



STEVEN P. LARSON

Groundwater Hydrologist

EDUCATION **MS** Civil Engineering, 1971, University of Minnesota, Minneapolis, Minnesota
BS Civil Engineering (with high distinction), 1969, University of Minnesota, Minneapolis, Minnesota

REGISTRATIONS **Certified Professional Hydrologist** American Institute of Hydrology

PROFESSIONAL HISTORY **S.S. Papadopoulos & Associates, Inc.**, Bethesda, Maryland
 Executive Vice President, 1980-present
U.S. Geological Survey, Water Resources Division, Reston, Virginia
 Hydrologist, 1975-1980
U.S. Geological Survey, Water Resources Division, St. Paul, Minnesota
 Hydrologist, 1971-1975
U.S. Geological Survey, Water Resources Division – National Training Center, Denver, Colorado
 Hydrologist, 1971
St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minnesota
 Research Assistant, 1969-1971

SUMMARY OF QUALIFICATIONS Mr. Larson is a recognized authority on numerical simulation models and their application in the analysis of a variety of groundwater problems. He has developed such models for analyzing groundwater flow, mass- and heat-transport in groundwater systems, contaminant migration, recovery of petroleum products from groundwater, saltwater intrusion in coastal aquifers, and thermal energy storage in aquifers. In addition, he has been in the forefront of combining these methods with linear programming techniques to optimize the development of groundwater supplies or remediation of contaminated groundwater. He has conducted training courses on the use of these models and provided technical support on their application to a variety of hydrologic conditions. Mr. Larson has authored and co-authored publications on the application of aquifer simulation models that are widely used by practicing hydrologists. He has served as an expert witness in numerous judicial forums regarding groundwater issues and the application of simulation models for demonstrating the fate of soil/groundwater contamination and the effect of remediation alternatives.

AWARDS & HONORS **Civil Servant of the Year**, U.S. Geological Survey, 1974
U.S. Geological Survey Incentive Award, 1974
American Society of Civil Engineering Student Award, 1969

REPRESENTATIVE PROJECT EXPERIENCE **S.S. Papadopoulos & Associates, Inc.**, Bethesda, Maryland
 As senior principal of the company, Mr. Larson assists in the management of the company and in the conduct and management of projects dealing with a wide variety of environmental and water-resource issues. During his many years at SSP&A, he has been involved in numerous projects covering a wide spectrum of technical, environmental, and legal issues including:

- Site evaluations for remedial investigations, feasibility studies, engineering evaluation/cost analyses, or remedial action plans at CERCLA and other waste disposal sites including the Stringfellow site in California, the FMC Fridley site in Minnesota, the Chem Dyne site in Ohio, the Conservation Chemical site in



STEVEN P. LARSON

Groundwater Hydrologist

Page 2

REPRESENTATIVE PROJECT

EXPERIENCE

— *continued*

- Missouri, the Hardage-Criner site in Oklahoma, and the Hastings site in Nebraska.
- Evaluations of groundwater contamination at CERCLA and other waste-disposal sites including Love Canal, New York; Savannah River Plant, South Carolina; Tucson Airport, Arizona; Ottati & Goss site, New Hampshire; Martin-Marietta site, Colorado; and Western Processing site in Washington.
- Environmental impact evaluations of the effects of water development for proposed coal slurry operations in Wyoming, of in-situ mining for trona minerals in Wyoming, and of groundwater development on the shallow-water-table in South Dakota.
- Evaluations of the effects of discharge on groundwater from chemical-manufacturing waste disposal in Wyoming, Virginia, and New York.
- Water-supply development evaluations, including potential impacts of salt water intrusion on water supply development, in Oman, Portugal and in Florida; and analysis of potential impacts of power plant cooling water on groundwater and surface water in Wyoming.
- Evaluations of permitting, licensing, and environmental issues associated with coal mining in Wyoming, Montana, and Arizona, copper mining in Montana and Utah, trona mining in Wyoming, and uranium mining in New Mexico.
- Evaluations of water-rights permitting and adjudication in New Mexico, Texas, Colorado, Kansas, Wyoming, Nebraska, Arizona, and Idaho.
- Environmental audits, groundwater monitoring plans, and other environmental investigations at the Oaks Landfill in Maryland, the FMC Carteret facility in Wyoming, the former IBM facility in Indiana, and the Insilco site in Florida.

