

Electrokinetic generation of iron-rich barriers in soils: realising the potential for nuclear site management and decommissioning.

Jamie M. Purkis^a, Frances Burrell^a, James R. Brydie^b, James Graham^c, Laurence Hopkinson^d, and Andrew B. Cundy^{a*}

^a School of Ocean and Earth Science, University of Southampton, National Oceanography Centre (Southampton), European Way, Southampton, SO14 3ZH, UK

^b CanmetENERGY, Natural Resources Canada, Devon, Alberta, T9G 1A8, Canada

^c National Nuclear Laboratory, Central Laboratory, Sellafield, Seascale, Cumbria, CA20 1PG, UK

^d School of Applied Sciences, University of Brighton, Lewes Road, Brighton, BN2 4GJ, UK

Corresponding author: A.Cundy@soton.ac.uk

SUPPORTING INFORMATION

S11: Supporting information for Figure 6: Pilot scale experiment, conducted to inform set-up of the large-scale experiment detailed in Figures 3, 4, and 5 of main paper.

Plate electrodes (LWH 0.2 x 28 x 18 cm; anode, mild steel, cathode, stainless steel) were placed in silica sand (14 kg) with 1 mM NaNO₃ electrolyte saturated to 50%, with a 50 V electric field (1 V.cm⁻¹) applied, in a 50 x 30 x 20 cm (length x width x height (LWH); 30,000 cm³) container. The electrodes were slightly smaller than the width and depth of the container, 28 cm wide by 18 cm high (504 cm²). Initial current was 110 mA, treatment time was 47 days.

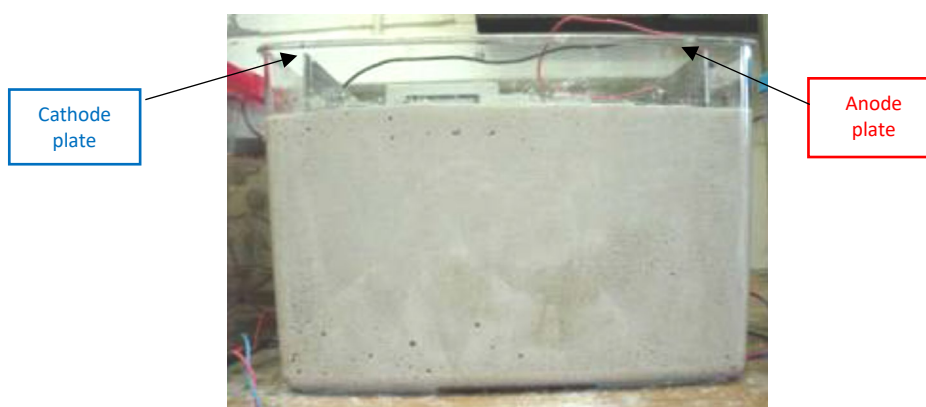


Figure S1 – Experimental set-up for pilot scale (sub-metre) experiment with cathode and anode plates highlighted. Cell dimensions: 50 x 30 x 20 cm LWH.