A. Michael Sheer, M.P.P
Chief Financial Officer
Senior Policy Analyst

HYDROLOGICS
Advancing the management of water resources

Expertise

Modeling and evaluating water management regimes, developing situational performance metrics for individual basins, assisting stakeholders in developing alternative management strategies

Education

M.P.P, Environmental Policy, 2010, University of Maryland
B.S., Biology: Behavior, Ecology, Evolution and Systematics, 2005, University of Maryland
B.S., Animal Science, 2005, University of Maryland

Professional History

Chief Financial Officer, HydroLogics, Inc., 2015-present
Senior Policy Analyst, HydroLogics, Inc., 2010 - present
Environmental Scientist, HydroLogics, Inc., 2005 - 2008
Research Fellow, Howard Hughes Medical Institute, 2001-2005

Project Experience

Kansas Real World Drought Exercise, Kansas, United States
Kansas Water Office (2017- present)
As project manager, designed and oversaw the transition of the Kansas Drought Tournament tool (see below) from a fictional basin onto the real-life combined Neosho, Marais Des Cygnes, and Verdigris basins. Redesigned interface to meet new objectives and operational alternatives for stakeholders to explore. Planned and ran a one-day session with stakeholders to explore management options for the region and educate them on the concerns and activities of the Kansas Water Office.

Kansas Drought Tournament, Kansas, United States
Kansas Water Office (2016-2017)
As project manager, oversaw, designed, and planned the first drought tournament held by the state. Designed and oversaw the implementation of a novel interface for the OASIS model by which players could directly work with an underlying OASIS model to explore a variety of methods for managing a fictional river basin. Players then competed with one another (for prizes) to create the "best" management plan for the basin after scoring performance in a variety of ways, with the final winning team chosen by vote.

Bow River Water Management Project, Alberta, Canada
Alberta WaterSMART (2016)
As a support modeler, worked collaboratively with stakeholders to identify and refine new infrastructure and operations mechanisms for adapting to climate variability in the Bow River basin. Identified and refined alternatives for stakeholders in live modeling sessions. While earlier work in the project focused on options for adapting to flood, this effort focused on both identifying potential for these facilities to act in a dual-purpose way in drought as well as identify new possibilities.

South Saskatchewan River Operational Model, Alberta, Canada
Alberta WaterSMART (2015)

As project manager, worked to combine the previous Bow River, Red Deer, and Oldman/Southern Tributaries models into a unified single-basin model. Organized development of new performance metrics to complement existing sub-basin metrics and address a variety of system-wide issues. This notably included an inter-provincial apportionment agreement for the South Saskatchewan River. Ran very large live modeling computer-aided negotiation sessions with stakeholders.

Bow River Basin Flood Mitigation, Alberta, Canada
Alberta WaterSMART (2014)
Acting as a support modeler, assisted in live collaborative modeling sessions with stakeholders to test potential mitigation options in the basin. Utilized a modified version of the Bow River Operational Model developed in 2010 running on an hourly timestep. Also integrated output with a GIS-based flood visualization tool developed by GranDuke Geomatics.

Red Deer River Basin, Alberta, Canada
Alberta WaterSMART (2013-2014)
As project manager, led the development of the Red Deer River Basin Operational Model. Worked with stakeholders in live modeling sessions to find basin-wide solutions to problems expected to arise from climate variability and growth. This project also included work with a locally developed ALCES land use model that was run "on-the-fly" with stakeholders.

Oldman, Southern Tributaries, and South Saskatchewan, Alberta, Canada
Alberta WaterSMART (2013-2014)
As project manager, led the development of the Oldman, Southern Tributaries, and
South Saskatchewan Operational Model (OSSKOM) to find novel solutions to deal with the impacts of Climate Variability. Worked directly with stakeholders to identify key performance metrics and codify existing management practices for inclusion in the model. Work included computer aided negotiation sessions using the OSSK model with stakeholders to develop alternative management practices to improve basin performance.

Bow River Basin Climate Variability, Alberta, Canada
Alberta WaterSMART (2011-2013)
As project manager, helped to develop and model a range of climate scenarios based on Global Circulation Models (GCM). Novel techniques allowed the conversion of Annual Average Stream flows extracted from GCMs into daily streamflows suitable for use in surface water management model. Led and coordinated a Computer Aided Negotiation (CAN) session in which basin stakeholders experimented with the Bow River Operations Model to find novel solutions to deal with the impacts of Climate Variability.

