

## Seminar Instructors:

**Roy Dodson, P.E.** is President of Dodson & Associates and founded the firm in 1983. He has extensive experience in performing hydrology and hydraulic studies and in the design of flood control facilities. Under his leadership, Dodson & Associates has completed well over 300 hydrology and hydraulic studies. Mr. Dodson also has extensive experience in using several of the most widely accepted computer programs for hydrology and hydraulic analysis, including the Corps of Engineers HEC-1, HEC-2, HEC-RAS, and HEC-HMS. Since 1986, he has led frequent training seminars on the use of HEC-1, HEC-2, HEC-RAS, and HEC-HMS. He is a nationally-recognized expert on the EPA's NPDES.

**Chris Johnson, P.E.** is a Senior Hydrologist with Dodson & Associates. Mr. Johnson has over 16 years of experience with a wide variety of water resources engineering projects. His experience covers virtually all phases of the design process, including feasibility studies, planning studies, preliminary design, preparation of bidding documents, and forensic analysis.

**Craig Maske, P.E.** is a Project Manager with Dodson & Associates and has over ten years of experience managing projects in both the public and private sector. He has had experience performing flood studies and drainage planning and analyses for public and private sector clients, including the design and construction of site work projects and flood control facilities.

**Andy Yung, P.E.** is a Vice President and Senior Hydrologist with Dodson & Associates. Mr. Yung has a wide range of experience both managing and designing projects involving the fields of hydrology and hydraulics, dam safety investigations, detention facility designs, master drainage studies, channel improvement and hydraulic structure designs, and watershed impact analyses.

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# Seminars-on-CD

## ■ Introduction to HEC-RAS

The HEC-RAS modeling system was developed as part of the Hydrologic Engineering Center's "Next Generation" (NexGen) hydrologic engineering software. The program is one of the most extensively tested civil engineering computer programs ever developed. HEC-RAS incorporates several aspects of hydraulic modeling, including water surface profile computations, bridge hydraulics, and one-dimensional steady flow. It can interface with geographic information systems to automate the development of cross section data and plot flood plains.

This seminar on CD provides an overview and demonstration of the Hydraulic Engineering Center's River Analysis System (HEC-RAS) software with a focus on HEC-RAS capabilities. It discusses the history and purpose of HEC-RAS. Current capabilities are covered in detail and future enhancements are highlighted. Comparisons are made between HEC-2 and HEC-RAS. Getting started with a HEC-RAS model will be presented along with many example modeling situations that are included with the program. The course contains the same class materials provided at the live seminar, including the HEC-RAS and HEC-GeoRAS User's Manuals and software installation and a HEC-RAS Quick Reference Guide. Earn 0.4 CEUs (4 PDHs).

### COURSE OUTLINE :

- Introduction
- Overview of HEC-RAS Program Capabilities
- What's New in HEC-RAS Version 3.0
- Hydraulic Computations
- Basic User Interface
- Bridge & Culvert Computations
- Other Features
- Making the Transition from HEC-2 to HEC-RAS
- Unsteady Flow Simulation
- Sample Project Demo
- Introduction to HEC-GeoRAS

#### *Bonus Information:*

*GIS Floodplain Determinations and Introduction to LIDAR Data*

## ■ Introduction to HEC-HMS

This seminar on CD is an overview and demonstration of the Hydraulic Engineering Center's Hydrologic Modeling System (HEC-HMS) software. It is intended primarily for those already familiar with hydrologic watershed models such as HEC-1, TR-20, or SWMM. The focus is on new HEC-HMS capabilities, such as the powerful graphical interface and the ability to use new data sets such as NEXRAD weather radar data and Digital Elevation Models (DEMs). While this seminar is a comprehensive overview and demonstration of the HEC-HMS software, it does not cover all of the fundamentals of watershed hydrologic analysis. This course contains the same class materials provided at the live seminar, including HEC-HMS and HEC-GeoHMS User's Manuals and software installation. Earn 0.4 CEUs (4 PDHs)

### COURSE OUTLINE :

- Introduction
- Basic Concepts of Hydrology & HEC-HMS
- Precipitation Options
- Loss Computations
- Rainfall/Runoff Transformations: Unit Hydrograph

- Stream Flow Routing & Diversion
- Distributed Runoff Methods
- Reservoir & Detention Basin Analysis
- Calibration of HEC-HMS Input Parameters
- Sample Project Demo
- Introduction and Practical Application of HEC-GeoHMS
- Bonus Information: Introduction to LIDAR*

## ■ The FEMA National Flood Insurance Program: Local, Regional, and Technical Issues

This seminar provides an overview of how the National Flood Insurance Program (NFIP) works from the standpoint of the local community officials and engineering consultants who must comply with the program. An introduction to the program is provided, along with details of how flood insurance studies are performed and how study results can be revised as needed.

