APPENDIX A

FINAL WASTE ACCEPTANCE CRITERIA

Table A.1. Soil waste form WAC for resident farmer using a well for domestic water supply and Bear Creek for agricultural water supply

Radionuclides**	HI WAC*** (pCi/g)	Carcinogenic WAC*** (pCi/g)
Ac-227		
Ag-108m		
Al-26		
Am-241		2.0E+21
Am-243		
Ba-133		
Be-10		
Bi-207		
C-14		165
Cf-249		
Cf-250		
Cf-251		
CF-252		
Cl-36		
Co-60		
Cm-242		
Cm-243		
Cm-244		
Cm-245		
Cm-246		
Cm-247		
Cm-248		
Cs-135		
Cs-137		
Eu-150		
Eu-152		
Eu-154		
Eu-155		
I-129		13

Radionuclides**	HI WAC*** (pCi/g)	Carcinogenic WAC*** (pCi/g)
K-40		
Nb-93m		
Ni-59		
Ni-63		
Np-237		320
Pa-231		
Pb-210		
Pd-107		
Pu-236		
Pu-238		
Pu-239		720
Pu-240		5800
Pu-241		
Pu-242		
Pu-244		
Ra-226		
Ra-228		
Se-79		
Si-32		
Sm-151		
Sn-121m		
Sn-126		
Sr-90		
Tc-99		172
Th-228		
Th-229		
Th-230		
Th-232		
H-3 (Tritium)		1.5E+05
U-232		

Radionuclides**	HI WAC*** (pCi/g)	Carcinogenic WAC*** (pCi/g)
U-233	4.5E+07	1700
U-234	2.8E+07	1700
U-235	9500	1500
U-236	2.8E+05	1700
U-238	1500	1200
Zr-93		

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Aluminum (7429-90-5)		
Antimony (7440-36-0)	160	
Arsenic (7440-38-2)		
Barium (7440-39-3)	1.5E+05	
Beryllium (7440-41-7)		
Boron (7440-42-8)	2.4E+04	
Cadmium (7440-43-9)		
Calcium (7440-70-2)		
Chromium [total] (7440-47-3)	1.4E+05	
Cobalt (7440-48-4)		
Copper (7440-50-8)		
Gold (*metallic*) 7440-57-5)		
Hafnium (7440-58-6)		
Iodine (7553-56-2)		
Iridium (7439-88-5)		
Iron (7439-89-6)		
Lanthanum (7439-91-0)		
Lead (7439-92-1)	1500	
Lithium (7439-93-2)		
Magnesium (7439-95-4)		
Manganese (7439-96-5)	3.6E+05	
Mercury (7439-97-6)		
Molybdenum (7439-98-7)	3900	
Nickel (7440-02-0)		
Niobium (7440-03-1)		
Phosphorus (7723-14-0)		
Potassium (7440-09-07)		
Selenium (7782-49-2)	1600	
Silver (7440-22-4)		
Sodium (7440-23-5)		
Strontium (7440-24-6)	3.0E+05	
Tantalum (7440-25-7)		

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Thallium (7440-28-0)		
Tin (7440-31-5)	2200	
Tungsten (7440-33-7)		
Vanadium (7440-62-2)	2.5E+04	
Yttrium (7440-65-5)		
Zinc (7440-66-6)		
Zirconium (7440-67-7)		
2,4-D (94-75-7)	119	
2,4,5-T [Silvex] (93-72-1)	330	
Acenaphthene (83-32-9)	3.9E+05	
Acenaphthylene (208-96-8)	9.32E+04	
Acetone (67-64-1)	270	
Acetonitrile (75-05-8)	13	
Acetophenone (98-86-2)	330	
Acrolein (107-02-8)	1.1	
Acrylonitrile (107-13-1)	2.1	0.093
Aldrin (309-00-2)	4.4E+04	6600
Anthracene (120-12-7)		
Aroclor-1016 (12674-11-2)		
Aroclor-1221 (11104-28-2)		2300
Aroclor-1232 (11141-16-5)		1000
Aroclor-1242 (53469-21-9)		
Aroclor-1248 (12672-29-6)		
Aroclor-1254 (11097-69-1)		
Aroclor-1260 (11096-82-5)		
Aroclor-1268 (11100-14-4)		
Benzene (71-43-2)		200
Benzo[a]anthracene (56-55-3)		
Benzo[a]pyrene (50-32-8)		
Benzo[g,h,i]-perylene (191-24-2)		
Benzo[b]fluoranthene (205-99-2)		
Benzo[k]fluoranthene (207-08-9)		

