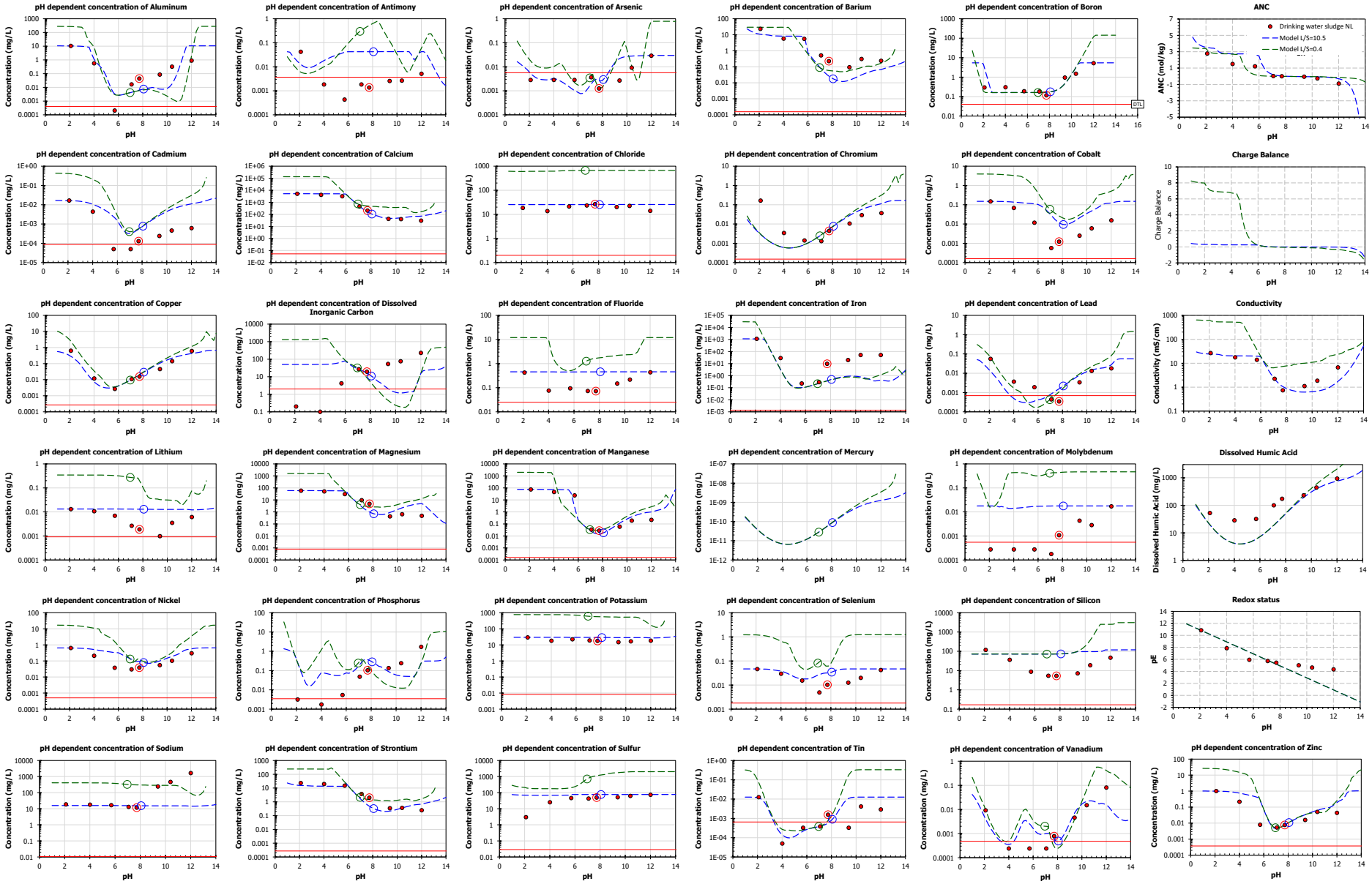
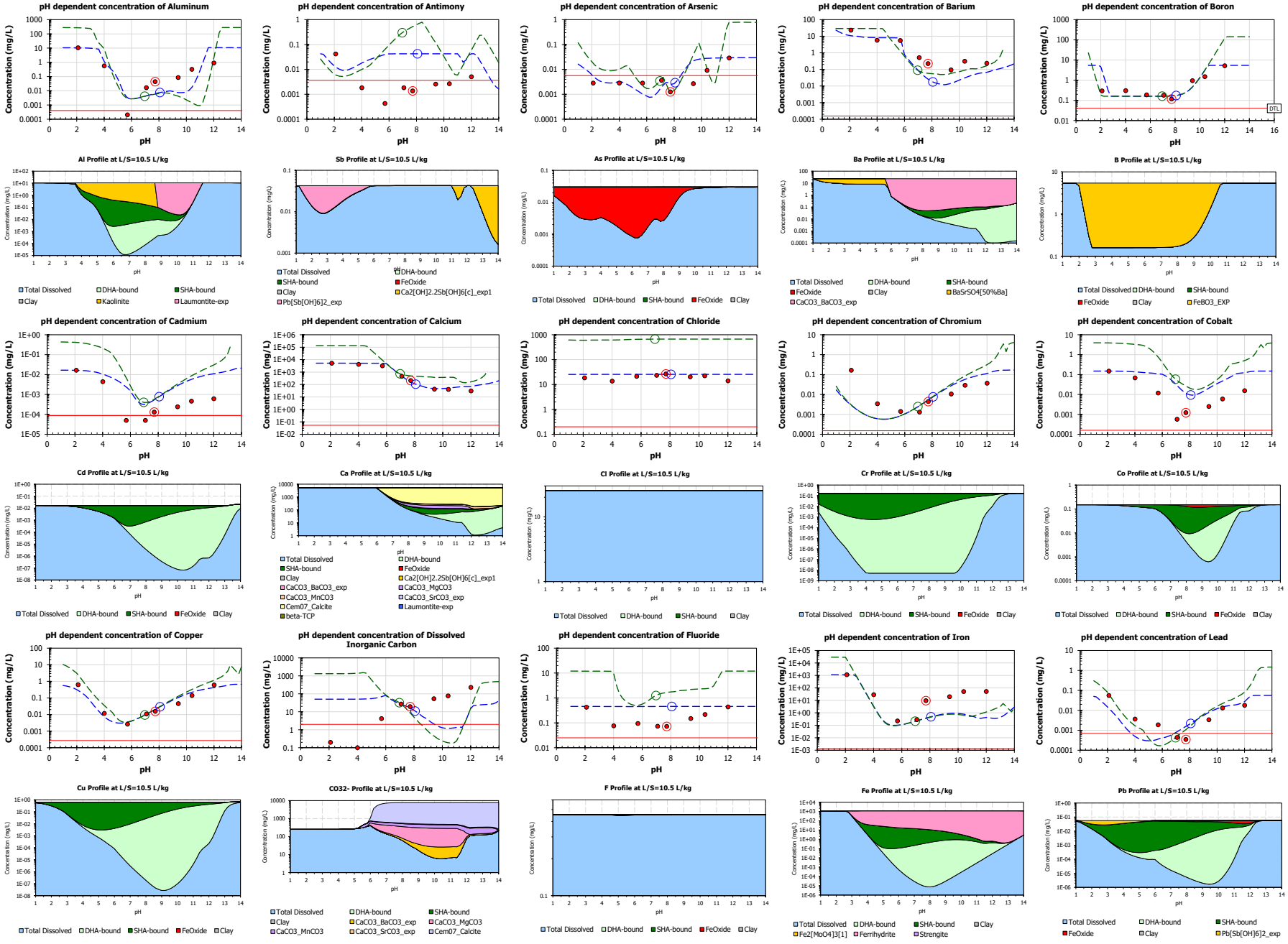
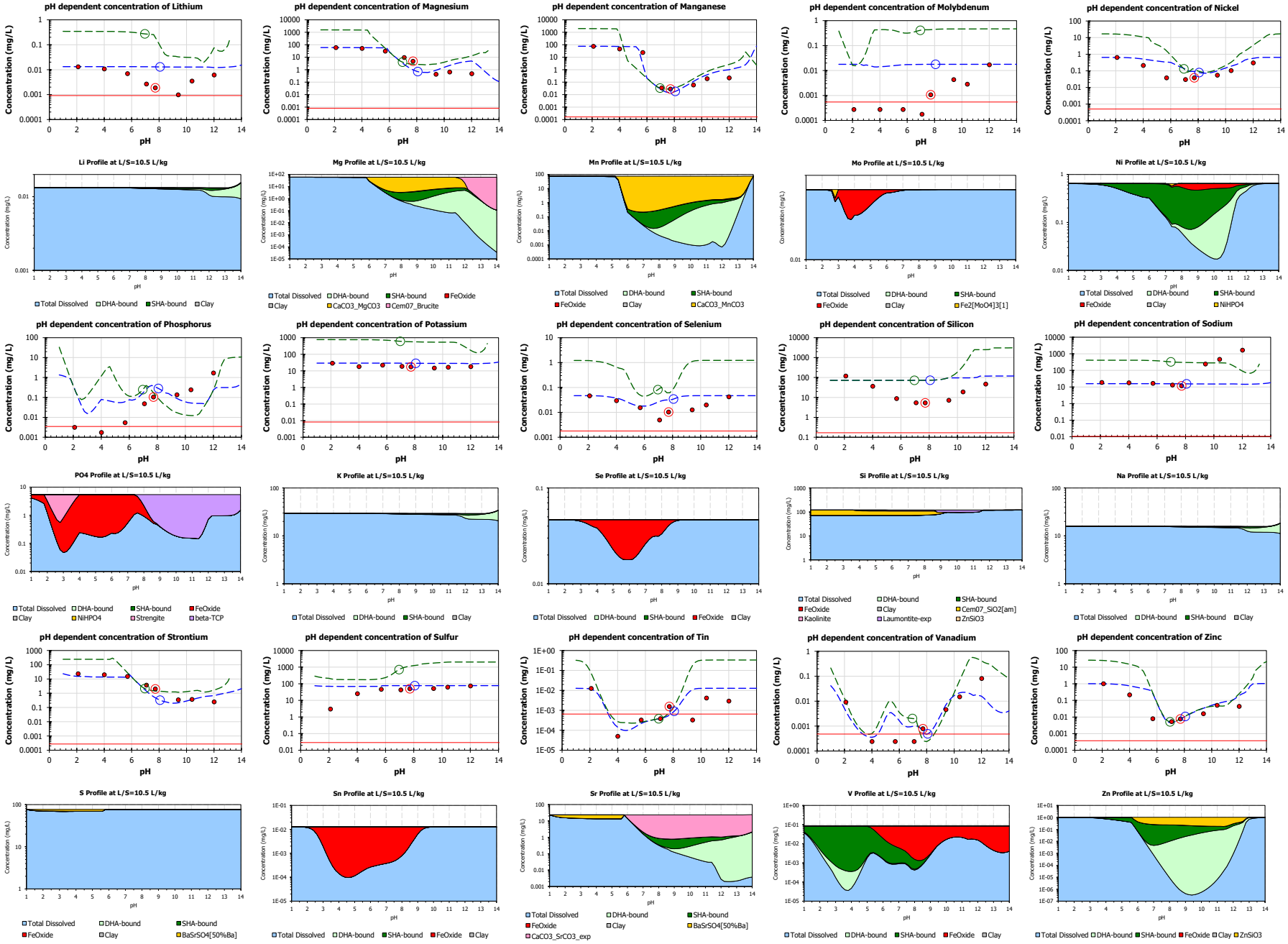
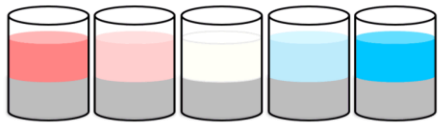

