the water fields of Kaluga and Tomsk, and others), the possibility of concentrated groundwater extraction in large amounts (to 50-100 ths.m³/day and in favorable conditions even to over 1000 ths.m³/day) is questionable. The main reason of this is the rather more considerable impact of groundwater withdrawal on the geological and wholly on natural environment and, thus, rather more serious disturbances in the environmental balance in reality than theoretically determined ones. The basic among them are: overdewatering of the unsaturated zone (e.g. the water field of Tomsk), a change in thermodynamic and hydrogeochemical conditions followed by changes in component composition and an increase of total mineralization (e.g. the water fields of Tomsk and Kaluga), depletion of groundwater reserves due to their uncompensated replenishment, etc. Some adverse phenomena occur that are not taken in account during calculations, i.e. activation of hydraulic state of water-bearing strata (e.g. Central Klyazma River water field), a change in physical properties of water-bearing rocks and dividing beds and others. Other problems of large water intakes are connected with the economic aspects of their exploitation, leading to a growth of competitive ability of distributed extraction of groundwater.

The problems revealed make necessary to carry out an environmental expertise and ecologo-geological substantiation at the stage of groundwater prospecting.