

# SCIENTIFIC WORKS

**Topic: No. 1.1: "Development of the scientific basis of assessment of hydraulic and hydrological processes in irrigation systems, hydrotechnical structures and water reservoirs based on information technologies"**

Priority scientific directions of the department

1. Hydrotechnical constructions in pressure and non-pressure systems, laws of flow movement in open basins and hydraulic calculation of structures.
2. The scientific basis of using advanced information and SMART technologies in the monitoring of hydraulic and hydrological processes in riverbeds, canals, open and closed ditches, reservoirs;
3. Evaluation of hydraulic reliability and efficiency of resource-saving techniques and technologies in water management and development of design parameters.
4. Researching the laws of two-phase flows in open channels, pressure systems, and hydrotechnical structures used for various purposes, and developing opportunities for use in solving practical problems.
5. Development of theoretical bases and methods of calculation of the movement of sediments in the reservoirs and clarifiers of hydraulic engineering facilities.
6. Application of GIS technologies in the evaluation of processes in Uzan;
7. Improvement of water balance calculation and turbidity prediction in reservoirs
8. Evaluating the irrigation importance of river sediments and developing recommendations for management.
9. Research of filtration processes in main mines and hydrotechnical facilities.

## **Name of cooperating institutions**

Research Institute of Irrigation and Water Problems

## **Results obtained in cooperation this year**

Participated in seminars and conferences regularly held by the organization, various events were organized within the institute. Young teachers working in the department were given practical help in performing chemical analysis of the results of scientific research. Employees of the department are working within the framework of scientific cooperation at the Institute of Prof. I. Akhmedkhodzhaeva

HYDROPROEKT Joint Stock Company	It was organized to use the achievements achieved as a result of mutual cooperation, to exchange regulatory documents, to carry out projects on the basis of orders, to improve the qualifications of specialists, and to carry out scientific inspection works together. Classes are conducted based on the 5+1 program.
Tashkent Institute of Architecture and Construction	As a result of mutual cooperation, work was carried out in the fields of educational and methodological, scientific research and spiritual and educational work.
Fire Safety Institute of the Ministry of Internal Affairs of the Republic of Uzbekistan.	As a result of mutual cooperation, joint work was carried out on educational and methodological, scientific research and spiritual and educational work. PhD theses are being prepared in cooperation.
Chirchik Higher Tank Command Academy.	As a result of mutual cooperation, joint work was carried out on educational and methodological, scientific research and spiritual and educational work.
Upper Chirchik Water Works Department.	As a result of mutual cooperation, work was carried out in cooperation based on the integration of scientific research and science education production.
Bogistan Agricultural Vocational College in Chortoq district	In order to ensure the implementation of the decision No. PK-3003 and the continuity and consistency of State educational standards, curricula and programs, higher and secondary special, vocational education educational programs, work was carried out in mutual cooperation.