pH dependent concentration of Aluminum
pH dependent concentration of Antimony
pH dependent concentration of Arsenic
pH dependent concentration of Barium
pH dependent concentration of Boron
ANC
Drinking water sludge NL
Model L/S=10.5
Model L/S=0.4
pH dependent concentration of Cadmium
pH dependent concentration of Calcium
pH dependent concentration of Chloride
pH dependent concentration of Chromium
pH dependent concentration of Cobalt
Charge Balance
pH dependent concentration of Copper
pH dependent concentration of Dissolved Inorganic Carbon
pH dependent concentration of Fluoride
pH dependent concentration of Iron
pH dependent concentration of Lead
Conductivity
pH dependent concentration of Lithium
pH dependent concentration of Magnesium
pH dependent concentration of Manganese
pH dependent concentration of Mercury
pH dependent concentration of Molybdenum
Dissolved Humic Acid
pH dependent concentration of Nickel
pH dependent concentration of Phosphorus
pH dependent concentration of Potassium
pH dependent concentration of Selenium
pH dependent concentration of Silicon
Redox status
pH dependent concentration of Sodium
pH dependent concentration of Strontium
pH dependent concentration of Sulfur
pH dependent concentration of Tin
pH dependent concentration of Vanadium
pH dependent concentration of Zinc
Concentration (mg/L)
ANC (mol/kg)
Charge Balance
Conductivity (mS/cm)
Dissolved Humic Acid (mg/L)
pE
pH
DTL


