

SPATIAL FORMATION OF WATER PROTECTION ZONES BY GIS

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In the most of the river basins of Eastern Europe including Ukraine, the freshwater contamination level is testified to an environmental situation in crisis and to the incapability of vital environmental systems for natural self-regulation. [1]

In Ukraine for the past 25 years, it is the small river is most felt the pressure of human activity, these being the most changed, and some have even completely disappeared.

Direct factor of influence on the small rivers is the presence of flow (treated and untreated): municipal, industrial, agricultural. They are particularly dangerous, because in some cases the runoff volume can be the same or higher than the small rivers runoff. [2]

Surface runoff from agricultural land contains erosion products, chemical fertilizers remnants, pesticides and bacteria. [3]

The main legislative regulating act of using, water protection, state management and control of water use and protection, water resources restoration is the Water Code of Ukraine, promulgated by Decree of the Verkhovna Rada on June 6, 1995.

Water protection zones are established to create a favorable regime of water bodies, preventing pollution, clogging and depletion, plants and animals destruction.

The upper boundary of water protection zones are defined by specialists in specific developed projects on the basis of normative and technical documentation. [4;5]

The problem is that the "regulation" defines only the general principles of water protection zones are not fully take into account the environmental load on the water body as a result of economic activities and natural conditions (topography, composition of the ground etc.). On the design of water protection zones is necessary to perform complex operations of spatial analysis and process a large amount of heterogeneous information.

The more river management, the more should be the size of protection zones.

In such conditions, traditional environmental protection measures based on available technical and technological solutions may be limited.

The most blatant contravention of standards and requirements include [1]:

- soil ploughing up to the waterline or shore (bank) ledge;
- location of agricultural activity directly in the waterside zone;
- omission of simple biotechnical measures, such as bank forest shelter belts, etc.;
- herding of animals in the area close to the banks which causes deterioration in landscape stability through destruction and disturbance of the vegetation cover;
- waterside dumping as a result of the fertilizer storage, uncivilized recreation and other negative environmental consequences of local economic and social activity

Geographic information technology provides a detailed description of the structure and surface features to evaluate soil and land use, creates the necessary conditions for adequate representation of the spatial variation of erosion damage factors and other processes that occur in natural landscapes and agrolandscape system. [6]

Thus, for the problem solving of the water protection zones must be specified under not on economic development of land but according to natural and geographical conditions of this territory.

References

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