

Environment Business



An Introduction to Using Groundwater Models in Contaminated Site Assessment and Remediation Design

Groundwater models are powerful tools in contaminated site assessment and remediation system design. This course is intended to arm managers, regulators, professionals, and technologists with a basic understanding of how models work, what types of models are commonly used, how to choose the right model for the situation, and modelling limitations. This understanding will allow you to identify situations that would benefit from groundwater modelling and to evaluate modelling results. The course will include review of conceptual model development, groundwater flow and transport principles, and common model pitfalls and limitations.

The course will include presentation of a number of groundwater model applications for contaminated sites in Alberta and elsewhere. The applications will demonstrate a range of groundwater modelling techniques, from simple analytical solutions to complex three dimensional numerical models. Applications may include:

- Risk management of salinity impacts associated with former flare pits
- Produced water migration from an injection well
- Gasoline leakage from an underground storage tank at a service station
- Hydrocarbon migration and remediation design for a pipeline break

Students are also encouraged to bring their own example applications for discussion in class. You should be familiar with basic concepts of groundwater flow, but you do not need previous experience with groundwater models.

Instructors:

Trevor Butterfield, M.Sc., Hydrogeologist, WorleyParsons, Edmonton, Alberta
Tannis Sharp, M.Sc., P.Eng., P.Geol., Hydrogeologist, WorleyParsons, Edmonton, Alberta

Bios:

Mr. Trevor Butterfield is a hydrogeologist with 9 years of experience in environmental consulting at WorleyParsons. He obtained a B.Sc. with specialization in Environmental Physical Sciences and a M.Sc. in Earth and Atmospheric Sciences with a specialization in hydrogeology, both at the University of Alberta. Trevor has experience in groundwater quality assessments, groundwater flow and contaminant transport modelling, aquifer testing, and groundwater project management. He has completed hydrogeologic site assessments at several upstream petroleum, oil sands, and agricultural facilities in Alberta. He has developed three-dimensional groundwater flow and solute transport models at local to regional scales for groundwater contamination, environmental impact assessment, and mine pit dewatering problems.

Ms. Tannis Sharp is a hydrogeologist with 11 years experience at WorleyParsons in groundwater resources and contaminated site assessment. She completed a B.Sc. in

Geological Engineering at the University of Saskatchewan and a M.Sc. in hydrogeology at the University of Alberta. She has conducted groundwater modelling for various environmental and groundwater resources projects around Alberta and in California from local to regional scales. Her modelling project experience includes groundwater supply, groundwater contamination, environmental impact assessment, and mine pit dewatering problems.