# Statistically-Based 3-D Conceptual Site Models and Time-Lapse Animation

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The objectives of this project are to create 3-D conceptual site models and an animation from soil and groundwater analytical results involving spills of perchloroethylene (PCE) at a dry cleaner in order to: thoroughly understand and quantify the subsurface soil and groundwater contamination, design a cost-effective soil and groundwater remediation solution, and demonstrate the efficiency, timing and effectiveness of the remediation.

Soil and groundwater analytical results, collected from multiple subsurface investigations at an active dry cleaner, were statistically analyzed, modeled and visualized using C-Tech's Earth Volumetric Studio (EVS). EVS uses mathematical kriging to interpolate a 3-D field of data from a set of known points (typically soil and groundwater sample results). EVS was also used to interpolate analytical data between the soil and groundwater sampling events. The statistically modeled data were used to create 3-D conceptual site models of the soil contamination and groundwater plume, as well as a time lapse animation of the soil and groundwater remediation.

The 3-D conceptual site models successfully identified the source areas of the contamination, quantified the amount of PCE contamination in both soil and groundwater, and assisted in the design of the remediation systems used to remove the contamination. Additionally, the time-lapse animation demonstrated how effectively the soil vapor extraction system removed the PCE in the soil and how quickly the biological injections remediated the groundwater in the source areas. A link to the corresponding animation, provided below, provides a more detailed analysis of the results. The animation can also be viewed by typing *"James Depa – 2018 Battelle Chlorinated Conference"* in the search bar at www.youtube.com.