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Benzoic Acid (65-85-0)	9810	
Benzyl Alcohol (100-51-6)	1200	
Benzidine (92-87-5)	1.2	0.161
alpha-BHC (319-84-6)		39
beta-BHC (319-85-7)		140
delta-BHC (319-86-8)		140
bis(2-Ethylhexyl)phthalate (117-81-7)		
Bromodichloromethane (75-27-4)	55	1.0
Bromoform (75-25-2)	110	16
Bromomethane (74-83-9)	3.5	
2-Butanone (78-93-3)		
Butylbenzene (104-51-8)	1.51E+04	
Butylbenzylphthalate (85-68-7)		
Carbazole (86-74-8)		1.1E+05
Carbon tetrachloride (56-23-5)	66	56
Carbon Disulfide (75-15-0)	710	
Chlordane (57-74-9)	2.1E+05	9.2E+04
Chlorobenzene (108-90-7)	330	
Chloroform (67-66-3)	100	40
Chloromethane (Methyl Chloride) (74-87-3)		4.4
2-Chloronaphthalene (91-58-7)		
2-Chlorophenol (95-57-8)		
o-Chlorotoluene (95-49-8)	440	
Chrysene (218-01-9)		
m-Cresol (108-39-4)	170	
o-Cresol (95-48-7)	232	
p-Cresol (106-44-5)	170	
Cumene (Isopropylbenzene) (98-82-8)	4.08E+04	
Cyanide (57-12-5)	8100	
DDD (72-54-8)		7.7E+04
DDE (72-55-9)		1.3E+05
DDT (50-29-3)		

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Di-n-butylphthalate (84-74-2)	190	
Di-n-octylphthalate (117-84-0)		
Dibenz[a,h]anthracene (53-70-3)		
Dibenzofuran (132-64-9)		
Dibromochloromethane (124-48-1)	79	1.1
1,2-Dichlorobenzene (95-50-1)	9400	
1,3-Dichlorobenzene (541-73-1)	5.8E+04	
1,4-Dichlorobenzene (106-46-7)	2.4E+04	100
3,3'-Dichlorobenzidine (91-94-1)		
1,1-Dichloroethane (75-34-3)		
1,2-Dichloroethane (107-06-2)		
1,1-Dichloroethene [Dichloroethylene] (75-35-4)		
1,2-Dichloroethylene (540-59-0)		
1,2,-cis-Dichloroethylene (156-59-2)	150	
1,2-trans-Dichloroethylene (156-60-5)	62	
Dichlorodifluoromethane (75-71-8)	6000	
1,2-Dichloropropane (78-87-5)		1.1
Dieldrin (60-57-1)	60	7.1
Diethylphthalate (84-66-2)	6180	
1,2-Dimethylbenzene (95-47-6)	7.56E+04	
1,1-Dimethylethylbenzene (98-06-6)		
2,4-Dimethylphenol (105-67-9)	2150	
Dimethylphthalate (131-11-3)	3.07E+04	
4,6-Dinitro-2-methylphenol (534-52-1)		
2,4 Dinitrotoluene (121-14-2)	62	1.0
2,6 Dinitrotoluene (606-20-2)	24	0.81
2,4-Dinitrophenol (51-28-5)		
Endosulfan plus metabolites**** (959-98-8)	3.3E+05	
Endrin (72-20-8)	3.0E+04	
Endrin Aldehyde (7421-93-4)	3.0E+04	
Endrin Ketone (53494-70-5)	3.0E+04	
Ethylbenzene (100-41-4)	4900	

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Ethylchloride (75-00-3)	1100	22
Fluoranthene (206-44-0)		
Fluorene (86-73-7)		
Heptachlor (76-44-8)	6.9E+04	2400
Heptachlor Epoxide (1024-57-3)	1500	1000
Hexachlorobenzene (118-74-1)	7.73E+05	3.97E+06
Hexachloroethane (67-72-1)	500	2800
n-Hexane (110-54-3)	5.3E+04	
1-Hexanol (111-27-3)	97	
2-Hexanone (591-78-6)	97	
Indeno[1,2,3-cd]pyrene (193-39-5)		
Isophorone (78-59-1)	1.5E+04	6100
Lindane (58-89-9)	940	180
Methanol (67-56-1)	1100	
Methoxychlor (72-43-5)		
Methylene Chloride (75-09-2)	140	7.3
Methylcyclohexane (108-87-2)	3.6E+04	
Methyl Isobutyl Ketone (108-10-1)	170	
Methyl Methacrylate (80-62-6)	3300	
1-Methyl-4-(1-methylethyl)-benzene (99-87-6)	1.51E+04	
2-Methylnapthalene (91-57-6)	4000	
(1-Methylpropyl)benzene (135-98-8)	1.51E+04	
Naphthalene (91-20-3)	9900	
2-Nitroaniline [O – Nitroaniline] (88-74-4)		
4-Nitrobenzenamine (4-Nitroaniline) (100-01-6)	2.3E+09	8.7E+08
Nitrobenzene (98-95-3)	1.98	
2-Nitrophenol (88-75-5)	1.8	
4-Nitrophenol (100-02-7)	850	
N-nitroso-di-n-propylamine (621-64-7)		0.019
N-Nitrosodiphenylamine (86-30-6)	4800	1100
Pentachlorophenol (87-86-5)		
Phenanthrene (85-01-8)		

