

**Design and Construction Issues at Hazardous Waste Sites (DCHWS) 2020
Conference**

**Abstract: Innovative Pulsed Ozone Microdiffusion Sparge Approach for
Tetrachloroethylene Remediation at an Arizona State Superfund Site**

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The East Central Phoenix 24th Street and Grand Canal (24th and Grand) Arizona Department of Environmental Quality was placed on the Arizona Department of Environmental Quality (ADEQ) Water Quality Assurance Revolving Fund (WQARF, a.k.a. State Superfund) due to elevated concentrations of tetrachloroethene (PCE) detected in a nearby groundwater production well.

A soil vapor extraction system was operated as an early response action (ERA) to address vadose zone PCE impacts at the site. Groundwater monitoring activities conducted by Geosyntec indicate that significant PCE impacts exist in groundwater beneath and downgradient of the Site. The site is located in a heavily urban area with relatively deep depth to groundwater which makes the implementation of an effective groundwater remedial approach challenging and expensive.

In order to provide ADEQ with an aggressive and cost-effective alternative to help expedite the site remedial process, Geosyntec designed and installed a proprietary specialize five-well ozone sparge pilot system that became operational in early April 2020. The remedial system uses a cyclical injection pressure pulse process incorporating micro-diffusers and specially designed injection wells. This process results in an increase in dissolved-phase ozone as compared to traditional sparging, which in turn has resulted in a significantly larger radius of influence than was expected. Groundwater monitoring associated with the pilot test has indicated a significant decrease in PCE concentration in the groundwater influenced by the ozone sparging system.

Geosyntec will present the nuances of this remedial approach, as well as the challenges that were overcome, the effectiveness of the system, and the anticipated path forward for this site and others.