Alan Jang – ITASCA Denver

Senior Modeler

Expertise	Groundwater Flow and Contaminant Transport Modeling for Mine Dewatering, Water-Resources Management, and Environmental Impact Assessment; Modeling of Multi-phase Flow; Development of Numerical Models; Extensive Experience with Numerical Codes, Including *MODFLOW*, *MODFLOW-SURFACT*, *MODFLOW 6*, *MT3DMS*, *MINEDW*, *FEFLOW*, and *PEST*
Education	Ph.D. (Environmental and Water Resources Engineering), 2005 Georgia Institute of Technology, Atlanta, Georgia, USA M.S. (Civil Engineering), 1995 Korea Advanced Institute of Science and Technology, South Korea B.S. (Environmental Engineering), 1993 Pusan National University, South Korea
Registration	Registered Professional Engineer, Colorado
Professional Affiliations	Member: National Ground Water Association (NGWA) and Colorado Groundwater Association (CGWA)

Professional Experience

2021 – Present	ITASCA Denver, Lakewood, Colorado Senior Modeler
2014 – 2021	ITASCA Denver, Lakewood, Colorado Senior Project Hydrogeologist
2012 – 2014	ITASCA Denver, Lakewood, Colorado Project Hydrogeologist
2006 – 2012	Georgia Institute of Technology, School of Civil and Environmental Engineering, Atlanta, Georgia Senior Research Engineer, Postdoctoral Fellow
2000 – 2005	Georgia Institute of Technology, School of Civil and Environmental Engineering, Atlanta, Georgia Graduate Research Assistant
1995 – 1999	Samsung Engineering and Construction Inc., Advanced Institute of Technology, Anyang University, South Korea Engineer

Project Experience

Developed three-dimensional numerical groundwater flow models to simulate single- and multiple-phase subsurface flow and chemical transport. Numerical codes used include *MODFLOW* (groundwater flow code), *MT3DMS* (solute fate and transport code), *TechFlowMP* (multi-phase flow and multi-species transport code), and

PEST (parameter estimation and uncertainty analysis tool). The work included small- and field-scale groundwater flow, reactive contaminant transport, and gas flow through soil media in the vadose and saturated zones. Experience includes:

- evaluating and conducting numerical subsurface contamination studies;
- installing pumping and observation wells; and
- conducting pumping tests and groundwater monitoring, gas pressure measurement, and on-site analysis of volatile compounds.

Conducted groundwater modeling projects to support environmental impact assessments and dewatering plans for open-pit and underground mines. Conducted local- and regional-scale groundwater flow models to support pre-feasibility and feasibility studies for mine sites. Modeling experience includes conceptual model development, numerical model implementation, model calibration, and model predictions. Groundwater flow modeling was completed using *MODFLOW-SURFACT* and *MODFLOW 6*.

Carried out constructive dewatering studies for installing storm-water drainage systems in an urban area. The studies provided an optimal solution to design a network of groundwater removal and flow control systems.

Conducted groundwater flow and solute transport modeling to investigate the migration of metals and non-metallic constituents, such as uranium, arsenic, nitrate, and sulfate. Numerical codes used were *MODFLOW-SURFACT*, *MT3DMS*, and *CXTFIT* (parameter estimation tool with analytical solutions).

Carried out a groundwater modeling project at a mine site to support the design and installation of a network of pumping wells and to assess future impacts of dewatering operations on the aquifers. *MINEDW* (groundwater flow code) was used.

Research

Developed a *TechFlowMP* code (multiphase flow and solute transport model) and conducted numerical studies on groundwater flow and contaminant transport in the groundwater system, including density-driven advection of gas in the unsaturated zone and groundwater pollution. Developed VolNAPL model that estimated light non-aqueous phase liquids residing in the subsurface. Studied remedial technologies for petroleum-compromised sites and landfills with in-situ air sparging and soil vapor extraction. Instructed groundwater hydrology courses at the university level.

Participated in the development of *MINEDW*, a mining-focused three-dimensional groundwater flow model.