pH dependent concentration of Aluminum
pH dependent concentration of Antimony
pH dependent concentration of Arsenic
pH dependent concentration of Barium
pH dependent concentration of Boron
Al Profile at L/S=10.5 L/kg
Sb Profile at L/S=10.5 L/kg
As Profile at L/S=10.5 L/kg
Ba Profile at L/S=10.5 L/kg
B Profile at L/S=10.5 L/kg
pH dependent concentration of Cadmium
pH dependent concentration of Calcium
pH dependent concentration of Chloride
pH dependent concentration of Chromium
pH dependent concentration of Cobalt
Cd Profile at L/S=10.5 L/kg
Ca Profile at L/S=10.5 L/kg
Cl Profile at L/S=10.5 L/kg
Cr Profile at L/S=10.5 L/kg
Co Profile at L/S=10.5 L/kg
pH dependent concentration of Copper
pH dependent concentration of Dissolved Inorganic Carbon
pH dependent concentration of Fluoride
pH dependent concentration of Iron
pH dependent concentration of Lead
Cu Profile at L/S=10.5 L/kg
CO32- Profile at L/S=10.5 L/kg
F Profile at L/S=10.5 L/kg
Fe Profile at L/S=10.5 L/kg
Pb Profile at L/S=10.5 L/kg
Concentration (mg/L)
pH
DTL
Total Dissolved
DHA-bound
SHA-bound
FeOxide
Clay
Kaolinite
Laumontite-exp
Ca2[OH]2.2Sb[OH]6[c]_exp1
Pb[Sb[OH]6]2_exp
BaSrSO4[50%Ba]
CaCO3_BaCO3_exp
FeBO3_EXP
CaCO3_MgCO3
CaCO3_MnCO3
CaCO3_SrCO3_exp
Cem07_Calcite
beta-TCP
Laumontite-exp
Fe2[MoO4]3[1]
Ferrihydrite
Strengite


