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ENVIRONMENTAL REHABILITATION OF WATER BODIES
AS A FORM OF WATER RESOURCES MANAGEMENT

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The main consequences of anthropogenic impacts include changes in the hydrological regime, anthropogenic eutrophication, pollution, toxicification, thermofication, acidification, and destruction of aquatic ecosystems. Recovering a water body from a pathological state and ecosystem degradation is extremely difficult. This area of activity is called restoration and eco-rehabilitation of aquatic ecosystems. Examples of lakes in a pathological state (with “extremely dirty” waters) include Lakes Nizhny (56 *ha*) and Sredny Kaban (119 *ha*) in Kazan. In the 1980s, they were essentially wastewater settling basins and were in a pathological state. The lakes were characterized by low transparency (0.1 *m*) and a black water color, a change in water type (from hydrocarbonate-calcium to sulfate), high water hardness, exceeding the maximum permissible concentration by tens and hundreds of times, elevated temperatures (they did not freeze), and a strong hydrogen sulfide odor. Sporadic species were observed in the plankton and benthos, and unnatural colors were observed in planktonic organisms. Between 1983 and 1987, they were brought out of their toxic state through the use of special measures (removal of the layer of contaminated bottom sediments, aeration of the water, cessation of wastewater discharges, etc.). As a result of studies to assess the ecological state, indicators characterizing the pathological state of the water body were identified. Restoration projects were carried out for a number of small lakes in Kazan (eutrophicated and polluted). Experiments with lake restoration projects have allowed us to propose several principles for the concept of eco-rehabilitation of water bodies: “consideration of the type of aquatic ecosystem”, “consideration of the nature of anthropogenic impact”, “consideration of the ecological state”, “consideration of the type of water use”, and others. The author understands that restoration is a natural process, during which the condition of a reservoir improves through self-purification processes or under the influence of special measures, and eco-rehabilitation is the use of special physical, chemical and biological measures to improve the condition of a reservoir.

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