

Successful Remediation of Operating Service Station and Third-Party Properties at a National Park Townsite — Case Study

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Under a tight timeframe, our client wanted to upgrade their service station facility which had existed within a National Park townsite well before the 1960's. The redevelopment was approved by the Town, Parks Canada and Environment Canada subject to the condition that all remedial activities were to be undertaken concurrent with site redevelopment activities (i.e., even though this site was to remain an operating service station it had to be "clean").

Based on previous limited subsurface environmental investigations, the contaminants of concern were identified as concentrations of BTEX, PHC F1 through F4, PAHs, chlorinated and non-chlorinated phenolic compounds, chlorinated and non-chlorinated aliphatics and aromatics, and lead concentrations. Parks Canada and Environment Canada required that the concentrations of these constituents be less than the stringent CCME Environmental Quality Guidelines for residential/parkland for soil and freshwater aquatic life for groundwater as the site was in a National Park and considered part of a UNESCO World Heritage Site.

To meet the tight timeframe for the redevelopment, working with our client, Parks Canada and Environment Canada, the remediation of the soil and groundwater contamination was negotiated to be split into two separate problems: onsite and offsite, that could be remediated under separate remediation action plans, as further delineation of the contaminants of concerns were required offsite.

The primary lithology beneath the site is alluvial sand and gravel with interbedded layers of silt; the water table was shallow at a depth of approximately 3 m below grade. Based on hydraulic testing, the tank replacement had to be designed with sheet piling and dewatering as there was a restriction on the pumping rate to the Town's sanitary sewer and the base of the excavated tank nest needed to be sampled and confirmed to be "clean" before the new tanks could be installed.

The remediation involved a combination of excavation to remove the contaminated soil within the shoring and above the water table, and in-situ methods

involving Soil Vapour Extraction / Groundwater Aeration and Enhanced Biodegradation using Oxygen Releasing Compounds were required to remediate the contamination below the water table on both the redeveloped site and the contamination that was later encountered with delineation drilling on an adjacent third party's property.

Although changing CCME guidelines throughout the remediation increased the difficulty and timeframe of meeting the remediation endpoints, verification drilling and sampling confirmed that soil and groundwater beneath the redeveloped site and the adjacent third party property had been remediated to meet the CCME Guidelines.

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