Chapter NR 538

APPENDIX

Table 1

Initial Certification and Recertification
Water Leach Test
ASTM D3987-12

Numerical Standard cmg{Ld		Parameter	Foundry System Sand	Coal Ash	FGD Gypsum	Other
A[1]	**B**[2]					
0.006	0.03	Antimony	X	X	X	X
0.01	0.05	Arsenic	X	X	X	X
2	10	Barium		X		X
0.004	0.02	Beryllium	X	X		X
2	10	Boron		X	X	X
0.005	0.025	Cadmium	X	X		X
250	1250	Chloride		X		X
0.1	0.5	Chromium, Total	X	X		X
0.04	0.2	Cobalt	X	X		X
1.3	6.5	Copper	X			X
4	20	Fluoride		X	X	X
0.015	0.075	Lead	X	X		X
0.3	1.5	Manganese			X	X
0.002	0.01	Mercury		X	X	X
0.04	0.2	Molybdenum		X		X
0.1	0.5	Nickel	X			X
10	50	Nitrite + Nitrate cas Nd				X
2	10	Phenol	X			X
0.05	0.25	Selenium		X	X	X
250	1250	Sulfate		X		X
0.002	0.01	Thallium		X	X	X
0.375	0.75	Vanadium				X
25	125	Zinc				X

Notes:

1 - Column A]Industrial byproducts that have concentrations below these standards may be used as geotechnical fill no less than 3 feet from the water table at the time of placement in accordance with s. NR 538.12 c2d cbd, or no less than 5 feet from the water table when used for nonmetallic mine reclamation under s. NR 538.10 c2d cfd. Standards are based on the enforcement exceedance values in s. NR 140.10 or recommended standard updates from the Wisconsin department of health services.

2 - Column B]Industrial byproducts that have concentrations above Column A but below Column B may be used as geotechnical fill no less than 5 feet from the water table at the time of placement in accordance with s. NR 538.12 c2d ccd. Standards are based on 5 times the enforcement exceedance values in s. NR 140.10.

Table 2

Initial Certification and Recertification

Bulk Analysis

Numerical Standard cmg{kgd	Parameter	Foundry System Sand	Coal Ash	FGD Gypsum	Other
97.3	Antimony	X	X	X	X
8	Arsenic	X	X	X	X
8600	Barium		X		X
122	Beryllium	X	X	X	X
43600	Boron		X		X
104	Cadmium	X	X		X
1.9	Chromium, Hexavalent	X	X	X	X
35.2	Cobalt	X			X
52	Lead	X	X		X
13.7	Mercury		X	X	X
1220	Molybdenum		X		X
264	Nickel	X			X
1210	Selenium		X	X	X
2.4	Thallium		X	X	X
773	Vanadium		X		X
73000	Zinc				X
19.9	Benzcadanthracene	X			X
2.0	Benzocadpyrene	X			X
20	Benzocbdfluoranthene	X			X
200	Benzockdfluoranthene	X			X
2000	Chrysene	X			X
2	Dibenzocahdanthracene	X			X
20	Indenoc123-cddpyrene	X			X
75.8	1-methyl naphthalene	X			X
628	2-methylnaphthalene	X			X
25.1	Naphthalene	X			X
4710	Pyrene	X			X

Notes:

Standards are based on Wisconsin department of health services potential ingestion and inhalation exposure modelling results.

Table 3

FGD Byproduct for Soil or Plant Additive Standards
Total Elemental Analysis

Parameter	Numerical Standard cmg{kgd
Antimony	1.5
Arsenic	13.1
Barium	1000
Beryllium	2.5
Boron	200
Cadmium	1.0
Chromium cTotald	100
Copper	95
Lead	52
Manganese	2937
Mercury	3.13
Molybdenum	10
Nickel	100
Selenium	50
Thallium	1.0
Vanadium	136
Zinc	150

Notes:

Values are derived from the NRCS Conservation Practice Standard Code 333, X*Amending Soil Properties With Gypsum Products,Y* June, 2015, screening values or ch. NR 720 Background Threshold Values for lead, manganese and zinc which have background values exceeding the NRCS screening values. Mercury values are based on the ch. NR 720 Direct Contact Remedial Concentration Limits cRCLsd.

Table 4

Beneficial Use Methods		Must contain less than the concentration specified for the parameters in the following Appendix Tables:		
NR 538.10		**1**[3,4]	**2**	**3**
c1d	Contained or Converted Uses **cad** Encapsulated uses **cbd** Waste stabilization or solidification **ccd** Supplemental fuels **cdd** Daily cover	---	---	---
c2d	Geotechnical Fill **cad** Building sub-base **cbd** Paved lot sub-base **ccd** Soil{gravel cover **cdd** Feed and manure storage structures **ced** Transportation embankments **cfd** Non-metallic mine reclamation[2]	X	---	---
c3d	Construction Uses **cad** Paved roadway base course **cbd** Base aggregates **ccd** Utility trench backfill **cdd** Tank, vault or tunnel abandonment **ced** Slabjacking material **cfd** Soil and pavement base stabilization for structural improvements **cgd** Flowable fill for structural improvements **chd** Bonded surface course	X	---	---
c4d	Unconfined uses **cad** Unbonded Surface Course **cbd** Winter road abrasives **ccd** Manufactured soil	X	X	---
c5d	Soil or Plant Additives **cad** Flue gas desulphurization material **cbd** Agricultural liming agents[1]	---	---	X

Notes:

1] Byproducts intended for use as agricultural liming agents must contain concentrations less than the values listed in s. NR 204.07 c5d ccd.

2] Byproducts intended for use as part of a nonmetallic mine reclamation project must either be designated as Xselect foundry sandY by the department under s. NR 538.06 c3d cfd or contain concentrations less than the values listed in Appendix, Table 1, Column A.

3] Table 1 contains numeric standards under Column A and Column B. The standards under Column B determine the eligible uses under s. NR 538.08 and the standards under Column A determine the separation to groundwater for geotechnical fill uses under s. NR 538.10c2d.

4 - Select foundry sand must contain less than the concentration specified for the parameters in Table 1, Column B as required under s. NR 538.03c12md.