



Present state of the collector-drain waters of the Aral Sea basin and their link to lakes and reservoirs of Karakalpakstan

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Karakalpakstan is the end user of water situated in the low delta of the Amu-Darya, which was considered the only source providing this region with water. A large part of the Amu-Darya waters is consumed mainly by the irrigation systems of the canals Kizketken, Suenli, Pahtaarna, Raushan, and others. The total passing capability of the main collector-drain waterway systems is about 300 m³/sec. The main part of the existing collector-drain systems (CDS) is of an open horizontal type and only a small part (about 430 km) is the close horizontal drainage, but many of them do not meet modern technical requirements. About 30% of innerfarming CDS are in unsatisfactory technical conditions. The volume of the collector-drain flow varies between 2 and 3 cubic kilometers per year. The mineralization varies from 3.0 to 5.0 gr/l. Its composition is chloride-sulfate type (calcium-magnesium-sodium type is typical for the recent years. Reduction of the mineralization of subsoil waters from summer to autumn allows to use the collector-drain waters for the irrigation of agricultural crops, especially in the deficiency of irrigation waters. Collector-drain waters are used not only for plant-growing, but also for filling small reservoirs, lakes and ponds. There were about 100 to 120 lakes and reservoirs in the Karakalpakstan territory. Out of those, more than 30 large and about 50 small lakes have grown up by now because of the drain water inflow. In extreme ecological conditions, the reserved collector-drain water in the southern Aral region seaside and on the territory of the northern areas of Karakalpakstan can be used for improving the ecological situation.