SPECIFIC PROJECT EXPERIENCE

- Far-Mar-Co Subsite, Hastings Superfund Site, Nebraska – Supervised the preparation of an engineering evaluation/cost analysis (EE/CA) to support implementation of remediation of groundwater contamination. Worked with regulatory agencies to gain approval of the EE/CA and progress toward design and implementation. Previously, on behalf of Morrison Enterprises, supervised completion of a remedial investigation and a feasibility study which focused on carbon tetrachloride and ethylene dibromide contamination.
- Stringfellow site near Riverside, California – Served as the principal technical advisor on groundwater issues to the Pyrite Canyon Group, which overviewed investigations and remedial activities sponsored by the responsible parties. Designed and evaluated several investigations and remediation programs. Represented the client as a technical spokesperson in workshops, technical seminars, and meetings with regulatory agencies and other interested parties. Prepared key documents to support the decision-making process toward the final Record of Decision.
- In the case of *Kansas v. Colorado* before the U.S. Supreme Court – Served on a team of technical advisors to the State of Kansas in its litigation with Colorado over violations of the Arkansas River Compact. Assisted in obtaining a finding



STEVEN P. LARSON

Groundwater Hydrologist

Page 3

**REPRESENTATIVE
PROJECT
EXPERIENCE**
— *continued*

of compact violation regarding the pumping of groundwater from wells along the river valley in Colorado. Continues as a technical expert as the case moves into subsequent phases involving the quantification of depletions of supply, assessments of damage, and future compliance by Colorado.

EXPERT AND FACT WITNESS EXPERIENCE

- Litigation associated with soil and groundwater contamination at CERCLA, RCRA, and other facility sites in California, Kansas, Missouri, Oklahoma, Tennessee, Montana, Florida, Iowa, and Nebraska.
- Toxic tort, property damage, and liability litigation regarding soil and groundwater contamination at sites or facilities in New York, Tennessee, Texas, Virginia, Ohio, and other states.
- Insurance recovery litigation associated with contamination at a variety of sites or facilities for commercial clients such as General Electric, FMC Corporation, Upjohn, AT&T, Rohr Industries, Beazer East/Koppers, North American Phillips, DOW Chemical, Occidental Chemical, and Southern California Edison.
- Water-rights permitting litigation and water adjudication including cases in New Mexico, Colorado, and Arizona, as well as interstate river compact disputes involving the states of Kansas, Colorado, Wyoming, and Nebraska.

U.S. Geological Survey, Water Resources Division, Reston, Virginia

Originated, planned and conducted research in the development of numerical simulation models and techniques for the analysis of a variety of problems related to groundwater systems. Mr. Larson applied the developed models to actual field situations for verification and further refinement, and documented these models in a manner suitable for use by others. He served as coordinator and instructor for training courses on groundwater simulation models and methodologies conducted by the Division, and provided primary technical assistance to many groundwater projects conducted by District. Mr. Larson participated in and represented the U.S. Geological Survey in national and international meetings. He conducted groundwater studies of national and regional interest and participated in, or was detailed to, overseas projects conducted or managed by other U.S. agencies and the World Bank.

U.S. Geological Survey, Water Resources Division, St. Paul, Minnesota

Served as Project Chief and participated in studies involving the evaluation of groundwater resources, the assessment of stream-water quality, and the analysis of surface-water/groundwater relationships in various parts of Minnesota.

U.S. Geological Survey, Water Resources Division, National Training Center, Denver

Participated in an extended training program providing in-depth training on both office and field techniques for the collection and the analysis of data and the conduct of surface-water, groundwater, and water-quality studies.



STEVEN P. LARSON

Groundwater Hydrologist

Page 4

- REPRESENTATIVE PROJECT EXPERIENCE**
— *continued*
- St. Anthony Falls Hydraulic Laboratory, Minneapolis, Minnesota**
As a Research Assistant, participated in the development and operation of an urban-runoff model to predict sewer flow distribution for the Minneapolis – St. Paul Sanitary District. Assisted in runoff prediction studies for St. Paul and participated in a project to survey and summarize computer programs used in water resources engineering.
- PROFESSIONAL SOCIETIES**
- Association of Ground Water Scientists and Engineers
American Institute of Hydrology
- PUBLICATIONS**
- Barth, G., S.P. Larson, G. Lewis, and K. Green. 2011. Prediction Uncertainty of Drawdown in the Seven-Rivers Augmentation Well Field. National Groundwater Association Conference 2011. NGWA, Baltimore, MD June 2011, 15.
- Tonkin, M., S.P. Larson, M. Bakker, R. Shannon, and V. Bennett. 2011. Application of Analytic Element Method (AEM) and Numerical Axi-Symmetric (RZ) Models to Simulate a Groundwater Circulation Well (GCW): *In Review*: 5.
- Spiliotopoulos, A., M. Karanovic, and S.P. Larson. 2008. Development of Transient Flow Models for the Solomon River Basin. Presented at MODFLOW and More 2008: Ground Water and Public Policy Conference, May 18-21, 2008, Golden, Colorado.
- Larson, S.P. 2007. The Use of Complex Computer Modeling of Groundwater Systems. Presented at the 53rd Annual Rocky Mountain Mineral Law Institute,, Vancouver, British Columbia, July 19-21, 2007. 21.
- Papadopoulos, S.S., and S.P. Larson. 2007. The Drawdown Distribution in and around a Well Pumping from a Two-Region Aquifer. 119th Annual Meeting of the Geological Society of America, Denver, Colorado, October 27-31, 2007. In *Abstracts and Programs*. 39, no. 6. Washington, DC: American Geophysical Union. 189.
- Larson, S.P. 2006. Simplicity in Modeling – Use of Analytical Models with PEST. MODFLOW and More 2006, Managing Ground-Water Systems, International Ground Water Modeling Center, Colorado School of Mines Golden, Colorado, May 22-24, 2006. Vol. 2. 579-583.
- Tonkin, M.J., S.P. Larson, and C. Muffels. 2004. Assessment of Hydraulic Capture through Interpolation of Measured Water Level Data. Presented at Conference on Accelerating Site Closeout, Improving Performance, and Reducing Costs through Optimization, Environmental Protection Agency, Federal Remediation Technology Roundtable, June 15-17, 2004, Dallas, Texas.
- Tonkin, M.J., and S.P. Larson. 2002. Kriging Water Levels with a Regional-Linear and Point-Logarithmic Drifts: *Ground Water*. 40, no. 2, March-April: 185-193.
- Blum, V.S., S. Israel, and S.P. Larson. 2001. Adapting MODFLOW to Simulate Water Movement in the Unsaturated Zone. MODFLOW 2001 and Other Modeling Odysseys, Proceedings, International Groundwater Modeling Center (IGWMC), September 11-14, 2001, Colorado School of Mines, Golden, Colorado. 60-65.



