

Contaminant Flux Responses to Thermal Treatment of DNAPL Source Zones

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Contaminant flux is being proposed as a metric to help elucidate the benefits of DNAPL source-zone remedial efforts. While it is clear that aggressive remediation technologies can rapidly remove DNAPL mass, experience has shown that complete removal is often not practicable. However, changes in contaminant discharge from the source as a result of partial DNAPL mass removal are expected to produce beneficial responses within the down gradient plume and these responses may accelerate the achievement of remedial goals.

The objective of this study was to assess the effects of NAPL mass removal via resistive heating on changes in contaminant mass flux along control planes down gradient from the source. Data are presented from NAPL areas 1 and 3 at the East Gate Disposal Yard site, Fort Lewis, Washington. Multiple methods of measuring flux were used including conventional estimation from distinct field measurements of hydraulic gradient, hydraulic conductivity and contaminant concentration. Newer methods designed to directly measure both groundwater velocities and contaminant loadings are under development and two of these methods, passive flux meters and integrated pump tests, were used in this study.