pH dependent concentration of Lithium
pH dependent concentration of Magnesium
pH dependent concentration of Manganese
pH dependent concentration of Molybdenum
pH dependent concentration of Nickel
Li Profile at L/S=10.5 L/kg
Mg Profile at L/S=10.5 L/kg
Mn Profile at L/S=10.5 L/kg
Mo Profile at L/S=10.5 L/kg
Ni Profile at L/S=10.5 L/kg
Total Dissolved DHA-bound SHA-bound Clay
Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_MgCO3 Cem07_Brucite
Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_MnCO3
Total Dissolved DHA-bound SHA-bound FeOxide Clay Fe2[MoO4]3[1]
Total Dissolved DHA-bound SHA-bound FeOxide Clay NiHPO4
pH dependent concentration of Phosphorus
pH dependent concentration of Potassium
pH dependent concentration of Selenium
pH dependent concentration of Silicon
pH dependent concentration of Sodium
PO4 Profile at L/S=10.5 L/kg
K Profile at L/S=10.5 L/kg
Se Profile at L/S=10.5 L/kg
Si Profile at L/S=10.5 L/kg
Na Profile at L/S=10.5 L/kg
Total Dissolved DHA-bound SHA-bound FeOxide Clay NiHPO4 Strengite beta-TCP
Total Dissolved DHA-bound SHA-bound Clay
Total Dissolved DHA-bound SHA-bound FeOxide Clay
Total Dissolved DHA-bound SHA-bound FeOxide Clay Cem07_SiO2[am] Kaolinite Laumontite-exp ZnSiO3
Total Dissolved DHA-bound SHA-bound Clay
pH dependent concentration of Strontium
pH dependent concentration of Sulfur
pH dependent concentration of Tin
pH dependent concentration of Vanadium
pH dependent concentration of Zinc
S Profile at L/S=10.5 L/kg
Sn Profile at L/S=10.5 L/kg
Sr Profile at L/S=10.5 L/kg
V Profile at L/S=10.5 L/kg
Zn Profile at L/S=10.5 L/kg
Total Dissolved DHA-bound SHA-bound FeOxide Clay BaSrSO4[50%Ba]
Total Dissolved DHA-bound SHA-bound FeOxide Clay
Total Dissolved DHA-bound SHA-bound FeOxide Clay CaCO3_SrCO3_exp BaSrSO4[50%Ba]
Total Dissolved DHA-bound SHA-bound FeOxide Clay
Total Dissolved DHA-bound SHA-bound FeOxide Clay ZnSiO3
Concentration (mg/L)
pH

