# *flex*AEM™ System for Groundwater Modeling

The *flex*AEM™ System is designed to introduce you to the power, accuracy and ease of use of the analytic element method (AEM) approach to groundwater modeling using the new AnAqSim AEM modeling software. AEM groundwater modeling provides an almost perfect balance of simplicity and power for typical groundwater analysis projects. To make AEM modeling accessible for any groundwater project, McLane Environmental has developed the *flex*AEM™ System of tools and training.

Tutorials and software tools have been developed to lead you step-by-step through the process of building and running AEM groundwater models for problems that cover the range from simple single-layer steady-state models to complex multi-layer transient simulations. Saltwater interface modeling is also possible with AnAqSim, and model calibration can be automated using powerful PEST parameter estimation software.

The *flex*AEM™ System also includes a Remediation Calculator Toolkit of over a dozen simple pre-packaged calculators to design, or evaluate the performance of, groundwater remediation systems consisting of wells, trenches, slurry walls, caps, and other components. These calculators allow groundwater scientists and engineers to rapidly assess groundwater flow patterns and velocities, pumping or infiltration aquifer stresses, capture zones and discharge rates for remediation system designs.
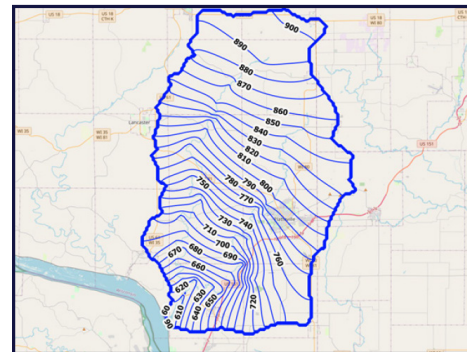
AEM Groundwater Modeling

Groundwater modeling is a valuable tool for managing water resources, assessing and remediating impacted sites, and designing and permitting natural hydrologic and engineered systems. For experienced ground-water modelers, flexible and powerful analytic element method (AEM) techniques provide you with a new rapid prototyping / rapid insight component for your toolkit.
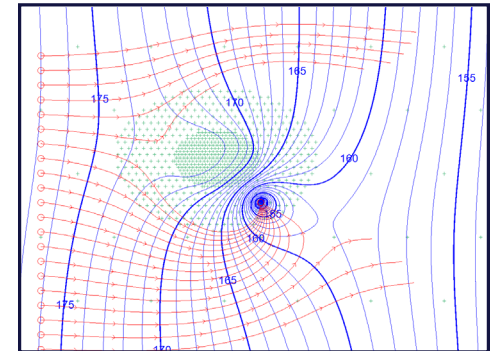
For non-modeler hydrogeologists and engineers, AEM modeling provides you with a "kinder and gentler" introduction to groundwater modeling for the occasions on which you might want to run a quick analysis without climbing the learning curve of complex modeling software. The *flex*AEM™ System is designed to introduce modelers and non-modelers to this new way of modeling through a series of tutorials, tools and courses that explain in easy-to-follow, step-by-step instructions, the concepts and applications of the method.

*flex*AEM™ System Tutorials, Tools, and Training

The *flex*AEM™ System is built on the power, flexibility and speed of the AnAqSim AEM groundwater modeling software. Based on the subdomain method (Fitts 2010), it "breaks the mold" for an AEM model by allowing all of the typical elements (wells, rivers, flow barriers) to be applied in a single- or multi-layer aquifer, with horizontal and/or vertical anisotropy, for steady-state or transient simulations.

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*flex*AEM™ tutorials cover every aspect of setting up and running an AnAqSim model. They are self-paced and move from simple to more complex topics. Along the way the user is introduced to tips on model design, examples of how to use the various analysis tools to examine model results, and helpful hints on how to avoid or troubleshoot common problems. The *flex*AEM™ system is designed to assist the user in creating an AnAqSim model within a matter of hours, and to become a proficient AnAqSim modeler within several days or weeks depending on prior experience.

*flex*AEM™ custom tools make creation of analytic elements even easier. They produce precise geometric shapes for line or area features at any rotation angle, export data points to an AnAqSim model, and allow for accurate measurement of polygon features. The *flex*AEM™ system also includes linkages with other commercial software that assists the user in creating basemaps and input data sets, and displaying model results (contours, pathlines, flow vectors) in 2D and 3D views.

The *flex*AEM™ tutorials can be used in two ways: (1) each tutorial can be worked through as a hands-on exercise to learn important groundwater model concepts and how to implement those in AnAqSim, or (2) a selected tutorial on a topic can be read through to learn how to implement that particular method in an AnAqSim model you may be currently building, and working model files are provided so that you can simply launch those in AnAqSim and explore how it's done.

Contact Us!

For more information on the *flex*AEM™ System of training, tools, and courses visit:

http://www.flexAEM.com

Or email Customer Service at:

support@flexAEM.com

Try *flex*AEM™ – How to Get Started

New to AEM modeling or AnAqSim?

Build a quick AEM Model in AnAqSim

Download our "Hello World" tutorial and build a simple model in about 15 minutes! This quick example is available at:

https://www.flexaem.com/about

Free Introduction: The FREE Set 1 and Set 2 Tutorial Series

To find out what AEM groundwater modeling with the *flex*AEM™ System is all about, download the free instruction sets at:

https://www.flexaem.com/tutorials-tools/

Set 1 introduces you to the methods and benefits of applying groundwater modeling to a wide range of environmental and engineering projects. Set 2 teaches you AEM modeling, including an intro to the subdomain method and the use of AnAqSim to build and run several simple groundwater models. All exercises included in the package may be completed using the free AnAqSim Demo software that can be downloaded from the AnAqSim download page *here*.

Experienced modeler?

Deeper Exploration of AEM Modeling

Add AEM modeling to your toolkit by exploring AnAqSim's many features including subdomains; stream, river, and drain elements; transient simulations; model calibration techniques and many others. More advanced exercise sets introduce more complex AnAqSim modeling features such as multiple layers and saltwater interface modeling. Information on the various exercise packages, special pricing bundles, and purchasing / download information can be found at:

www.flexAEM.com/tutorials-tools

Need a simple way to analyze remedial designs?

Simple Analytic Groundwater Flow Calculators

Pre-configured groundwater calculators allow you to apply the power of AEM for simple groundwater flow modeling or remediation system design. Download the free Remediation Calculator Quick Start example at:

www.flexAEM.com/tutorials-tools/remediation-calculator-toolkit