E-REDOX® CASE STUDY: *IN SITU* REDUCTION OF CHLORINATED SOLVENTS IN GROUNDWATER IN A SUBARCTIC REGION

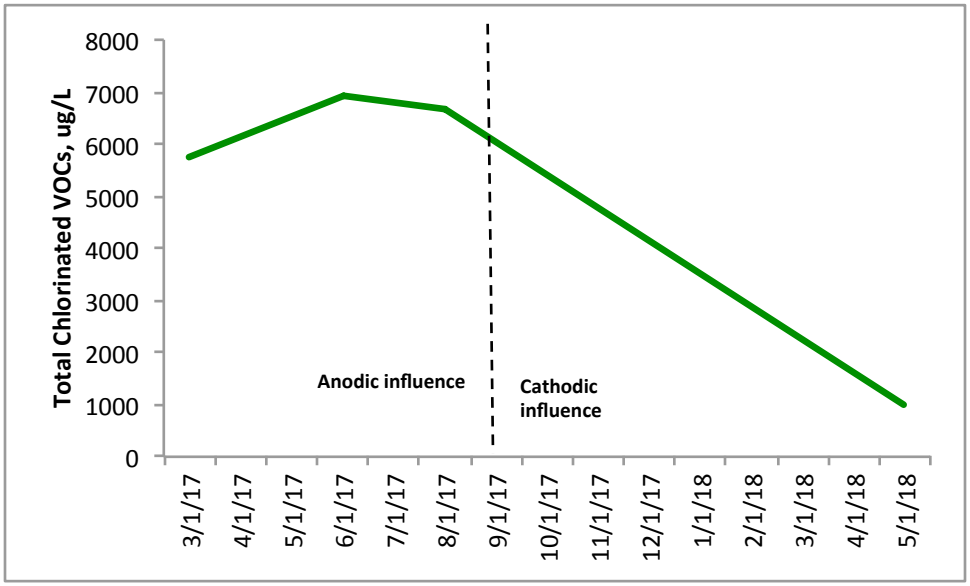
Location: State government site in Fairbanks, Alaska

Contaminated Matrix: Groundwater

Primary Contaminants of Concern: Chlorinated ethenes

Project Objective: Demonstrate sustainable enhanced *in situ* contaminant reduction in a subarctic groundwater system using E-Redox® technology powered by solar cells

Case Study Description & Results: An E-Redox® field demonstration was conducted at a state government site in Fairbanks, AK, where the groundwater has been historically impacted by chlorinated volatile organic compounds (VOCs). The impacted groundwater system consisted of overlaying permafrost. The E-Redox® system was powered by solar cells, where system operation varied depending on daylight hours of the season. The figure below shows the total chlorinated VOCs concentrations in the contaminant source area. For the first five months of operation, the source area was under anodic influence, which resulted in enhanced back-diffusion of contaminants. The polarity of the E-Redox® system was switched and the source area was under cathodic influence. This resulted in a significant decrease in chlorinated VOCs (approximately 90% removal of chlorinated VOCs). The E-Redox® system continues to operate until chlorinated VOC concentrations are below regulatory standards in Alaska.



Total chlorinated VOCs concentrations at the source