With this interpretation, the concept of comprehensive construction safety will be fully complied with modern requirements for construction activities, namely:

- safety;
- consistency and flexibility;
- energy and resource saving;
- quality and efficiency.

Thus, the concept: of "integrated construction safety" can be formulated as a set of forms and methods of organizing construction activities, which ensure compliance with regulations and safety standards aimed at shaping the human living environment, minimizing environmental impacts, taking into account the risks associated with occurrence and elimination of consequences of emergency situations.

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DEVELOPMENT OF EFFECTIVE METHODS FOR MONITORING HYDROLOGICAL PARAMETERS OF RIVERS AND THE DESIGN OF DATA COLLECTION SYSTEMS TO IMPROVE FORECASTS AND RESOURCE MANAGEMENT

Hydrological parameters play a crucial role in understanding the water cycle and impact the safety and stability of water resources. To effectively manage these resources and ensure reliable forecasts related to them, it is necessary to develop efficient methods for monitoring hydrological parameters and design advanced data collection systems.

Hydrological parameters, such as water level, river discharge, and water temperature, are key to understanding water systems. They determine the water balance and influence ecosystems, the agricultural sector, and industry. Collecting and analyzing these parameters allow for informed decision-making in water management.

The water level in rivers, lakes, and other water bodies determines the water volume and can be an indicator of the water body condition. The quantity of water flowing through a specific river cross-section per unit of time, known as river discharge, is crucial for determining the water balance and predicting potential floods or droughts.

The thermal regime of water is important for determining ecological conditions and the viability of aquatic organisms. The amount of water used for drinking, agricultural needs, industry, and other sectors affects the water resource balance.

The degree of water turbidity, determined by the presence of particles and contaminants in the water, is also a significant parameter.

These hydrological parameters form the basis for studying water systems, their efficient use, and the management of water resources. Monitoring these parameters helps in forecasting and managing water resources, addressing ecological issues in water bodies, and ensuring the sustainable utilization of this vital resource.

New technologies such as satellite imaging, sensors, and IoT systems are revolutionizing the monitoring methods for hydrological parameters. They provide real-time data collection, enabling:

1.Satellite Imaging: Used to determine the area of water surfaces, track changes in water levels, and monitor the location of ice masses in water bodies.

2.Satellite Radiometry: Allows for measuring water temperature and determining water characteristics on the surface.

3.Hydrological Water Level Sensors: Installed in rivers and lakes for real-time water level measurements.

4.Water Temperature Sensors: Used to monitor the thermal regime of water at different depths and levels.

5.Data Collection Systems Using IoT: Combine automated sensors and data transmission systems for instant data collection and transmission to central computing systems.

6.Hydrological Models: Used for predicting river flows, the state of water reservoirs, and the impact of climate change on hydrological systems.

7.Geographic Information Systems (GIS): Assist in analyzing spatial data, including the location of water sources, landscape features, and other factors.

8.Laser or Radar Sensing: Used for measuring water height, river and lake bed topography, and detecting changes in water resources.

9. Monitoring Through Social Media: Used to gather information from users about the state of rivers, floods, or other events, enhancing measurement accuracy and frequency.

Creating effective data collection systems involves integrating various sources of information. Satellite data, automated river sensors, and data from meteorological stations are combined into a unified system that allows real-time monitoring and analysis of water resources.

10.Defining specific hydrological parameters to be measured. Establishing the frequency and accuracy of measurements. Identifying real-time or periodic measurement needs.

Conclusion. Thanks to accurate and up-to-date data, forecasting floods, droughts, and other hydrological events becomes more effective. Water resource management becomes more flexible and adaptive, contributing to the conservation of water ecosystems and ensuring sustainable use of water resources.

The development of methods for monitoring hydrological parameters and data collection systems plays a key role in ensuring the sustainability of water resources and improving the quality of forecasts. The integration of modern technologies allows for effectively addressing problems related to water systems and ensures the sustainable development of society [1,2,3].

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