EDITORIAL
1 Road to 2050: Visions for a More Sustainable Future / Laurel Saito,
Daniel P. Loucks, Walter M. Grayman

TECHNICAL PAPERS
3 Short-Term Optimal Operation of Hydropower Reservoirs with Unit
Commitment and Navigation / Jinwen Wang, Yongchuan Zhang
13 Quarter-Hourly Operation of Hydropower Reservoirs with Pumped Storage
Plants / Jinwen Wang, Shuangquan Liu
24 Assessment of Flow Regulation Effects by Dams in the Han River, Korea,
on the Downstream Flow Regimes Using SWAT / Nam Won Kim, Jeong
Eun Lee, Ji Tae Kim
36 Efficiency of Storm Detention Tanks for Urban Drainage Systems under
Climate Variability / J. Andres-Domenech, A. Montanari, J. B. Marco
47 Burst Detection in Water Networks Using Principal Component Analysis /
C. V. Palau, F. J. Arregui, M. Carlos
55 Extended Blockage Detection in Pipelines by Using the System Frequency
Response Analysis / Huan-Feng Duan, Pedro J. Lee, Mohamed
S. Ghidaoui, Yeou-Koung Tung
63 Real-Time Water Quality Monitoring: Assessment of Multisensor Data Using
Bayesian Belief Networks / Steven Murray, Mirnader Ghazali, Edward
A. McBean
71 Hybrid Fuzzy Regression-Artificial Neural Network for Improvement of
Short-Term Water Consumption Estimation and Forecasting in Uncertain
and Complex Environments: Case of a Large Metropolitan City / A. Azadeh,
N. Neshat, H. Hamidipour
EDITORIAL
77 Ecohydrology and Fish-Passage Engineering: Legacy of Denil and the Call for a More Inclusive Paradigm / Brett Towler, Alex Hoar, David Ahlfeld

TECHNICAL PAPERS
80 Scenario-Based Forecast of Regional Water Demands in Northeastern Illinois / Benedykt Dziegielewski, Farhat Jahan Chowdhury
90 California’s Sacramento-San Joaquin Delta Conflict: From Cooperation to Chicken / Kaveh Madani, Jay R. Lund
100 Evaluating the Impact of Climate Change Mitigation Strategies on the Optimal Design and Expansion of the Amherstview, Ontario, Water Network: Canadian Case Study / Ehsan Roshani, Stephanie P. MacLeod, Yves R. Filion
111 Storm-Water Investment Strategy Evaluation Model for Impaired Urban Watersheds / Arthur E. McGarity
125 Site Suitability Analysis for Natural Systems for Wastewater Treatment with Spatial Fuzzy Analytic Hierarchy Process / Konstantinos Anagnostopoulos, Athanasios Vavatsikos
144 Multiobjective Evolutionary Computation Approach for Redesigning Water Distribution Systems to Provide Fire Flows / Lufthansa Kanta, Emily Zechman, Kelly Brumbelow
153 Applying Network Theory to Quantify the Redundancy and Structural Robustness of Water Distribution Systems / A. Yazdani, P. Jeffrey
162 Dual Water Distribution Network Design under Triple-Bottom-Line Objectives / Doosun Kang, Kevin Lansey
176 Boolean Integer Nonlinear Programming for Water Multireservoir Operation / Abdelkrim El Mouatasim

TECHNICAL NOTES
EDITORIAL
193 Provoking More Productive Discussion of Wicked Problems / Jay R. Lund

TECHNICAL PAPERS
196 Reducing the Complexity of Multiobjective Water Distribution System Optimization through Global Sensitivity Analysis / Guangtao Fit, Zoran Kapelan, Patrick Reed
208 Revisiting Optimal Water-Distribution System Design: Issues and a Heuristic Hierarchical Approach / Doosun Kang, Kevin Lansey
218 Water-Distribution Systems Simplifications through Clustering / Lina Perelman, Avi Ostfeld
230 False Negative/Positive Issues in Contaminant Source Identification for Water-Distribution Systems / Hailiang Shen, Edward McBean
237 Losses Reduction and Energy Production in Water-Distribution Networks / Nicola Fontana, Maurizio Giugni, Davide Portolano
245 Hybrid Water Demand Forecasting Model Associating Artificial Neural Network with Fourier Series / Frederico Keizo Odan, Luisa Fernanda Ribeiro Reis
257 Short-Term Scheduling for Large-Scale Cascaded Hydropower Systems with Multivibration Zones of High Head / Chuntian Cheng, Jianjian Shen, Xinyu Wu
268 Option Games in Water Infrastructure Investment / Pongsak Suttinon, Asif Mumtaz Bhatti, Seigo Nasu
277 Kernel Function Model for Planning of Agricultural Groundwater Development / Susmita Ghosh, Deepak Kashyap
287 Statistical and Dynamical Climate Predictions to Guide Water Resources in Ethiopia / P. Block and L. Goddard

CASE STUDIES
299 Estimating and Verifying United States Households’ Potential to Conserve Water / Francisco J. Suero, Peter W. Mayer, David E. Rosenberg

TECHNICAL NOTES
307 Planning-Level Capital Cost Estimates for Pumping / Thomas M. Walski
EDITORIAL
311  Comment on the Announced Death of Stationarity / Nicholas C. Matalas

