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*Areas of Expertise*

Tom has more than 35 years experience in practical aspects of municipal stormwater permit implementation, stormwater treatment practice design, stream restoration, watershed retrofits and urban watershed planning.

**Executive Director. Chesapeake Stormwater Network. Baltimore, MD** (July 2007 to present). Tom founded the Chesapeake Stormwater Network to promote more sustainable stormwater practices in the Chesapeake Bay. As an interactive network, CSN aligns and integrates the efforts of its 9,500 members across the Bay through technical assistance, webcasts and workshops. Tom also serves as the stormwater coordinator for the EPA Chesapeake Bay Program, and has guided eight expert panels to consensus to define removal rates for urban BMPs, including stormwater retrofits, stream restoration, low impact development practices, urban nutrient management, residential stewardship practices, enhanced erosion and sediment controls, nutrient discharges from grey infrastructure, street and storm drain cleaning and floating treatment wetlands. Tom has also created new protocols to verify urban BMPs using visual indicators for rapid field inspection.

**Executive Director and Founder. Center for Watershed Protection** (1992 to 2007). Tom founded a national nonprofit organization dedicated to protection of streams, lakes and estuaries through improved stewardship of urban and rural watersheds, and was responsible for all aspects of work program development, watershed research, technical support and training.

**Chief, Anacostia Restoration Team. Metropolitan Washington Council of Governments** (1982-1992). Tom directed a team of eight interdisciplinary staff that focused on design and implementation of urban watershed restoration practices and nonpoint source pollution controls. Tom spearheaded the first major urban watershed restoration effort in the nation, and crafted a comprehensive plan to implement watershed restoration projects.

*General Skills and Experience*

**Stormwater Retrofitting.** Tom has been actively involved in stormwater retrofits since 1987, and wrote the definitive reference on the topic in 2007 (*Urban Stormwater Retrofit Practices*). Tom worked to define the cost and pollutant removal of urban retrofit practices, and developed the retrofit adjutor curve approach that was approved the Chesapeake Bay Program. Tom has developed and delivered guidance on how to find and design feasible and cost effective retrofit projects at the small watershed level, including the recently released Pond Protocol.

**Design of Stormwater Practices:** Tom has written or co-written more than a dozen local and state stormwater engineering design manuals, and developed or refined the first design specifications for bioretention, rain tanks, soil compost amendments, constructed wetlands, permeable pavers and dry swales. Tom has worked directly with five Bay states to implement

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new runoff reduction methods to implement new stormwater requirements.

**Urban Stream and Stormwater Runoff Research:** Tom has been continuously involved in research to better understand the quality of stormwater runoff, the dynamics of urban streams and their response to upstream land development. Tom developed the Impervious Cover Model which predicts future stream quality on the basis of watershed impervious cover. Tom has developed methods to compute urban land use loading rates and define key sources of sediments, nutrients and toxics in urban watersheds.

**Watershed Restoration Techniques:** Tom has written or co-written eight volumes of the *Small Urban Watershed Restoration Manual Series* that define the methods and practices needed to comprehensively and cost-effectively restore streams damaged by past development. These methods have been tested and refined in more than 25 urban watersheds in North America. Tom also authored several widely-used references, including *The Practice of Watershed Protection*.

**Other Watershed Skills:** Tom also has expertise in better site design, urban wetland management, watershed forestry, stormwater quality monitoring. Tom has served on two U.S. National Academy of Science expert panels on stormwater and watershed management issues.

### *Selected Publications*

Potential Benefits of BMPs to Reduce Toxic Contaminants in the Chesapeake Bay Watershed (2016)

The Pond Protocol: Visual Indicators for Maintaining and Managing Legacy Stormwater Ponds (2016)

Bioretention Illustrated: A Visual Guide for Constructing, Inspecting, Maintaining and Verifying the Bioretention Practice (2013)

Homeowner Guide for a More Bay-Friendly Property (2013)

*Small Urban Watershed Restoration Manual Series* (2000 -2007)

Manual 1 An Integrated Framework to Restore Small Urban Watersheds.

Manual 2 Methods to Develop Restoration Plans for Small Watersheds.

Manual 3 Stormwater Retrofit Practices

Manual 4 Urban Stream Repair Practices.

Manual 8 Pollution Source Control Practices.

Manual 9 Municipal Pollution Prevention and Good Housekeeping Practices

Manual 10 Unified Stream Assessment (USA): A Users Guide.

Manual 11 Upland Site and Subwatershed Reconnaissance (USSR): A Users Guide..

The Impacts of Impervious Cover on Aquatic Systems (2003)

The Practice of Watershed Protection (2000)

Maryland Stormwater Design Manual. Volumes 1 and 2. (1999) w/ R. Claytor.