Object pH Dependent Leaching Test Model
Name Drinkingwater Sludge NL

pH Dependent Leaching Test Scenario



Lab Test

Extra L/S Simulation

Lab Test

Model Parameters

Entity	Unit	Default
c0		-3.647
c1		-0.5858
c2		-0.1176
c3		0.05073
c4		-0.004665
c5		0.0001337
Clay	mg/kg	3000
Hydrous Ferric Oxide	mg/kg	750.0
L/S	L/kg	10.50
pE		5.200
pH		7.720
Solid Humic Acid	mg/kg	1.200E+04
Simulated Low L/S	L/kg	0.4000

Available Content

Entity	mg/kg						
Acetic acid	2.220E-08	F	4.790	Pb	0.5900		
Ag	1.079E-08	Fe	1.208E+04	PO4	57.17		
Al	111.9	B	57.06	Sb	0.4467		
As	0.3178	Si	1261	Se	0.4905		
Ba	245.8	Hg	2.006E-08	Sn	0.1335		
Br	28.21	K	308.6	S	809.4		
Ca	5.448E+04	Li	0.1392	Sr	246.6		
Cd	0.1760	Mg	626.4	Th	2.320E-08		
Cl	268.4	Mn	796.6	U	2.380E-08		
Co	1.581	Mo	0.1869	V	0.8850		
CO32-	8.200E+04	Na	166.0	Zn	10.67		
Cr	1.747	Ni	6.808				
Cu	6.689	NO3	6.200E-09				

