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SIMPLIFIED HYDROLOGIC CORRELATIONS TO FORECAST THE NATURAL REGIME OF LAKE CHAPALA

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ABSTRACT

Lake Chapala is the most important lake in Mexico and the main water supply for Guadalajara, the second biggest city in the country. Presently the lake contributes more than 65% of the daily water needs of the city. The main tributary to the lake is the Lerma River. After a severe drought period in the 1950s, the water inflow to the lake from the Lerma River during the period 1960-1980 was on average 1,769 Mm³/yr. This raised the average storage volume of the lake to 6,940 Mm³. During the period 1980-2000 the water supply of the Lerma River was drastically reduced, to only 425 Mm³/yr diminishing the storage volume of the lake to 2,163 Mm³ in 2000. The present work provides a simplified statistical analysis of the official historical hydrologic and hydrometric data and illustrates what the water level of the lake would have been under a natural flow regime for the period of 1934-2003, and also shows the natural hydraulic residence time for the lake. This information allows calculation of water deficits, and also quantifies certain parameters of the lake hydrologic regime, allowing for better decisions to be made about the management of the Lerma-Chapala Basin.

Reference: de Anda, J., H. Shear, and J.L. Zavala. 2005. Simplified Hydrologic Correlations to Forecast the Natural Regime of Lake Chapala, Journal of Environmental Hydrology, Vol. 13, Paper 23.

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