BILLY E. JOHNSON
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Water Quality and Contaminant Modeling Branch
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Education:
- B.S., Mississippi State University, 1987, Civil Engineering
- M.S., Memphis State University, 1993, Civil Engineering
- PhD, Colorado State University, 1997, Civil Engineering

Current Position:

As a Research Civil Engineer in the Water Quality and Contaminant Modeling Branch, Dr. Johnson develops and applies multi-dimensional hydrodynamic and hydrologic models. Dr. Johnson works with various ERDC laboratories as well as Universities, Private Companies, Federal Govt., State Govt. and Local Govt. in this development and application. He is currently interested in developing physically based Nutrient and Chemical fate/transport processes to the distributive hydrologic model, GSSHA as well as continuing to work with ERDC team members to add sediment capability to the reservoir water quality model, CE-QUAL-W2.

Research Expertise:
- One-, two-, and three-dimensional hydrodynamic modeling.
- One-, two- dimensional hydrologic and water quality modeling.
- Development of upland erosion and channel sedimentation algorithms for two- dimensional distributed rainfall-runoff model.
- Development of nutrient sub-modules for inclusion into USACE developed water engines.
- Development of contaminant sub-modules for inclusion into USACE developed water engines.
- Development of Training Range Environmental Evaluation and Characterization System (TREECS™)

Professional Experience:
- Hydraulic Engineer, Memphis District, USACE, 1987 – 1991.
  - Lumped parameter hydrologic modeling (HEC-1).
  - One– dimensional hydraulic modeling (HEC-2).
- Research Hydraulic Engineer, ERDC Coastal and Hydraulics Laboratory, 1991 - 2000.
  - One-, two-, three – dimensional hydrodynamic modeling (UNET, HEC-2, RMA-2, CH3D).
  - One-, two- dimensional hydrologic modeling (HEC-1, CASC2D, HSPF).
  - Development of the upland erosion algorithm for CASC2D.
  - Assisted in the incorporation of CASC2D into the WMS.
- Principal Environmental Systems Modeler, Concurrent Technologies Corporation, 2000 – 2001.
  - Three– dimensional hydrodynamic modeling (CH3D).
  - Watershed / Water quality modeling (HSPF).
- Research Civil Engineer, ERDC Environmental Laboratory, 2001 – present.

- One-, two-, three- dimensional hydrodynamic and water quality modeling.
- Multi-Dimensional Watershed / Water quality model development and application.
- Multi-Dimensional Watershed / Contaminant model development and application.
- Assisting in the incorporation of HSPF into the WMS.
- Professional Engineer, Mississippi, 1993 – Present.
- Diplomate, Water Resources Engineer - American Academy of Water Resources Engineers (AAWRE)

Professional Organizations:
- Member American Society of Civil Engineers (ASCE)
  - Surface Water Hydrology Committee
- Member American Water Resources Association (AWRA)
  - Hydrology and Watershed Management Committee
  - Distributed Watershed Modeling Committee (Chairman)
  - Associate Editor of JAWRA (Surface Water Hydrology)
- Member International Association of Hydrological Sciences (IAHS)
- Member Society of American Military Engineers (SAME)

Special Recognitions:
Herbert D. Vogel Engineer Award Winner - 2006
Armed Forces Civilian Service Medal (Hurricane Katrina Support) - 2006
Diplomate, Water Resources Engineer – 2007
ERDC Research and Development Achievement Award – 2008
ERDC Commander's Award for Civilian Service – 2008
Mississippi Section – ASCE Engineer of the Year - 2012

Selected Publications:
Johnson, Billy E. and Raphelt, Nolan K. 1994 (September), "Using GIS to solve Urban Hydrology Problems", Proceedings of IRTCUW/UNESCO and TECHWARE (The European Conference and Exhibition on Remote Sensing and GIS in Urban Waters) UDT'94 IAHR to be held in Moscow Russia.

Johnson Billy E., Smith Roger H., and Anderson, Jerry L., 1995 (May). "Comparison of Distributive vs. Lumped Rainfall-Runoff Models on the Goodwin Creek Watershed". Proceedings, ASCE 22nd Water Resources Planning Conference, Cambridge, MA.