The NFIP is a federal program enabling property owners to purchase insurance protection against losses from flooding. This insurance is designed to provide an alternative to disaster assistance and to meet the escalating costs of repairing damage to buildings and their contents caused by floods. The NFIP is administered by the Federal Emergency Management Agency (FEMA). Participation in the NFIP is based on an agreement between local communities and the federal government. Earn 0.4 CEUs (4 PDHs)

### COURSE OUTLINE :

- Introduction
- Development of the NFIP
- Answering Questions About Flood Insurance
- Local and State Governments and the National Flood Insurance Program
- Obtaining Data for Flood Insurance Studies
- Analysis of Stream Systems
- Floodway Regulations and Computations
- Analysis of Levee Systems
- Analysis of Ice-Covered Streams
- Analysis of Alluvial Fan Flooding
- Analysis of Shallow Flooding and Approximate Areas
- Coastal Flooding
- Presenting the Results of Flood Insurance
- Changing or Correcting Flood Insurance Studies
- Restoration of Flood Protection for Decertified Flood Protection Projects
- Recent Activities

## ■ Hands-On HEC-1 Seminar

This hands-on HEC-1 seminar is a comprehensive introduction to watershed modeling using HEC-1 and also includes introductions to HEC-HMS, HEC-GeoHMS and LIDAR Data. HEC-1 computes hydrographs for both simple and complex stream systems. It can be used for designing storm water detention basins, analyzing large reservoirs, performing dam-breach analyses, and computing urban runoff using kinematic wave methods. It provides several methods for computing precipitation distributions, infiltration losses, unit hydrographs, channel routing, and other basic hydrologic computations. The course includes seminar slide handouts, Hands-On HEC-1 book, HMR52 User's Manual, and software installation. Earn 0.4 CEUs (4 PDHs)

### COURSE OUTLINE

- Basic Concepts of Hydrology
- HEC-1 Introduction and Input/Output Data
- HEC-1 Precipitation Options

- HEC-1 Loss Computations
- Unit Hydrograph Computations
- Stream Flow Routing and Diversion
- Reservoir and Detention Basin Analysis
- Dam Safety and Dam Failure Analysis
- Calibration of HEC-1 Input Parameters
- Using HEC-1 for Urban Runoff Analysis

## ■ NPDES Storm Water Permit Compliance: Construction, General, and Municipal Topics

This NPDES seminar CD provides practical and useful information for complying with the EPA's most recent requirements for storm water discharge permits issued for construction, industrial and municipal activities. This CD focuses on construction topics. Earn 0.5 CEUs (5 PDHs)

### COURSE OUTLINE :

- Introduction and Course Overview
- EPA Storm Water Regulations
- Enforcement and Compliance with the Clean Water Act
- Regulated Storm Water Discharges
- Municipal Storm Water Permit Requirements
- Construction Storm Water Permitting
- NPDES Construction Permit SWPPP
- Stabilization Practices for Construction Erosion Control
- Structural Practices for Construction Sediment Control
- Other Storm Water Pollution Prevention Measures

## ■ NPDES Storm Water Permit Compliance: Industrial, General, and Municipal Topics

This NPDES seminar CD focuses on industrial topics but also discusses general and municipal topics. Earn 0.6 CEUs (6 PDHs)

### COURSE OUTLINE :

- Introduction and Course Overview
- EPA Storm Water Regulations
- Enforcement and Compliance with the Clean Water Act
- Regulated Storm Water Discharges
- Municipal Storm Water Permit Requirements
- Regulated Industrial Storm Water Discharges
- Industrial Storm Water Discharge Permit Applications
- Basic Elements of Industrial SWPPP
- NPDES Sampling and Monitoring
- Good Housekeeping Best Management Practices

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