Bow River Live Simulation, Alberta, Canada
Alberta WaterSMART (2011)
As project manager, developed a game in which stakeholders took on roleplaying opportunities for jointly managing their way through an unexpected drought. Developed and built the model to allow players to communally operate the system on a week by week basis, using forecasts (with errors) and discussion to choose operational decisions for releases, fisheries management, and minimum

flow supplementation. Co-ordinated and managed the modeling and technical effort both before and during the event itself. Assisted with facilitation when needed.

Bow River Basin, Alberta, Canada
Alberta WaterSMART (2010-2011)
Co-principal in the development of the Bow River Operational Model. Collected operational data from basin stakeholders and prior modeling efforts under extremely short time frames. Developed alternative operations in collaborative sessions with stakeholders in an attempt to establish that superior river operations were possible while maintaining existing water rights frameworks. Led and coordinated several stakeholder meetings intended to refine modeled procedures and encourage cooperation.

Apalachicola-Chattahoochee-Flint River Basin
Atlanta Regional Commission (2006-2010)
Worked with existing OASIS models of the Apalachicola-Chattahoochee-Flint River Basin in developing risk analysis performance metrics during the 2007-2008 drought. Assisted in the modeling of several biological performance metrics, and stress testing operational scenarios. Provided regular updates on the status of the system, often with 24-48 hour turnaround.

Kissimmee River Basin, Florida
AECOM (formerly Earth Tech) (2006-2008)
Assisted in the development and modeling of operational strategies for the upper and lower Kissimmee Basis using the OKISS Oasis model. Acted as a team modeler during live interactive modeling sessions used to generate new strategies. Also worked individually with stakeholders to refine specific management strategies and convert them into modeled forms.

Publications, Reports, and Presentations

A. Michael S. Sheer, "Continuous Models: Creating Models and Working with Stakeholders Over the Long Term." American Water Resources Association (AWRA) Summer Specialty Conference on Climate Change Solutions, June 26, 2017

David Sauchyn, Jeannine-Marie St-Jacques, Elaine Barrow, Michael Nemeth, Ryan MacDonald, **A. Michael S. Sheer**, Daniel P. Sheer, 2016. "Adaptive Water Resource Planning in the South Saskatchewan River Basin: Use of Scenarios of Hydroclimatic Variability and Extremes." *Journal of the American Water Resources Association (JAWRA) Journal of the American Water Resources Association (JAWRA)* 52(1):222-240.

St-Jacques, J.M., D.J. Sauchyn, E. Barrow, M.W. Nemeth, R.J. MacDonald, **A.M.S. Sheer** and D.P. Sheer. Adaptive water resource planning in the South Saskatchewan River Basin: use of scenarios of hydroclimatic variability and extremes. 27th Pacific Climate Workshop, Pacific Grove, California, Mar. 8-11, 2015

A. Michael S. Sheer, "We C.A.N. Do It: Actively Engaging Stakeholders in Modelling." International Environmental Modelling and Software Society (iEMSs) 7th Intl. Congress on Env. Modelling and Software, June 15-19, 2014

A. Michael S. Sheer, Michael W. Nemeth, Daniel P. Sheer, Megan Van Ham, Michael Kelly, David Hill, Samuel D. Lebherz, 2013. "Developing A New Operations Plan For The Bow River Basin Using Collaborative Modeling For Decision-support." *Journal of the American Water Resources Association (JAWRA)* 49(3):654-668.

Jeannine-Marie St. Jacques, David Sauchyn, David J. Thompson, **A. Michael S. Sheer,** Daniel P. Sheer, Daniel P. Sheer, Michael Kelly, Megan Van Ham, Michael W. Nemeth, Elaine Barrow, "Developing 21st Century Hydroclimate Scenarios for the Bow River Basin, Alberta, Canada." Pacific Climate Workshop, March 3-6, 2013

Michael Kelly, Michael Nemeth, **A. Michael Sheer**, Daniel Sheer "The Bow River Project: Collaboration For Improved Water Management." Water in a World of Seven Billion, May 10, 2012

A. Michael S. Sheer, Michael W. Nemeth, Daniel P. Sheer, Megan Van Ham, Michael Kelly, David Hill, Samuel D. Lebherz, "NR-18: Informing Policy Decisions through Collaborative Modeling in the Bow River Basin." American Geophysical Union Science Policy Conference, May 1-2, 2012

A. Michael Sheer, "Collaborative Modeling and Policy in the Bow River Basin." American Geophysical Union Fall Meeting, December 07, 2011