

Cold Weather Injections at Remote Site

120,000 L of Aqueous Solution Injected During Winter 2013/14



Location: Northern Saskatchewan
Contaminant: Gasoline
Formation Type: Silty clay

Situation:

A historical leaking UST resulted in contamination to soil and groundwater inside a remote National Park. A Risk Assessment identified concerns over benzene concentrations for a planned building expansion. Excavation was ruled out due to the depth of the impacts (up to 8 mbgs) and disruption to the environmentally-sensitive area. As such, ISCO was selected as the preferred remedial approach by the stakeholders. In addition to having to inject into low permeability soils in extreme cold weather conditions, Vertex had to provide all water, power, heat, shelter and other support services to the remote site, which had been shut down for the winter.



Vertex Solution

Vertex utilized our extensive experience in cold weather and remote location remediation projects to develop a contingency-based remedial solution. A fully self-contained worksite was mobilized to the site and assembled, including all necessary drilling and injection equipment, power and water supplies, secure chemical storage containers, heat source, shelter, etc. PersulfOx® (catalyzed sodium persulphate) was selected as the oxidant and was injected using temporary injection points advanced using direct-push methods. The average temperatures ranged from -20°C to -30°C throughout the duration of the project, not including the last day of work when the temperature reached -50°C with the wind chill.

Benefit

Vertex was able to successfully inject 24,000 kg of PersulfOx® in 120,000 L of aqueous solution during a single injection event lasting less than a month - an average cold weather injection rate of over 6,000 L per day. Back-up plans of higher concentration injections and direct placement of the oxidant in the subsurface proved to not be necessary.



**Below the surface
Beyond the science**

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Vertex-VE462 Lobstick-Cast-Study-4625P-20161103