

Development of a new design of deironing granulated filter for joint removal of iron and ammonium nitrogen from underground water

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ABSTRACT

Providing the population with high-quality drinking water is one of the main state tasks. Rural water supply systems and water supply systems of small settlements in the region require special attention, namely, the development of technologies for individual, small-sized water treatment equipment, as well as equipment for collective use, designed to purify groundwater for drinking purposes. In many areas, there are groundwaters containing excess levels of several pollutants, which makes their purification much more difficult. Elimination of shortcomings in the known methods of water iron removal is possible by reconstructing existing water supply systems from underground sources in small settlements. A rational solution is to search for groundwater treatment technologies that make it possible to provide the population with high-quality drinking water at a lower cost. The result of increasing the concentration of oxygen in water was obtained in the process of modifying the filter by changing the excess air exhaust system, which was made in the form of a perforated pipeline located in the lower half of the granular filter layer connected to the upper branch pipe. At the same time, high-quality groundwater treatment, sufficient simplicity and reliability in operation are ensured, local conditions and the inaccessibility of many objects and settlements in the region are taken into account as much as

possible. After the filter was upgraded, the concentration of iron decreased from 4.4 to 0.27 mg/L and ammonium nitrogen from 3.5 to 1.5 mg/L.

KEYWORDS:

Underground water

de-ironing

ammonium nitrogen

water treatment

filter design

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