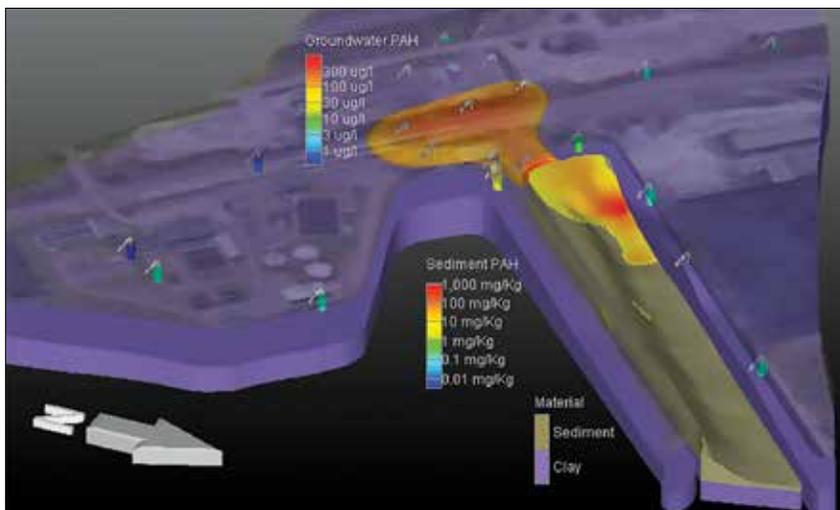


Fate and Transport Services for Utilities



Conceptual site model for former manufactured gas plant supporting remedial design

The Coal Combustion Residuals (CCR) Rule and Resource Conservation and Recovery Act (RCRA) require utilities to document and mitigate adverse effects from contaminants in disposed materials as they migrate through soil, groundwater, adjacent wetlands and surface water bodies. Foth's experts understand the fate and transport of the released contaminants, which is critical to determine the extent of current and future impacts, remedial action, and design remedies.

Foth's fate and transport services assist utilities in meeting these challenges. We begin by supporting utilities to answer critical questions:

- ◆ What is the nature and extent of contamination?
- ◆ Is there ongoing contaminant transfer between media (soil, groundwater, surface water)?
- ◆ Is the contamination stable or spreading?
- ◆ Are there pathways for exposure to receptors?

- ◆ Is remedial action necessary?
- ◆ What are the costs and benefits of each remedial option?
- ◆ How long will it take to attain regulatory compliance?

Foth's experts use models to simulate site situations (contamination sources, nature and extent of contamination); identify processes operating within soil and groundwater that may help decrease or spread contaminant mass; design remedies; and predict outcomes, costs and time frames for meeting remedial goals, including:

Geospatial Analysis

- ◆ 3-D visualization
- ◆ Volume & mass calculations
- ◆ Monitoring optimization

Delineation and Remedial Design

- ◆ Groundwater modeling
- ◆ Contaminant fate and transport modeling
- ◆ Soil leachate modeling
- ◆ Remedial design & optimization

Aquifer Hydraulics

- ◆ Hydraulic characterization
- ◆ Design of dewatering systems

Groundwater / Surface Water Interaction

- ◆ NPDES permit and technical support
- ◆ Outfall and diffuser evaluation and design

Fate and transport assessments and predictive modeling typically demonstrate:

- ◆ Contaminant plume is shrinking or stable
- ◆ Expanding or migrating plume

Foth can support you through the entire process — delineation of contaminant nature and extent, evaluation of potential risks, remediation, and negotiation of regulatory requirements.

Model Expertise

- ◆ EVS, GMS: 3-D data visualization
- ◆ MODFLOW, WINFLOW: Groundwater flow
- ◆ MODPATH: Particle tracking, capture zone delineation
- ◆ MT3D, RT3D: Contaminant transport
- ◆ CORMIX: Discharge to rivers, lakes and ocean
- ◆ SEAWAT: Density-driven flow and transport
- ◆ PEST: Automatic model calibration
- ◆ BIOSCREEN, BIOCHLOR: 2-D VOC, SVOC fate and transport
- ◆ HELP, VLEACH, SESOIL: Soil to groundwater leaching
- ◆ MAROS, GTS: Monitoring optimization

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