

## References

### Peer Reviewed

Bohne, B., I.J. Storchenegger, and P. Widmoser. 2012. An easy to use calculation method for weir operations in controlled drainage systems. Elsevier Journal of Agricultural Water Management 109: 46-53.

Buda, A.R., K.W.J. Williard, J.E. Schoonover, and M.S. Srinivasan. 2015. Featured collection introduction: Agricultural hydrology and water quality. Journal of the American Water Resources Association 51(4): 877-882.

D'Ambrosio, J.L., L.R. Williams, M.G. Williams, J.D. Witter, and A.D. Ward. 2014. Geomorphology, habitat, and spatial location influences on fish and macroinvertebrate communities in modified channels of an agriculturally-dominated watershed in Ohio, USA. Elsevier Journal of Ecological Engineering 68: 32-46.

D'Ambrosio, J.L., A.D. Ward, and J.D. Witter. 2015. Evaluating geomorphic change in constructed two-stage ditches. Journal of the American Water Resources Association 51 (4): 910-922.

Davies, B.R., J. Biggs, P.J. Williams, J.T. Lee, and S. Thompson. 2008. A comparison of the catchment sizes of rivers, streams, ponds, ditches and lakes: implications for protecting aquatic biodiversity in an agricultural landscape. Hydrobiologia 597(1): 7-17.

Davis, R.T., J.L. Tank, U.H. Mahl, S.G. Winikoff, and S.S. Roley, 2015. The Influence of Two-Stage Ditches with Constructed Floodplains on Water Column Nutrients and Sediments in Agricultural Streams. Journal of the American Water Resources Association 51(4): 941-955.

Dunn, M., N. Mullendore, S. Garcia de Jalon, L.S. Prokopy. 2016. The Role of County

- Surveyors and County Drainage Boards in Addressing Water Quality. *Environmental Management* 57: 1217-1229.
- Evans, R.O., K.L. Bass, M.R. Burchell, R.D. Hinson, R. Johnson, and M. Doxey. 2007. Management alternatives to enhance water quality and ecological function of channelized streams and drainage canals. *Journal of Soil & Water Conservation* 62(4): 308-320.
- Herzon, I. and J. Helenius. 2008. Agricultural drainage ditches, their biological importance and functioning. *Elsevier Journal of Biological Conservation* 141: 1171-1183.
- Huang, J., W.J. Mitsch, and A.D. Ward. 2010. Design of Experimental Streams for Simulating Headwater Stream Restoration. *Journal of the American Water Resources Association* 46 (5): 957-971.
- Jayakaran, A., D. Mecklenburg, A.D. Ward, L.C. Brown, and A. Weekes. 2005. Formation of Fluvial Benches in headwater Channels in the Midwestern Region of the USA. *International Agricultural Engineering Journal*, 14(4): 193-208.
- Jayakaran, A.D. and A.D. Ward. 2007. Geometry of inset channels and the sediment composition of fluvial benches in agricultural drainage systems in Ohio. *Journal of Soil and Water Conservation* 62(4): 296-307.
- Jayakaran, A.D., D.E. Mecklenburg, J.D. Witter, A.D. Ward, and G.E. Powell. 2010. Fluvial processes in agricultural ditches in the North Central Region of the United States and implications for their management. In *Agricultural Drainage Ditches: Mitigation Wetlands for the 21st Century*, Matthew T. Moore and Robert Kröger (eds.), 195-222.
- Kröger, R., M.T. Moore, J.L. Farris, and M. Gopalan. 2011. Evidence for the Use of Low-Grade Weirs in Drainage Ditches to Improve Nutrient Reductions from Agriculture. *Water air Soil Pollut* 221: 223-234.

- Kröger, R., S.C. Pierce, K.A. Littlejohn, M.T. Moore, and J.L. Farris. 2012. Decreasing nitrate-N loads to coastal ecosystems with innovative drainage management strategies in agricultural landscapes: An experimental approach 103: 162-166.
- Kröger, R., J.T. Scott, and J.M. Prince Czarnecki. 2014. Denitrification potential of low-grade weirs and agricultural drainage ditch sediments in the Lower Mississippi Alluvial Valley. Elsevier Journal of Ecological Engineering 73: 168-175.
- Kröger, R., J.M. Prince Czarnecki, J.L. Tank, S.F. Christopher, J.D. Witter. 2015. Implementing innovative drainage management practices in the Mississippi River Basin to enhance nutrient reductions. Journal of the American Water Resources Association, 51(4): 1020-1028
- Kronvang B., C.C. Hoffmann, and R. Dorge. 2009. Sediment deposition and net phosphorus retention in a hydraulically restored lowland river floodplain in Denmark: combining field and laboratory experiments. Marine and Freshwater Research 60(7): 638-646.
- Landwehr, K.D., and B.L. Rhoads. 2003. Depositional response of a headwater stream to channelization. River Research and Applications 19: 77-100.
- Leslie, A.W., R.F. Smith, D.E. Ruppert, K. Bejleri, J.M. Mcgrath, B.A. Needelman, and W.O. Lamp. 2012. Environmental Factors Structuring Benthic Macroinvertebrate Communities of Agricultural Ditches in Maryland. Environ Entomol 41(4): 802-812.
- Littlejohn, K.A., B.H. Poganski, R. Kröger, and J.J. Ramirez-Avila. 2014. Effectiveness of low-grade weirs for nutrient removal in an agricultural landscape in the Lower Mississippi Alluvial Valley. Elsevier Journal of Agricultural Water Management 131: 79-86.
- Liu, Feng, Runlin Xiao, Yi Wang, Yong Li, Shulan Zhang, Qiao Luo, Jinshui Wu. 2013. Effect of a novel constructed drainage ditch on the phosphorus sorption capacity of ditch soils in

