

عنوان مقاله:

Reservoir sedimentation management: A state-of-the-art review

محل انتشار:

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خلاصه مقاله:

Reservoir sedimentation is a serious challenge in many regions of the world and has severe consequences for water management, flood control, and generation of energy. The purpose of this paper is providing a valuable source of information on the reservoir sedimentation problem and reviewing the existing control strategies utilized globally against it. A wide range of sedimentation related problems were outlined. Different sediment management strategies were investigated with their main advantages and disadvantages. Special attention was devoted to the flushing technique as the most effective way of preserving the reservoirs' storage capacity. As the main novelty of this study, a series of innovative complementary methods to improve the efficiency of sediment removal during the flushing operation was introduced. Based on the analysis, each sediment management strategy may be advantageous under certain circumstances, and successful implementation of such strategies needs regular monitoring and comprehensive recognition of the effective factors. The use of initiative structural methods, including those cited in this article, although they improve the flushing efficiency, they may come with some limitations that should be considered in practice. It is strongly recommended that such structural methods be taken into account in the first phases of dams' design because they may influence the layout of dam structures. As conclusion, it was found that the progress is being made in successfully reducing and managing of sedimentation at reservoirs. New methods in combination with the flushing operation demonstrated significant performance in sediment removal from the reservoirs and restoring the corresponding storage. The study of this paper is recommended to interested researchers, dam owners, and water resources authorities.

کلمات کلیدی:

water management, Storage dam, Mitigation strategies, Sustainable operation, Pressurized flushing

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