SCHEDULE 4

Sampling and Analysis

PART 3

Monitoring for Indicative Dose and Analytical Performance Characteristics

Performance characteristics and method of analysis.

8. For the following parameters and radionuclides, the method of analysis used must, as a minimum be capable of measuring activity concentrations with a limit of detection specified below in Table E:

TABLE E

Parameters and radiouclides	*Limit of detection*[(1)(2)]
Tritium	10 Bg/l[(3)]
Radon	10 Bg/l[(3)]
gross alpha activity	0.04 Bg/l[(4)]
gross beta activity	0.4 Bg/l[(4)]
U-238	0.02 Bg/l
U-234	0.02 Bg/l
Ra-226	0.04 Bg/l
Ra-228	0.02 Bg/l[(5)]
Pb-210	0.02 Bg/l
Po-210	0.01 Bg/l
C-14	20 Bg/l
Sr-90	0.4 Bg/l
Pu-239/Pu-240	0.04 Bg/l
Am-241	0.06 Bg/l
Co-60	0.5 Bg/l
Cs-134	0.5 Bg/l
Cs-137	0.5 Bg/l
I-131	0.5 Bg/l

(1) The limit of detection must be calculated according to the ISO standard 11929:2010 entitled “Determination of the characteristic limits (decision threshold, detection limit and limits of the confidence interval) for measurements of ionising radiation - Fundamentals and application”, with probabilities of errors of 1st and 2nd kind of 0.05 each.

(2) Measurement uncertainties must be calculated and reported as complete standard uncertainties, or as expanded standard uncertainties with an expansion factor of 1.96, according to the ISO IEC Guide 98-3:2008 entitled “Guide to the expression of uncertainty in measurement”.

(3) The limit of detection for tritium and for radon is 10% of the corresponding parametric value of 100 Bg/l.

(4) The limit of detection for gross alpha activity and gross beta activities is 40% of the screening values of 0.1 Bq/l and 1.0 Bq/l respectively.

(5) This limit of detection applies only to initial screening for indicative dose for a new water source. If initial checking indicates that it is unlikely that Ra-228 exceeds 20% of the derived concentration, the limit of detection may be increased to 0.08 Bq/l for routine Ra-228 nuclide specific measurements, until a subsequent re-check is required.