Groundwater Monitoring & Remediation

GWMR Special Issue:
Vertical Characterization and Monitoring of Contaminants in Groundwater

The National Ground Water Association is announcing a call for papers for a special issue of *Groundwater Monitoring & Remediation* on "Vertical Characterization and Monitoring of Contaminants in Groundwater."

We know that plumes are highly variable in the vertical dimension, with contaminant concentrations often varying by several orders of magnitude over intervals of centimeters to meters. Legacy methods involving long-screened wells and two-dimensional snapshot maps of plumes are insufficient for understanding contaminant fate and transport and may even be misleading.

Despite the availability of modern tools for aquifer investigations, characterization of subsurface contamination in three dimensions is not yet standard in the groundwater protection industry. Moreover, monitoring of the concentrations and flux of subsurface contamination *over time* (i.e., the "fourth dimension") at a spatial scale that matches the distribution of the contaminants is even less common.

The focus of this special issue is on "High Definition and Vertical Characterization and Monitoring of Contaminants in Groundwater." The issue will highlight the characterizing and monitoring of the vertical extent of natural and anthropogenic contaminants in the subsurface, leading to a true four-dimensional understanding of the nature, extent, and flux of the contaminants in the subsurface.

We are soliciting manuscripts that focus on, but are not limited to, the following topics:

- Examples of diagnostic temporal performance monitoring of in situ contaminated groundwater remedies
- Case studies where groundwater sampling and monitoring has been done along transects oriented perpendicular to the plume axis
- Vertical characterization and monitoring at groundwater/surface water boundaries
- Assessments focused on mass flux and contaminant mass discharge (CMD)
- Case studies where CMD has been monitored over time at contaminated sites
- Characterization and temporal monitoring of contaminant concentrations and fluxes in the vadose zone
- The role of high-resolution groundwater sampling and monitoring for assessing the risk of vapor intrusion from groundwater sources

- Vertical profiling and long-term monitoring of contaminants in drinking water aquifers and wells
- Case studies where engineered multilevel monitoring systems (e.g., Westbay, Solinst Waterloo, CMT, Flute and others) systems have been used
- Case studies involving innovative depth-discrete monitoring of contaminant flux using passive flux meters (PFMs) and direct velocity measurement tools
- Strategies and technologies for characterization and monitoring the vertical nature, extent, and flux of dissolved contaminants over time outside of North America
- Geophysical methods for characterizing and monitoring contaminants in the subsurface
- Novel technologies for vertical subsurface characterization and monitoring (e.g., fiber optics)
- Advances in remote sensing technologies to characterize and monitor contaminants in groundwater
- Innovative technologies for vertical characterization and monitoring used in the oil and gas and mining industries
- Technologies and strategies for characterizing and monitoring nuclear sites being decommissioned and the next generation of nuclear power plant sites

GWMR is currently targeting 2027 for publication of the special issue. Guest editors of the issue are Murray Einarson, PG, CEG, CHG (Haley & Aldrich, meinarson@haleyaldrich.com), Fred Day-Lewis, Ph.D. (Pacific Northwest National Laboratory, Frederick.day-lewis@pnnl.gov), and John Heneghan (Sellafield Ltd. john.p.heneghan@sellafieldsites.com).

All submitted manuscripts will be subject to the normal *GWMR* review process.