<u>**Modeling 201: Demystifying your Modeling Project**</u>

Session Description: We will walk through all phases of a modeling project, from QAPP development to model configuration and calibration to communicating model results. Participants will gain fluency in modeling terminology as well as an understanding of the modeling process. The session format will include presentations as well as hands-on application of a completed QUAL2K model and small-group breakouts. The hands-on modeling will use a completed model and associated documentation (QAPP, modeling report) to provide tangible examples of the presentation topics. Pre-workshop materials including webinars and example model documentation will be provided for advanced preparation.

Intended Audience: Modeling 201 (Demystifying your Modeling Project) is geared towards state and federal water program staff with knowledge of Clean Water Act program terminology and common water quality processes. The session is appropriate for both technical staff early in their modeling careers and project managers that may have responsibilities reviewing and managing a modeling project. Some exposure to modeling projects will be helpful to place the course content in context, but participants are not expected to have independently conducted a modeling project.

<u>Draft Agenda</u>

Day	Topic
Tuesday	• Introductions/overview of the week
	• Lightening Modeling 101

	• Model Planning Overview
	    ○ Project planning overview
	    ○ Problem formulation
	    ○ Model selection
	    ○ Endpoint determination
	    ○ Contracting

	• QAPPs
	    ○ QAPP development
	    ○ Data/inputs
	✶ *Interactive*: Answering Key Questions in an Example QAPP

	• Model Setup (Configuration and Data Compilation)
	    ○ Model types
	    ○ Inputs and configuration (watershed models)
	        ▪ Data gathering (common sources, spatial and temporal resolution)
	✶ *Interactive*: QUAL2K Case Study Introduction

Wednesday	• Model Setup (Configuration and Data Compilation) (continued)
	    ○ Inputs and configuration (receiving waterbody models)
	        ▪ Data gathering (common sources, spatial and temporal resolution)
	    ○ Addressing data gaps
	    ○ Overview of workhorse models
	✶ *Interactive*: QUAL2K Background and Model Inputs

	• Model Calibration and Performance Evaluation (1)
	    ○ Selecting parameters to calibrate
	    ○ Calibration process and evaluation
	    ○ Sensitivity testing

Day	Topic
	• *Interactive*: Work through QUAL2K calibration
	• Model Calibration and Performance Evaluation (2)
	○ Post-processing and visualization
	○ Quantitative vs. qualitative examples
	○ Error statistics
	✶ *Interactive*: Work on post-processing, visualization, and error statistics
Thursday	• Model Acceptance
	○ Acceptance process, peer review
	○ Determination of suitability
	• Scenarios and decision making
	✶ *Interactive*: Conduct QUAL2K scenarios
	• Model Report
	○ Review components
	○ Administrative record
	✶ *Interactive*: Where is it documented?
Friday morning	• Public Process
	○ Communication
	○ Model defensibility
	• Wrap-up and resources