Table S1. Main mineral reaction equations, stability constants (log_k) and enthalpies (delta_h) at 25 °C reported in the wateq4f.dat thermodynamic data file.

Mineral Name	Reaction	Log_k	Delta_h (kcal)
Aragonite	$CaCO_3 = Ca^{2+} + CO_3^{2-}$	−8.336	−2.589
Artinite	$MgCO_3{:}Mg(OH)_2{:}3H_2O + 2H^+ = 2Mg^{2+} + CO_3^{2-} + 5H_2O$	9.6	−28.742
Brucite	$Mg(OH)_2 + 2H^+ = Mg^{2+} + 2H_2O$	16.84	−27.1
Calcite	$CaCO_3 = Ca^{2+} + CO_3^{2-}$	−8.48	−2.297
Dolomite	$CaMg(CO_3)_2 = Ca^{2+} + Mg^{2+} + 2CO_3^{2-}$	−17.09	−9.436
Goethite	$FeOOH + 3H^+ = Fe^{3+} + 2H_2O$	−1.0	−14.48
Huntite	$CaMg_3(CO_3)_4 = 3Mg^{2+} + Ca^{2+} + 4CO_3^{2-}$	−29.968	−25.760
Magnesite	$MgCO_3 = Mg^{2+} + CO_3^{2-}$	−8.029	−6.169
Nahcolite	$NaHCO_3 = Na^+ + HCO_3^-$	−0.548	3.720
Portlandite	$Ca(OH)_2 + 2H^+ = Ca^{2+} + 2H_2O$	22.8	−31.0