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THE UPPER RIO GRANDE SIMULATION MODEL (URGSiM)

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ABSTRACT: The Upper Rio Grande Simulation Model (URGSiM) is a monthly timestep model of the Rio Grande system in New Mexico developed at Sandia National Laboratories. URGSiM provides an interactive modeling environment for educating the interested public and engaging stakeholders in water management decisions. This monthly timestep decision support simulation tool is built in Powersim Studio based on surface water dynamics and reservoir operations from the Upper Rio Grande Water Operations Model (URGWOM), and groundwater dynamics from three MODFLOW regional groundwater flow models (Española Basin, Albuquerque Basin, and Socorro Basin). Future human demands are based on historic water use and population growth trends modifiable by the model user. URGSiM is calibrated based on 1975-1999 data, and validated based on 2000 - 2009 data. URGSiM has an easy to use graphic user interface, and runs 40 year scenarios in tens of seconds. URGSiM has been used for stochastic analysis of river system behavior expected under a range of potential future climate sequences based on tree ring records and climate change scenarios. Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

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