Solid Solutions

Name	End Member	Log(K)	Reaction
None			

Minerals

Name	Log(K)	Reaction
BaSrSO4[50%Ba]	8.221	BaSrSO4[50%Ba] -> 0.5 Ba+2 + 1 SO4-2 + 0.5 Sr+2
beta-TCP	28.93	beta-TCP -> 3 Ca+2 + 2 PO4-3
Ca2[OH][AsO4][c]	4.000	Ca2[OH][AsO4][c] + 1 H+ -> 1 AsO4-3 + 2 Ca+2 + 1 H2O
Ca2[OH]2.2Sb[OH]6[c]_exp1	5.000	Ca2[OH]2.2Sb[OH]6[c]_exp1 + 2 H+ -> 2 Ca+2 + 2 H2O + 2 Sb[OH]6-
CaCO3_BaCO3_exp	21.30	CaCO3_BaCO3_exp -> 1 Ba+2 + 2 CO3-2 + 1 Ca+2
CaCO3_MgCO3	19.00	CaCO3_MgCO3 -> 2 CO3-2 + 1 Ca+2 + 1 Mg+2
CaCO3_MnCO3	21.48	CaCO3_MnCO3 -> 2 CO3-2 + 1 Ca+2 + 1 Mn+2
CaCO3_SrCO3_exp	19.85	CaCO3_SrCO3_exp -> 2 CO3-2 + 1 Ca+2 + 1 Sr+2
CaMoO4[c]	7.940	CaMoO4[c] -> 1 Ca+2 + 1 MoO4-2
Cem07_Brucite	-16.83	Cem07_Brucite + 2 H+ -> 2 H2O + 1 Mg+2
Cem07_Calcite	8.485	Cem07_Calcite -> 1 CO3-2 + 1 Ca+2
Cem07_Gypsum	4.583	Cem07_Gypsum -> 1 Ca+2 + 2 H2O + 1 SO4-2
Cem07_SiO2[i	24.21	Cem07_SiO2[am] + 2 H2O -> 2 H+ + 1 H2SiO4-2
FeBO3_EXP	32.48	FeBO3_EXP + 2 H2O -> 1 Fe[OH]4- + 2 H+ + 1 H2BO3-
Fe2[MoO4]3[1	82.02	Fe2[MoO4]3[1] + 8 H2O -> 2 Fe[OH]4- + 8 H+ + 3 MoO4-2
Ferrihydrite	18.41	Ferrihydrite + 1 H2O -> 1 Fe[OH]4- + 1 H+
Fluorite	10.96	Fluorite -> 1 Ca+2 + 2 F-
Kaolinite	81.80	Kaolinite + 7 H2O -> 2 Al[OH]4- + 6 H+ + 2 H2SiO4-2
Laumontite-ex	116.0	Laumontite-exp + 8 H2O -> 2 Al[OH]4- + 1 Ca+2 + 8 H+ + 4 H2SiO4-2
Li-Albite[low2	86.27	Li-Albite[low2] + 8 H2O -> 1 Al[OH]4- + 6 H+ + 3 H2SiO4-2 + 1 Li+
NiHPO4	25.00	NiHPO4 -> 1 H+ + 1 Ni+2 + 1 PO4-3
Pb[OH]2[C]	-8.150	Pb[OH]2[C] + 2 H+ -> 2 H2O + 1 Pb+2
Pb[Sb[OH]6]2	29.00	Pb[Sb[OH]6]2_exp -> 1 Pb+2 + 2 Sb[OH]6-
Strengite	48.00	Strengite + 2 H2O -> 1 Fe[OH]4- + 4 H+ + 1 PO4-3
ZnSiO3	18.69	ZnSiO3 + 1 H2O -> 1 H2SiO4-2 + 1 Zn+2

Model Comparison: residuals - Concentration

Sample

Name Drinkingwater Sludge NL

Legend

Total Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the entire X range.
User Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the user defined X range.
Fractional Average Deviation Square root of the sum of the squared values of residuals divided by the number of values, over the fraction.
Note that the Total and User Average Deviation columns are averages as well.

