## Movement of a tritium plume in shallow groundwater at a legacy low-level radioactive waste disposal site in eastern Australia over four decades

Hughes, C.E.[1], Cendon, D.I.[1], Collins, R.N.[1,2], Hankin, S.I.[1], Harrison, J.J.[1], Hoffmann,E.L.[1], Loosz, T.[1], Payne, T.E.[1], Pham, A.N.[2], Twining, J.R.[1], Vine, M.[1], Waite, T.D.[2]

1. Australian Nuclear Science and Technology Organisation, PMB 1, 2234, Menai, NSW, Australia
2. UNSW Water Research Centre, School of Civil and Environmental Engineering, The University of New South Wales, Sydney, NSW 2052, Australia

Cath.Hughes@ansto.gov.au

Between 1960 and 1968 radioactive wastes with low levels of activity were buried by the Australian Atomic Energy Commission in a series of shallow trenches in bushland near the Lucas Heights facility, on the outskirts of Sydney. Groundwater monitoring carried out since the mid 1970's has found that no radioactivity, with the exception of tritium, has been detected outside the immediate vicinity of the trenches. However, over this period of more than 40 years, a plume of tritiated water has migrated from the trenched area and extends at least 100 m from the source. The peak tritium activity detected in the mid 1970's was 390 kBq/L directly adjacent to the trenches. Modern tritium activity in the groundwater is less than the drinking water standard of 7.6 kBq/L and poses no radiological risk to the community or local environment. The tritium dataset will be presented and analysed to determine the effects of rainfall and drought periods on tritium levels and plume transport.