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APPLICATION OF GEODESIC WORKS IN CARRYING OUT EARTHWORKS IN THE KIRQ KIZ MASSIVE (IN THE EXAMPLE OF ELLIK KALA DISTRICT)

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Abstract
This article analyzes the use of geodetic methods in land surveying in the "Qirq kiz" massif of Ellikkala district of the Republic of Karakalpakstan. The study reveals the importance of modern geodetic technologies - GNSS receivers, total stations, remote sensing using drones and GIS programs. Based on practical observations, the effectiveness, accuracy and role of these technologies in land cadastre work and legal registration are highlighted. Also, proposals have been developed for the modernization of the cadastre system and the rational use of land resources. The results of the study provide scientific and practical foundations that can be used to improve the land management system at the republican level.

Keywords: Ellikkala district, Qirq Kiz area, land management, geodetic works, land cadastre, modern technologies, GIS, GNSS, total station, aerial photography, land resource management.

Introduction

In recent years, the regulation of land relations, rational use of land resources and their protection have been identified as one of the priority areas of state policy in Uzbekistan. In particular, the improvement of the cadastral system through the application of modern geodetic methods to land registration processes is of particular importance. This article analyzes the practice of using geodetic works in land registration works carried out in the "Qirq kiz" massif of Ellikkala district of the Republic of Karakalpakstan.

About the Ellik Kala district — An administrative-territorial unit in the Republic of Karakalpakstan, established on March 23, 1977. The district borders the Kyzylorda region of the Republic of Kazakhstan in the north, the Beruniy and Takhtkapyr districts in the west, the Tortkul district in the south, the Navoi region in the east, and the Khorezm region in the southwest. The total area is 5.4 thousand square kilometers. According to 2004 statistics, the district had a population of 119.1 thousand.

The administrative structure includes 1 city (Boston) and 12 rural settlements (Amirabad, Guldursun, Gulistan, Navoi, Okchakul, Saribiy, Tozabog, Sharq Yulduzi, Ellikqala, Kyzylqum, Qilchinoq, Kyrqqiz). The district center is **the city of Boston** .

Agriculture is the main branch of the economic activity of the Ellikkala district. Cotton growing, animal husbandry, melon growing and horticulture are the main branches. Cotton, grain, potatoes, vegetables and fodder crops are grown on irrigated lands. Dehkan, shirkat and farms operate in the district, which have achieved high results in the cultivation of various crops and animal husbandry. The irrigation system plays an important role in the district, water is supplied through canals in the district. The water systems of the Amudarya and Kyzylkum collectors are important for the district's agriculture. The relief of the district consists of a flat plain that decreases from south to north. The geological structure of the region is mainly composed of alluvial-marine deposits formed in the Cretaceous and Paleogene periods. Against the background of the flat relief, shallow depressions, dry river beds and small elevations (hills) are found in some places.

Geodetic works serve as the main source for determining the location of land plots, the accuracy of their boundaries, calculating their area, and compiling cadastral maps. In the “Forty Girls” estate, GPS/GNSS receivers, total stations, aerial photography using drones, and GIS programs are widely used in this regard. This ensures reliability and speed in the processes of land allocation, re-surveying, and legal registration. As revealed during the study, the following results are achieved through modern geodetic methods:

- The level of accuracy of land plots is determined with an accuracy of 5–10 cm;
- Labor productivity has increased 2–3 times;
- Automated calculations are being carried out based on electronic mapping and a geographic information system.

Conclusion

The introduction of modern geodetic technologies in the land registration processes carried out in the Kirq Kiz massif serves to improve the territorial land management system. The accuracy, speed and reliability of land cadastre work have increased through GNSS technologies, GIS-based analyses and aerial photographs taken using drones. This can serve as a basis for developing effective approaches that can be widely used in other regions of the republic, based on the experience of the Ellikkala district.

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