APPENDIX A

RADIOLOGICAL RELEASE RESULTS

Effluent monitoring focuses on releases from the site, i.e., stack and liquid (wastewater) discharges. Tables summarizing monitoring results from 2000 are presented in this Appendix. The tables show the average concentration and a comparison to a DOE standard. For such releases, DCG values are provided for comparative purposes.

Table A-1. Radiological Effluent Data for 2000

Radionuclide	Released to	Activity, Ci	MEMP Range[b], Ci
Tritium	Air	3.8×10^{2} [a]	$3.8 \times 10^{2} - 8.0 \times 10^{2}$
	Water	1.7	1.7 – 2.5
Plutonium-238	Air	9.4×10^{-6}	$6.9 \times 10^{-6} - 4.5 \times 10^{-5}$
	Water	1.6×10^{-4}	$1.6 \times 10^{-4} - 4.8 \times 10^{-4}$
Plutonium-239,240	Air	3.6×10^{-8}	$2.0 \times 10^{-8} - 1.0 \times 10^{-7}$
	Water	2.4×10^{-6}	$1.7 \times 10^{-6} - 3.6 \times 10^{-6}$
Radon-222	Air	3.2	$5.5 \times 10^{-1} - 3.2$
Uranium-233,234	Air	1.8×10^{-8}	$8.0 \times 10^{-9} - 9.2 \times 10^{-8}$
	Water	3.4×10^{-4}	$3.4 \times 10^{-4} - 3.9 \times 10^{-4}$
Uranium-238	Air	1.1×10^{-8}	$4.0 \times 10^{-9} - 1.1 \times 10^{-8}$

[a] Tritium released to air consists of: Tritium oxide, 3.10×10^{2} Ci
Elemental tritium, 7.33×10^{1} Ci

[b] Minimum – Maximum (CY1996 – CY2000)

Table A-2. Average Annual Concentration of Radionuclide Air Emissions in 2000

Stack*	Radionuclide	Average Concentration (µCi/mL)
HH	Tritium	4.86×10^{-8}
NCDPF	Tritium	1.02×10^{-7}
SM/PP	Pu-238	1.78×10^{-14}
	Pu-239,240	4.42×10^{-17}
	U-233,234	3.83×10^{-18}
	U-238	1.04×10^{-18}
SW-1CN	Tritium	2.14×10^{-08}
	Pu-238	4.70×10^{-18}
	Pu-239	5.74×10^{-19}
	U-233,234	1.37×10^{-18}
	U-238	9.52×10^{-19}
T-West	Tritium	3.41×10^{-08}
	Pu-238	1.49×10^{-16}
	Pu-239	3.15×10^{-18}
	U-233,234	4.78×10^{-18}
	U-238	3.97×10^{-18}
T-East	Tritium	5.51×10^{-10}
HEFS	Tritium	2.95×10^{-7}
	Pu-238	3.43×10^{-17}
	Pu-239,240	1.06×10^{-19}
	U-233,234	3.32×10^{-18}
	U-238	5.43×10^{-19}
WDA	Tritium	7.55×10^{-11}
	Pu-238	4.47×10^{-15}
	Pu-239,240	3.51×10^{-17}
	U-233,234	9.32×10^{-18}
	U-238	1.51×10^{-18}
WDSS	Pu-238	2.73×10^{-17}
	Pu-239,240	3.37×10^{-19}
Building 22	Tritium	1.03×10^{-9}
Building 23	Tritium	1.99×10^{-8}
CWPF	Tritium	5.41×10^{-11}
	Pu-238	8.76×10^{-17}
	Pu-239,240	2.46×10^{-18}
	U-233,234	5.89×10^{-18}
	U-238	6.84×10^{-18}

* Sampling locations shown in Figure 4-1.

Table A-3. Average Annual Concentration of Radionuclides in Water Effluents in 2000

Outfall*	Radionuclide	Average Concentration (µCi/mL)	Average as a Percent of DOE DCG[a]
602	Tritium	2.63×10^{-6}	0.13
	Pu-238	1.34×10^{-10}	0.33
	Pu-239	5.08×10^{-12}	0.02
	U-233,234	4.27×10^{-10}	0.09
	Th-228	1.59×10^{-11}	0.004
	Th-230	1.82×10^{-11}	0.006
	Th-232	7.22×10^{-12}	0.01
002	Tritium	1.68×10^{-6}	0.08
	Pu-238	2.67×10^{-10}	0.67
	Pu-239	2.49×10^{-12}	0.008
	U-233,234	4.12×10^{-10}	0.08
	Th-228	1.98×10^{-11}	0.005
	Th-230	$2.81x\ 10^{-11}$	0.009
	Th-232	1.57×10^{-11}	0.03
601	Tritium	5.40×10^{-6}	0.27
	Pu-238	2.42×10^{-11}	0.06
	Pu-239	3.23×10^{-12}	0.01
	U-233,234	3.75×10^{-10}	0.08
	Th-228	1.51×10^{-12}	0.0004
	Th-230	2.50×10^{-12}	0.0008
	Th-232	1.40×10^{-12}	0.003
003	Tritium	1.27×10^{-6}	0.06
	Pu-238	2.26×10^{-12}	0.01
	Pu-239,240	2.26×10^{-12}	0.008
	U-233,234	3.25×10^{-10}	0.07
	Th-228	4.00×10^{-12}	0.001
	Th-230	9.10×10^{-12}	0.003
	Th-232	6.00×10^{-13}	0.001

[a] DOE DCG values in water:
Tritium = 2×10^{-3} µCi/mL
Pu-238 = 4×10^{-8} µCi/mL
Pu-239,240 = 3×10^{-8} µCi/mL
U-233,234 = 5×10^{-7} µCi/mL
Th-228 = 4×10^{-7} µCi/mL
Th-230 = 3×10^{-7} µCi/mL
Th-232 = 5×10^{-8} µCi/mL

* Sampling locations shown on Figure 4-1.