Johnson, Billy E., Julien, Pierre Y., and Molnar, Darcy K. 1997 (May). "Advances in Soil Erosion Modeling on Goodwin Creek. The Conference on Management of Landscape Disturbed by Channel Incision. Oxford, MS.

Julien, Pierre Y., Molnar, Darcy K., Johnson, Billy E., Combs, Phil G. 1998 (May), "Two-Dimensional Surface Runoff Modeling using CASC2D", EOS Journal of the American Geophysical Union.

Johnson, Billy E., Martin, Martin, William D., Jourdan, Mark 1999 (May). "Development and Verification of a Storm Event based Two-Dimensional Upland Erosion Model". International Conference on Drainage Basin Dynamics and Morphology. Jerusalem, Israel.

Johnson, Billy E., Julien, Pierre Y., and Watson, Chester C. 2000 (February), "Development of a Storm Event Based Two-Dimensional Upland Erosion Model (CASC2D-SED)", American Water Resources Association (AWRA), February 2000.

Billy E. Johnson and Pierre Y. Julien, "The two-dimensional upland erosion model, CASC2D-SED", International Association of Hydrological Sciences (IAHS) and Basin Research, IAHS publication no. 261, May 2000.

Johnson, Billy E., Merkle, Peter, Russell Lisle H., Bushong, Philip M., Wolski, Matthew G., and Holland, Jeffery. 2000 (July). "Development of a Particulate Transport Algorithm within the 2-D Rainfall-Runoff

Model (CASC2D), Fourth Annual George Mason University Transport and Dispersion Modeling Workshop, Fairfax, VA.

Johnson, Billy E., et al. 2001 (July), "Hydrologic Simulation Program – Fortran (HSPF) Development, Calibration, and Verification Plan Sinclair/Dyes Inlet Watershed, Concurrent Technologies Corporation, Bremertion, WA. 98312.

Bunch, Barry W., Johnson, Billy E., and Sarruff, Maria S. 2003 (June), "Panama Lakes Water Quality Modeling Study", TR-03-5, Engineer Research and Development Center, Vicksburg, MS. 39180.

Johnson, Billy E. and Zhang, Zhonglong, 2005 (September), "Development of a Distributed Source Contaminant Model for ARAMS", ERDC/EL TN-ECMI-05-3, Engineer Research and Development Center, Vicksburg, MS. 39180.

Billy E. Johnson, Medina Victor F., and Cunniff, David, "Evaluation of the Movement of Depleted Uranium using a Distributed Watershed Model", Practice Periodical of Hazardous, Toxic & Radioactive Waste Management (ASCE), Vol. 10 No. 3 pages 179-189. July 2006.

Billy E. Johnson, Zhang, Z. and Gerald, T.K., 2006 (October), "Development of Nutrient Sub-Modules (NSM) for Linkage with Hydraulic and Hydrologic Modeling Systems", AWRA Watershed Update - AWRA Hydrology & Watershed Management Technical Committee, Vol. 4 No. 4, Middleburg VA 20118-1626.

Billy E. Johnson and Terry K. Gerald, "Development of a Distributed Watershed Water Quality Model", Journal of American Water Resources Association (JAWRA), Vol. 42, No. 6: 1503-1525, Reston, VA., December 2006.

Johnson, Billy E., and Gerald, Terry, 2006, "Development of Distributed Nutrient Sub-Model (NSMv1.0) for Watersheds - Kinetic Process Descriptions", System Wide Water Resources Research Program (SWWRP), ERDC/EL TR-06-12.

Johnson, Billy E., and Coldren, Cade L., 2006, "Linkage of a Physically Based Distributed Watershed Model and a Dynamic Plant Growth Model", SWWRP Research Program, ERDC/EL TR-06-17.

Johnson, Billy E., and Zhang, Zhonglong, 2007, "Development of a Distributed Source Contaminant Transport, Transformation, and Fate (CTT&F) Sub-Model for Military Installations", EQT Research Program, ERDC-EL TR-07-10.