- an agricultural headwater catchment in subtropical central China. *Ecological Engineering* 58: 69-76.
- Magner, J., B. Hansen, T. Sundby, G. Kramer, B. Wilson, and J. Nieber. 2012. Channel evolution of Des Moines Lobe till drainage ditches in southern Minnesota (USA). *Environ Earth Sci Environmental Earth Sciences* 67(8): 2359-2369.
- Mahl, Ursula H., Jennifer L. Tank, Sarah S. Roley, Robert T. Davis. 2015. Two-stage ditch floodplains enhance N-removal capacity and reduce turbidity and dissolved P in agricultural streams. *JAWRA*, 51(4): 923-940.
- Needelman, B.A., P.J.A. Kleinman, J.S. Strock, and A.L. Allen. 2007. Improved management of agricultural drainage ditches for water quality protection: An overview. *Journal of Soil & Water Conservation* 62(4): 171-178.
- Pappas, E.A. and D.R. Smith. 2007. Effects of dredging an agricultural drainage ditch on water column herbicide concentration, as predicted by fluvarium techniques. *Journal of Soil and Water Conservation* 62(4): 262-268.
- Powell, G.E., D. Mecklenburg, and A.D. Ward. 2006. Evaluating channel-forming discharges: A study of large rivers in Ohio. *Transactions of the American Society of Agricultural and Biological Engineering* 49(1): 35-46.
- Powell, G.E., A.D. Ward, D.E. Mecklenburg, and A.D. Jayakaran. 2007a. Two-stage channel systems: Part 1, a practical approach for sizing agricultural ditches. *Journal of Soil and Water Conservation* 62(4): 277-286.
- Powell, G.E., Ward, A.D., Mecklenburg, D.E., Draper J. and W. Word. 2007b. Two-stage channel systems Part 2: Case Studies. *Journal of Soil and Water Conservation* 62(4): 287-296.

- Powell, K.L. and V. Bouchard. 2010. Is denitrification enhanced by the development of natural fluvial morphology in agricultural headwater ditches? *Journal of the North American Benthological Society* 29(2): 761-772.
- Rhoads, B.L. and K.D. Massey. 2012. Flow structure and channel change in a sinuous grass-lined stream within an agricultural drainage ditch: implications for ditch stability and aquatic habitat. *River Research and Applications* 28(1): 39-52.
- Roley, S.S., J.L. Tank, M.L. Stephen, L.T. Johnson, J.J. Beaulieu, and J.D. Witter. 2012. Floodplain restoration enhances denitrification and reach-scale nitrogen removal in an agricultural stream. *Ecological Applications* 22: 281-297.
- Roley, S.S., J.L. Tank, and M.A. Williams, 2012. Hydrologic connectivity increases denitrification in the hyporheic zone and restored floodplains of an agricultural stream. *J. of Geophysical Research* 117, 16pp.
- Roley, S.S., J.L. Tank, N.A. Griffiths, R.O. Hall, and R.T. Davis. 2014. The influence of floodplain restoration on whole-stream metabolism in an agricultural stream: insights from a 5-year continuous data set. *Freshwater Science* 33: 1043-1059.
- Roley, S.S., J.L. Tank, J.C. Tyndall, and J.D. Witter. 2016. How cost-effective are cover crops, wetlands, and two-stage ditches for nitrogen removal in the Mississippi River Basin? *Water Resources and Economics*, 15: 43-56.
- Smith, D.R. and E.A. Pappas. 2007. Effect of ditch dredging on the fate of nutrients in deep drainage ditches of the Midwestern United States. *Journal of Soil and Water Conservation* 62(4): 252-261.
- Smith, D.R. 2009. Assessment of in-stream phosphorus dynamics in agricultural drainage ditches. *Science of the Total Environment* 407: 3883-3889.

Smith D.R. and C. Huang. 2010. Assessing nutrient transport following dredging of agricultural drainage ditches. Transactions of the ASABE Vol. 53(2): 429-436.

Västilä, K., and J. Järvelä, 2011. Environmentally preferable two stage drainage channels: considerations for cohesive sediments and conveyance. International Journal of River Basin Manage 9(3-4): 171-180.

Västilä, K.; J. Järvelä, and H. Koivusalo. 2015. Flow-Vegetation-Sediment Interaction in a Cohesive Compound Channel. Journal of Hydraulic Engineering 142(1): 04015034

Ward, A. D., A.D. Jayakaran, D.E. Mecklenburg, G.E. Powell, and J. Witter. 2008. Two-Stage Channel Geometry: Active Floodplain Requirements. Encyclopedia of Water Science 2nd Edition, Stanley Trimble (editor), Taylor & Francis, CRC Press: 1253-1260.