TECHNICAL PAPERS
313  Decentralized Optimization Method for Water Allocation Management in the Yellow River Basin / Yi-Chen E. Yang, Jianshi Zhao, and Ximing Cai
326  550-Year Reconstruction of Streamflow Variability in Spring Valley, Nevada / Scotty Strachan, Franco Biondi, Joseph Leising
334  GIS-Based Decision Support System for Dam Break Flood Management under Uncertainty with Two-Dimensional Numerical Simulations / Honghai Qi, Mustafa S. Altinakar
356  Demand Components in Water Distribution Network Analysis / O. Giustolisi, T. M. Walski
368  Simplified Procedure for Water Distribution Networks Reliability Assessment / Carlo Ciaponi, Luigi Franchioli, Sergio Papiri
311  Calibration of Proportional Controllers for the RTC of Pressures to Reduce Leakage in Water Distribution Networks / A. Campisano, C. Modica, L. Vetrano
INTRODUCTION
385 Special Section on Climate Change and Water Resources: Climate Nonstationarity and Water Resources Management / Jose D. Salas, Balaji Rajagopalan, Laurel Saito, Casey Brown

FORUM
389 Two Faces of Uncertainty: Climate Science and Water Utility Planning Methods / Joseph J. Barsugli, Jason M. Vogel, Laurna Kaatz, Joel B. Smith, Marc Waage, Christopher J. Anderson

TECHNICAL PAPERS
396 Incorporating Climate Uncertainty in a Cost Assessment for New Municipal Source Water / Erin Towler, Bob Raucher, Balaji Rajagopalan, Alfredo Rodriguez, David Yates, R. Scott Summers
412 Water Management Decisions Using Multiple Hydrologic Models within the San Juan River Basin under Changing Climate Conditions / W. Paul Miller, R. Alan Butler, Thomas Piechota, James Prairie, Katrina Grantz, Gina DeRosa
421 Impacts of Climate Change on Irrigated Agriculture in the Maipo Basin, Chile: Reliability of Water Rights and Changes in the Demand for Irrigation / Francisco J. Meza, Daniel S. Wilks, Luis Gurovich, Nicolas Bambach
431 Agriculture Vulnerability to Climate Change in a Snowmelt-Driven Basin in Semiarid Chile / Sebastian Vicuna, James McPhee, Rene D. Garreau
465 Water Management Adaptations to Prevent Loss of Spring-Run Chinook Salmon in California under Climate Change / Lisa C. Thompson, Marisa I. Escobar, Christopher M. Mosser, David R. Purkey, David Yates, Peter B. Moyle

OTHER TECHNICAL PAPERS
479 Role of Modeling Uncertainty in the Estimation of Climate and Socioeconomic Impact on River Water Quality / Gabriele Freni, Giorgio Mannina, Gaspare Viviani
491 Exploring the Water-Thermoelectric Power Nexus / Vincent C. Tidwell, Peter H. Kobos, Len A. Malczynski, Geoff Klise, Cesar R. Castillo
502 Regional Estimation of Storm Water Management Parameters in Florida / David A. Chin
512 Natural Resource Sustainability versus Livelihood Resilience: Model of Groundwater Exploitation Strategies in Developing Regions / Ram Ranjan

Effective Approach for Solving Battle of Water Calibration Network Problem / Zheng Yi Wu and Thomas M. Walski


Impact of Water Demand Parameters on the Reliability of Municipal Storage Tanks / Jakobus E. van Zyl, Yves le Gat, Olivier Piller, Thomas M. Walski


OTHER CASE STUDIES


OTHER TECHNICAL NOTES

Extreme Impact Contamination Events Sampling for Real-Sized Water Distribution Systems / Lina Perelman, Avi Ostfeld
EDITORIAL
588 Engaging International Perspectives through EWRI for a Global Profession / Laurel Saito, Cristiane Queiroz Surbeck, Stacy Langsdale, Elizabeth Bourget, and Derek Wride

TECHNICAL PAPERS
590 Improved Dynamic Programming for Reservoir Operation Optimization with a Concave Objective Function / Tongtiegang Zhao, Ximing Cai, Xiaohui Lei, and Hao Wang
597 Short-Term Reservoir Storage Frequency Relationships / Ralph A. Wurbs, Spencer T. Schnier, and Hector E. Olmos
606 Representing Energy Price Variability in Long- and Medium-Term Hydropower Optimization / Marcelo A. Olivares and Jay R. Lund
614 Effect of Data Collection on the Estimation of Wall Reaction Coefficients for Water Distribution Models / M. F. K. Pasha and K. Lansey
624 Field Studies and Modeling Exploring Mean and Maximum Water Age Association to Water Quality in a Drinking Water Distribution Network / John Machell and Joby Boxall
651 Box-Constrained Optimization Methodology and Its Application for a Water Supply System Model / Mashor Housh, Avi Ostfeld, and Uri Shamir
660 Identifying Cultural Flow Preferences: Kakaunui River Case Study / Gail Tipa and Kyle Nelson
671 Integrated Planning of Land Use and Water Allocation on a Watershed Scale Considering Social and Water Quality Issues / Azadeh Ahmadi, Mohammad Karamouz, Ali Moridi, and Dawei Han

OTHER TECHNICAL NOTES
682 Finding Least-Cost Pump Schedules for Reservoir Filling with a Variable Speed Pump / József Gergely Bene and Csaba János Hős