

# Water protection zones and coastal protective strips of water bodies

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**ABSTRACT.** The coastal areas of water bodies carry a huge share of ecosystem services. Their structure and content must comply with certain greening standards to ensure safety and prevent the manifestation of a range of geoeological risks. Using the method of field research and analysis of data of remote sensing of the Earth, the state of water protection zones and coastal protection zones of several dozens of Russia and World water bodies was studied, mainly within the boundaries of settlements. The structural features of these areas have been identified, where the predominant element, instead of landscaping, is usually tiling and exposure of artificial origin. For small rivers, development of mass building and fencing up to the water edge are widely observed. Many kilometers of embankments, sometimes with heavy traffic, without discharging storm sewers into the centralized cleaning system, are typical for most large cities. Over 10 structural and functional features of these sites have been identified. The importance of scientific monitoring is indicated.

**Keywords:** water pollution, coastal zones, landscaping, protection of water bodies, recreation, discharges

Russia's water fund is the richest in the world. In general, 72.2 million hectares are occupied under water bodies, except for marshes, 38% of which is part of the lands of the water fund. The rest is distributed on the lands of the forest fund, agricultural purposes, and reserve lands. The total length of the coastline of the Russian seas is more than 60 thousand km. (State Report, 2018).

As one of the most important mechanisms for improving the water-ecological situation, the hydrological regime and the sanitary and hygienic condition of all water bodies, water protection zones and coastal protective zones with special management regimes are distinguished. The structure and content of these coastal areas is regulated by the Water Code of Russia and the Federal Law "On the Protection of Lake Baikal".

The study of such territories from the point of view of their current structure, condition and operation has important scientific, practical, and social significance, including the connection with their high dynamism not only of natural origin.

For many years the authors have studied water protection zones and coastal protective strips of water bodies in Russia and abroad, mainly within the boundaries of settlements, by the method of analyzing data of remote sensing of the Earth and field studies, according to the developed method. Structural assessment is carried out to identify such components as

paved (embankments, asphalt and other impermeable coverings), bare (with an indication of the origin - footpath-road or natural pebble, sandy areas), boggy (significant waterlogging with specific vegetation), greenery (covered with wood, shrubby and grassy vegetation, usually in the field, the proportion of these forms of vegetation in the coverage of the plot is also identified) and inaccessible located behind the fence.

Despite the special requirements for the maintenance of these sections of water bodies, especially in terms of landscaping, their structure mainly consists of paved and bare sections (more than 50%). Landscaped sections may predominate for small rivers, but they are especially characteristic of inaccessible territories (sometimes their proportion is over 40%).

Within the borders of the coastal protective strips of water protection zones, a whole spectrum is being carried out, including the illegal use of these areas of water bodies, leading to a serious deterioration in the quality of water and the sanitary condition of the water body:

1. Failure to comply not only with the borders of water protection zones and coastal protection zones themselves, but also with the implementation of prohibited activities within them (Gagarinova et al., 2018).
2. Insufficient knowledge of water protection zones, data quickly become obsolete due to their dynamism

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(Sukhodolov et al., 2018).

3. Most cities and towns are located along the banks of water bodies (Korytny, 2017).
4. Placement of special facilities (ports - freight and passenger, ports of vessels, including small ones, water intakes and drains) that do not fulfill safety requirements.
5. Placement of (water-intensive) enterprises - pulp and paper, production of concrete and other building materials, food, including agricultural (greenhouses, farms).
6. Construction of facilities, buildings, and structures, including illegal ones.
7. Construction of houses, hotels and recreation centers, in the absence of a centralized bathing system of sewerage.
8. Warehousing and general littering of the territory.
9. Car collisions, parking on permeable surfaces.
10. Uncontrolled flushing from surrounding areas.
11. Discharge of polluted, including storm drains.
12. Uncontrolled high-intensity recreation.
13. Felling, damage, and destruction of plantations.

A significant part of the increased anthropogenic impact on water bodies of the World and Russia and Lake Baikal is within the boundaries of water protection zones and coastal protection zones.

Constant, dynamic, planned monitoring of their condition, content and use will not only solve some of the

problems of re-operation, but also reduce the pressure of influence - reduce the share of environmental risks.

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