

Impact of the old dam upon the water quality at the intake in San Roque Reservoir (Cordoba, Argentina)

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RESUMEN

The San Roque reservoir (Córdoba, Argentina) is the main resource for drinking water to the city of Córdoba and its surroundings with a total population of nearly 1,500,000 inhabitants. A characteristic of this reservoir is the presence of an old wall (built in 1888) acting as a submerged weir upstream the new dam (1944). The water intake is located between these two walls. Water-quality related problems have increased in the reservoir due to agricultural activities, deforestation, urban run-off and particularly the discharge of untreated sewage. The reservoir is currently receiving large inflows of nutrients and the process of eutrophication started decades ago. As a consequence, regular and continuous cyanobacterial blooms occurred since 1988. However, during the 1998-1999 and 1999-2000 summer periods the growing of these blue-green algae (cyanophyceae) was scarce, instead red algae (dynophyceae: ceratium) dominated the blooms. This latter type of algae generated important operational problems at the water treatment plants that left the city without tap water for several days. This work presents the results of a comprehensive field study consisting of 27 campaigns during a chronological year (September 1999 - August 2000) in three monitoring stations: the water intake, the old wall surroundings and the center of the reservoir. Analysis of the gathered information clearly reveals the impact of the submerged weir on the water quality at the intake, also showing the different patterns of algae diversity at these stations. The observed differences in DO, temperature and chlorophyll are partially explained as a consequence of the relative importance of internal waves on vertical mixing in stratified water bodies

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