

Sustainable PFAS Resin Technology Applied at Multiple Locations for Military Base Aquifer Remediation

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Emerging Compounds Treatment Technologies (ECT2) was engaged to supply, install, and operate PFAS removal systems at three locations at the Royal Australian Air Force (RAAF) Base Williamtown, located in Australia. A stormwater treatment system was installed at Moors Drain, and two groundwater pump and treat systems were installed; one at the former Fire Training Area (FTA) and one on the PFAS plume identified in the Southern Area. Regenerable ion exchange (IX) resin treatment systems were selected as the best solution for this application. Through the installation and use of a central regeneration system to service all three treatment systems on the site, minimal waste is generated, primarily because the spent resin is regenerated onsite. Additionally, the programmable logic control systems installed on these treatments systems allow for seamless transition between extraction wells and treated water discharge methods, ensuring maximum reduction in groundwater contamination while operating 24/7. Multiple treatment systems were installed to ensure the primary issue in each of the areas could be managed without mission impacts on the property.

Installing multiple IX water treatment systems, along with a central regeneration facility, has proven to be an effective, efficient, sustainable approach to removing PFAS and achieving consistent compliance with Australia's HBGVs and other project objectives. The combination of treatment systems is already having a measurable impact on source area PFAS concentrations. Regenerating the resin on site, rather than disposing of spent resin, has resulted in minimal PFAS waste generation. The considerable reduction in waste generation, storage and thermal destruction has had a positive impact on the environment. The lessons learned to date have been largely around optimization of the pretreatment processes and resin regeneration system.

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Paul Newman is the Department of Defense Market Sector Leader for ECT2 (Emerging Compounds Treatment Technologies). ECT2 is an equipment company focused on developing and commercializing treatment technologies for emerging, difficult-to-treat contaminants. Paul's focus is currently on commercializing Synthetic Media technologies for the sustainable treatment of PFAS and 1,4-dioxane. He received his Bachelor's Degree in Geology from the University of Windsor and his Master's Degree from McGill University.