Residual details, concentrations

Residuals as log(model/sample)

Fraction	*8*	*7*	*6*	*5*	*4*	*3*	*2*	*1*	*Total Avg*
pH	*2.10*	*4.01*	*5.70*	*7.08*	*7.72*	*9.40*	*10.4*	*12.0*	*Deviation*
Al	-0.01	0.30	1.22	-0.58	-0.84	-1.06	-1.27	1.07	0.32
As	0.28	0.07	-0.44	-0.27	0.34	0.92	0.48	0.01	0.15
B	0.30	0.09	0.02	0.01	0.03	0.05	-0.05	0.00	0.06
Ba	-0.33	0.16	0.00	-0.83	-0.93	-0.81	-1.00	-0.54	0.24
Ca	0.00	0.09	0.20	0.01	-0.11	0.05	0.11	0.37	0.06
Cd	-0.01	0.38	1.67	0.82	0.62	1.07	1.10	1.26	0.35
Cl	0.14	0.27	0.08	0.04	-0.02	0.10	0.06	0.26	0.05
Co	0.00	0.30	0.97	1.69	0.98	0.92	0.91	0.90	0.34
CO32-	-	-	-	-	-	-	-	-	-
Cr	-1.76	-0.75	-0.21	0.32	0.08	0.42	0.30	0.49	0.26
Cu	-0.35	-0.21	0.12	-0.01	0.12	0.37	0.19	-0.16	0.08
F	0.03	0.78	0.68	0.79	0.80	0.49	0.32	0.02	0.20
Fe	-0.01	-0.96	-0.34	-0.09	-1.40	-1.34	-1.81	-2.08	0.44
Hg	-	-	-	-	-	-	-	-	-
K	0.01	0.21	0.12	0.19	0.21	0.28	0.23	0.17	0.07
Li	0.01	0.09	0.28	0.69	0.84	1.11	0.56	0.30	0.21
Mg	0.00	0.06	0.27	-0.54	-0.68	0.32	0.53	1.02	0.19
Mn	0.00	0.21	-0.96	-0.16	-0.27	0.29	0.32	0.66	0.16
Mo	1.81	1.72	1.79	2.00	1.22	0.61	0.80	0.02	0.50
Na	-0.07	-0.06	-0.02	0.08	0.12	-1.20	-1.48	-2.06	0.35
Ni	0.00	0.39	0.95	0.63	0.37	0.26	0.27	0.27	0.17
Pb	-0.65	-0.87	-0.72	0.29	0.66	0.37	0.05	0.19	0.19
PO4	-	-	-	-	-	-	-	-	-
S	1.37	0.44	0.20	0.26	0.19	0.17	0.09	0.02	0.19
Sb	-0.52	0.99	1.97	1.36	1.49	1.22	1.20	0.92	0.45
Se	0.00	0.11	0.07	0.74	0.49	0.57	0.37	0.05	0.14
Si	-0.22	0.30	0.91	1.13	1.13	1.12	0.70	0.40	0.29
Sn	-0.04	0.46	-0.17	0.01	-0.43	1.53	0.49	0.64	0.23
Sr	-0.18	-0.16	0.06	-0.43	-0.62	-0.21	-0.01	0.45	0.12
U	-	-	-	-	-	-	-	-	-
V	-0.36	0.17	1.03	0.62	-0.11	0.20	0.16	-0.71	0.18
Zn	0.00	0.54	1.50	-0.05	0.00	0.33	0.11	0.66	0.22
Avg Deviation	0.12	0.11	0.17	0.15	0.14	0.15	0.14	0.15	0.24

Yellow = own pH All residuals within + 1 or - 1 are considered to represent a good fit. 0 of coarse the best.

B	Phases missing over entire pH range
Fe	Pretty good. SHA - DHA adjustment??
Mo	Phase missing or not strong enough. Fe-Mo phase. Possible effect of very high Fe load?
Sb	Phases missing pH 4- 12
Si	No phases for Si at pH around neutral