STEVEN P. LARSON

Groundwater Hydrologist

Page 5

**DEPOSITION AND
TESTIMONY
EXPERIENCE**

DEPOSITIONS

- 2011 OneBeacon America Insurance Company vs. Narragansett Electric Company. Volume I. Commonwealth of Massachusetts, Suffolk County Superior Court. 05-3086-BLS-I. November 15.
- 2010 Kansas vs. Nebraska and Colorado. U.S. Supreme Court. No. 126, Orig. June 29.
- 2010 OneBeacon America Insurance Company vs. Narragansett Electric Company. Volume I. Commonwealth of Massachusetts, Suffolk County Superior Court. 05-3086-BLS-I. March 3.
- 2009 Morrison Enterprises and the City of Hastings, Nebraska vs Dravo Corporation. U.S. District Court for the District of Nebraska. No. 4:08-CV-3142 (Confidential section). July 23.
- 2009 State of Oklahoma vs. Tyson Foods et al. U.S. District Court for the Northern District of Oklahoma. 05-cv-349-TCK-SAJ. April 10.
- 2009 Kansas vs. Nebraska and Colorado. U.S. Supreme Court. No. 126, Orig. February 24.
- 2009 Timm Adams et al. vs. United States of America et al. U.S. District Court for the District of Idaho. CIV 03-0049-E-BLW. January 16.
- 2008 Gloria Ned et al. vs. Union Pacific Railroad. 14th Judicial District Court, Parish of Calcasieu, State of Louisiana. 2003-001100 (Consolidated Cases). August 15.
- 2008 Jeff Alban et al. vs. ExxonMobil Corporation et al. Circuit Court for Baltimore County. 03-C-06-010932. January 24.
- 2007 City of Neodesha, Kansas et al. vs. BP Corporation North America. District Court of Wilson County, Kansas. 2004-CV-19. July 24.

TESTIMONY

- 2011 OneBeacon America Insurance Company vs. Narragansett Electric Company. Volume I. Commonwealth of Massachusetts, Suffolk County Superior Court. 05-3086-BLS-I. March 23.
- 2010 OneBeacon America Insurance Company vs. Narragansett Electric Company. Volume I. Commonwealth of Massachusetts, Suffolk County Superior Court. 05-3086-BLS-I. October 7.
- 2010 Kansas vs. Nebraska and Colorado. U.S. Supreme Court. No. 126, Orig. July 12 - 14.
- 2010 State of Oklahoma vs. Tyson Foods et al. U.S. District Court for the Northern District of Oklahoma. 05-cv-349-TCK-SAJ. January 4-5.
- 2009 Timm Adams et al. vs. United States of America and E.I. DuPont de Nemours and Company, a Delaware corporation. U.S. District Court, District of Idaho. Case No. CIV-03-0049-E-BLW. August 6.



STEVEN P. LARSON

Groundwater Hydrologist

Page 6

DEPOSITION AND TESTIMONY EXPERIENCE
— *continued*

2009 Kansas vs. Nebraska and Colorado. U.S. Supreme Court. No. 126, Orig. March 9-19.

2009 Gloria Ned et al. vs. Union Pacific Railroad. 14th Judicial District Court, Parish of Calcasieu, State of Louisiana. 2003-001100 (Consolidated Cases). January 6, March 27.

2007 City of Neodesha, Kansas et al. vs. BP Corporation North America. District Court of Wilson County, Kansas. 2004-CV-19. December.

RATE OF COMPENSATION

Mr. Larson's rate of compensation is \$251.00 per hour.