Chemicals* (Chemical Abstract Service)	HI WAC*** (mg/kg)	Carcinogenic WAC*** (mg/kg)
Phenol (108-95-2)	3200	
Propylbenzene (103-65-1)	1.51E+04	
Propylene glycol (57-55-6)	1100	
Pyrene (129-00-0)		
Pyridine (110-86-1)	2.2	
Styrene (100-42-5)	1.6E+04	
1,1,1,2-Tetrachloroethane (630-20-6)	230	7.0
1,1,2,2-Tetrachloroethane (79-34-5)	250	0.489
Tetrachloroethene (127-18-4)	2900	440
2,3,4,6-Tetrachlorophenol (58-90-2)	1.08E+04	
Toluene (108-88-3)	4.9E+04	
Toxaphene (8001-35-2)		
1,2,4-Trichlorobenzene (120-82-1)	5100	
1,1,1-Trichloroethane (71-55-6)		
1,1,2-Trichloroethane (79-00-5)		
Trichloroethene (79-01-6)		780
1,1,2-Trichloro-1,2,2-Trifluoroethane (76-13-1)		
Trichlorofluoromethane (75-69-4)	2300	
2,4,5-Trichlorophenol (95-95-4)		
2,4,6-Trichlorophenol (88-06-02)		22
1,2,3-Trichloropropane (96-18-4)	28	0.016
Trimethylbenzene (mixed isomers) (25551-13-7)	2.2E+04	
1,2,4-Trimethylbenzene (95-63-6)	2.18E+04	
1,3,5-Trimethylbenzene (108-67-8)	2.6E+04	
Vinyl Chloride (75-01-4)	7.77	0.29
Xylene [mixture of isomers] (1330-20-7)	1.5E+04	

* Other administrative WAC compliance considerations may apply in addition to analytic WAC considerations, such as transuranic waste limits or RCRA LDRs. See Sect. 5.1 and Table A.3 for further details.
** Concentration limits based on compliance with the EMWMF ASA also apply to radionuclides. See Sect. 5.3 and Table A.2 for further details.
*** Where WAC is not given for either the HI or cancer criteria, contaminant migration was nevertheless modeled and contamination either does not reach the receptor in 100,000 years or radioactively decays to an insignificant level before reaching the receptor. In such cases the contaminant does not have a complete pathway, and its concentration does not affect the SOF or VWSF calculations.
**** Endosulfan plus metabolites includes endosulfan I, endosulfan II, endosulfan sulfate and any other associated metabolites. Sample concentrations shall be summed for all associated compounds that pass the SRC screening process to derive a total concentration of endosulfan plus metabolites within each sample for comparison against this SRC.

Ac = actinium
Ag = silver
Al = aluminum
Am = americium
ASA = auditable safety analysis
Ba = barium
Bi = bismuth
C = carbon
Cf = californium
Cl = chlorine
Cm = curium
Co = cobalt
Cs = cesium
EMWMF = Environmental Management Waste Management Facility
Eu = europium
g = gram
^{3}H = tritium
HI = hazard index
I = iodine
K = potassium
kg = kilogram
LDR = land disposal restriction
mg = milligram
Nb = niobium
Ni = nickel
Np = neptunium
Pa = protactinium
Pb = lead
pCi = picocurie
Pd = palladium
Pu = plutonium
Ra = radium
RCRA = Resource Conservation and Recovery Act of 1976
Se = selenium
Si = silicon
Sm = samarium
Sn = tin
SOF = sum of fractions
Sr = strontium
Tc = technetium
Th = thorium
U = uranium
VWSF = volume-weighted sum of fractions
WAC = waste acceptance criteria
Zr = zirconium