### **Professional Meetings**

Brooker, M., J. Witter, R. Islam, and P.J. Mouser. 2014. Physical and Chemical Properties of Bench Sediments in Self-Formed Agricultural Drainage Channels. American Geophysical Union. Fall Meeting 2014.

D'Ambrosio, J.L., A. Ward, J.D. Witter, and J.L. Tank. 2012. Ecological Services of Constructed Two-Stage Agricultural Ditches. ASABE 21st Century Watershed Technology Conference and Workshop Improving Water Quality and the Environment, ASABE, Bari, Italy, May 27-June 1.

Mecklenburg, D.E. and A.D. Ward. 2005. Design discharge procedures in the STREAM Spreadsheet Tools. Proceedings of the World Water and Environmental Resources Congress: Impacts of Global Climate Change, EWRI of ASCE, Anchorage, Alaska, May 15-19.

Mecklenburg, D. and J. Witter. 2012. Self-Forming Stream Design: Stream Restoration by Ecological Succession and Channel Evolution. 4th International Ecosummit: Ecological Sustainability - Restoring the Planet's Ecosystem Services. Columbus, OH.

Ranjan, Pranay. 2014. A social networks perspective on adoption of two-stage ditches in the Western Lake Erie Basin. Paper presentation at the annual meeting of the Western Political Science Association, Seattle, WA, Apr. 17-19.

### **Thesis and Dissertation**

D'Ambrosio, J.L. 2013. Perspectives on the geomorphic evolution and ecology of modified channels and two-stage ditches in the agriculturally-dominated Midwestern United States. Doctoral Dissertation, The Ohio State University.

Hodaj, A. 2016. Evaluating the two-stage ditch as a new best management practice. Doctoral Dissertation, Purdue University.

Kallio, R.M. 2010. Evaluation of Channel Evolution and Extreme Event Routing for Two-Stage Ditches in a Tri-State Region of the USA. Master's Thesis, The Ohio State University.

Kallio, S.E. 2009. Determining the Bankfull Discharge Exceedance Potential of Agricultural Ditches in Ohio. Master's Thesis, The Ohio State University.

Guider, M. 2016. Remote sensing of agricultural ditch characteristics for two-stage ditch candidacy. Master's Thesis, The Ohio State University.

Powell, G.E. 2006. Examination, Application, and Evaluation of Geomorphic Principles and Resulting Water Quality in Midwest Agricultural Streams and Rivers. Doctoral Dissertation, The Ohio State University.

Roley, S.S. 2013. The influence of floodplain restoration on stream ecosystem function in an agricultural landscape. Doctoral Dissertation, University of Notre Dame.

## **Reports**

John, S., G. McIsaac, T. McMahon, J. Boeckler, and J. Manuel. 2014. Big Ditch Watershed TMDL Implementation Plan. Illinois Environmental Protection Agency. Springfield, IL.

Strock, J., A. Ranaivoson, G. Feyereisen, K. Spokas, D. Mulla, and M. Roser. 2017. Nutrient removal in agricultural drainage ditches. Final Report for State of Minnesota Project Contract 63906.

USDA NRCS, 2007. Part 654 Stream Restoration Design National Engineering Handbook. United States Department of Agriculture Natural Resources Conservation Service. Washington, D.C.

USDA NRCS, 2014. USDA NRCS Conservation Practice Standard 582 for Open Channels in Ohio, [https://efotg.sc.egov.usda.gov/references/public/OH/OH\\_582\\_OpenChan\\_11-12-14.pdf](https://efotg.sc.egov.usda.gov/references/public/OH/OH_582_OpenChan_11-12-14.pdf)

Witter, J.D. 2013. Alternative Design Options for Open Channels: Two-Stage Ditches and Self-Forming Channels. <https://www.agrentools.com/wp-content/uploads/2016/03/Alternative-Design-Options-for-Open-Channels.pdf>.

## **Fact Sheets**

D'Ambrosio, J.D. Witter, and A.D. Ward. 2011. Building Better Ditches. Madison: Great Lakes Regional Water Program.

Ward, A., G.E. Powell, A.D. Jayakaran, J.D. Witter, J.L. D'Ambrosio, D. Mecklenburg. 2011. Selecting and Sizing a Two-stage Channel System in an Agricultural Landscape. Great Lakes Regional Water Program.

Ward, A.D., Witter, J.D., J.L. D'Ambrosio, J. Magner. 2013. Developing regional hydraulic geometry relationships for streams and ditches. Great Lakes Regional Water Program.



Ward, A., J.D. Witter, J.L. D'Ambrosio, D. Mecklenburg, J. Magner, K. Wamsley. 2013. Tri-state hydraulic geometry relationships for sizing two-stage agricultural ditches. Great Lakes Regional Water Program.

Witter, J.D., J.L. D'Ambrosio, A. Ward, J. Magner, and B. Wilson. 2011. Considerations for implementing two-stage channels. Great Lakes Regional Water Program.