Computational Methods and Strategies in Stormwater Management Using Storm QC Design Software

hosted by: Land Design Technologies, LLC

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*This short course will engage attendees with a variety of hands-on hydrologic analysis and stormwater management exercises using Storm QC design software. These exercises will span a wide range of topics, including: rainfall distribution and hydrograph creation; hydrograph routing through channels, basins and media-based BMPs; and using Storm QC to assist with the design of detention facilities and structural BMPs. **Storm QC is a commercial package that is the next generation model of the Virginia Tech/Penn State Urban Hydrology Model (VTPSUHM 8.3). Short course attendees will receive 16 PDH credits and a fully functional, two-week trial version of Storm QC.**

Technical Staff:

Dr. Randy Dymond, PE, F.ASCE, D.WRE*
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Virginia Tech

Dr. Clayton Hodges, PE*
Research Assistant Professor
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Environmental Program Manager, PA DEP
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Dr. Thomas Seybert, PE
Professor Emeritus of Engineering
Penn State University, Willkes-Barre, PA

Who Should Attend

This course is intended for stormwater facility designers with previous exposure to urban runoff calculations involving NRCS (SCS) methods and reservoir routing principles. Special emphasis will be on fundamental calculations for detention facility design, particularly outlet structure design. Each participant is encouraged to bring a hand calculator for occasional use.

Topics covered include travel-time, design rainfall, NRCS unit hydrograph, NRCS tabular hydrograph, detention pond routing, detention storage estimates, multiple-stage outlet design, bio-retention cell design, extended detention design, enhanced extended detention design and infiltration basin design. Volume management BMPs and the use of the Pennsylvania Stormwater BMP Manual will also be discussed and illustrated with an interactive exercise.

*While Dr. Dymond and Dr. Hodges' current affiliation is with Virginia Tech, each has longstanding ties to Pennsylvania and Penn State University. Dymond, a native of Allentown, holds B.S., M.S., and Ph.D. degrees from Penn State University. Hodges previously served as lead programmer on VTPSUHM, and attendees will likely recall his multiple presentations at past VTPSUHM short courses.

Penn State Great Valley, Malvern, PA
October 24-25, 2019

Description

This short course will present a wide array of hydrologic and hydraulic methods for performing hydrologic analysis, stormwater management design, and detention facility/BMP design. The *Storm QC* software will be used to illustrate these various computational techniques, and special emphasis will be placed on using the software to assist, simplify, and expedite the design of stormwater management facilities and meeting regulatory compliance in the Commonwealth of Pennsylvania.

Example analysis and design scenarios will be presented and completed using *Storm QC*, and upon completion of the course, attendees will be well-acquainted with the software and able to begin using it in their own professional applications.

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PARTICIPANTS MUST BRING A LAPTOP OR TABLET COMPUTER TO THIS SHORT COURSE. The user must have administrative privileges on that computer so that the *Storm QC* software can be installed. Only MS Windows–based laptop computers will be supported. Minimum computer requirements are 8 MB of RAM, Windows 7 or 10 (preferred) and a minimum screen resolution of 1024x768. Apple computers, iPads and similar devices will not be supported. Laptops can be shared with a colleague if so desired. Upon registering and paying for the course, attendees will be provided with instructions for downloading and installing the software in advance of the course.

The Computer Model

Storm QC performs the necessary computations for quantitative stormwater design in land development and transportation engineering. The software has been rigorously tested in both professional and academic settings for engineering accuracy, using the latest time tested and widely recognized hydrologic and hydraulic methods. *Storm QC* was developed for both land development and transportation professionals needing stand-alone, integrated toolsets to model rainfall and runoff, create storage/elevation and rating curves, and perform both channel and reservoir routing using multiple methods. With an intuitive, easy-to- use, professional user interface, *Storm QC* was designed, programmed, and tested by engineers who have years of experience both designing stormwater infrastructure and educating others in the latest hydrologic practices.

Notable Storm QC Features Include

- Rainfall: NRCS Type I, IA, II, III; NRCS NEH Synthetic; NOAA A, B, C, D; user-defined methods
- Peak Methods: Rational, NRCS TR55, USGS rural and urban regression, Anderson, Snyder
- Hydrographs: NRCS Curvilinear UH, Rational, Modified Rational, NRCS TR-55, Deconvolution
- Travel Time: NRCS segmental, Seelye, Overland, Kirpich, Kinematic Wave
- Channel Routing: Muskingum, Muskingum/Cunge, Modified Att-Kin, NRCS Convex
- Storage Elevation: Contour area, pipe storage, manhole storage, media-based BMPs
- Outlet Structures, Reservoir and BMP Routing
- Multiple hydraulic calculation utilities
- Imports VTPSUHM files

Registration Fee

The regular fee to attend this short course is $845 per person with an early signup cost of $795. This registration fee includes course notes (provided in hard copy and digital form), professional instruction, as well as:

- A fully-functional, two-week trial version of *Storm QC.*
- A discount code that can be applied to the purchase price of a fully-licensed version of *Storm QC.*
- AM/PM refreshment breaks and daily lunches
- 16 Professional Development Hours (PDHs)

- **How to register:** Attendees pay by credit card or by check made payable to "Land Design Technologies, LLC". Please click **HERE** to begin the registration process.

- **Location/Time:** The short course will be held at Penn State Great Valley: School of Graduate Professional Studies, 30 East Swedesford Rd, Malvern, PA 19355. A list of lodging options near the meeting venue will be forwarded during the registration process. Attendees are responsible for arranging their own travel and lodging accommodations, and the course registration fee does not include attendees' lodging or meals except as described, above.

- **Deadline:** The early registration deadline for this short course is September 20, 2019. After this date, registration fees increase from $795 to $845 per person. The deadline for registration is October 10, 2019. If you wish to register after this deadline has passed, please EMAIL to confirm that space is still available.

- **Refunds:** If your request to withdraw is received by October 10, 2019, Land Design Technologies, LLC will issue a full refund of your registration fee. Withdrawals after that date will result in a $50 charge.

- **Questions:** Questions regarding this short course may be sent to EMAIL.