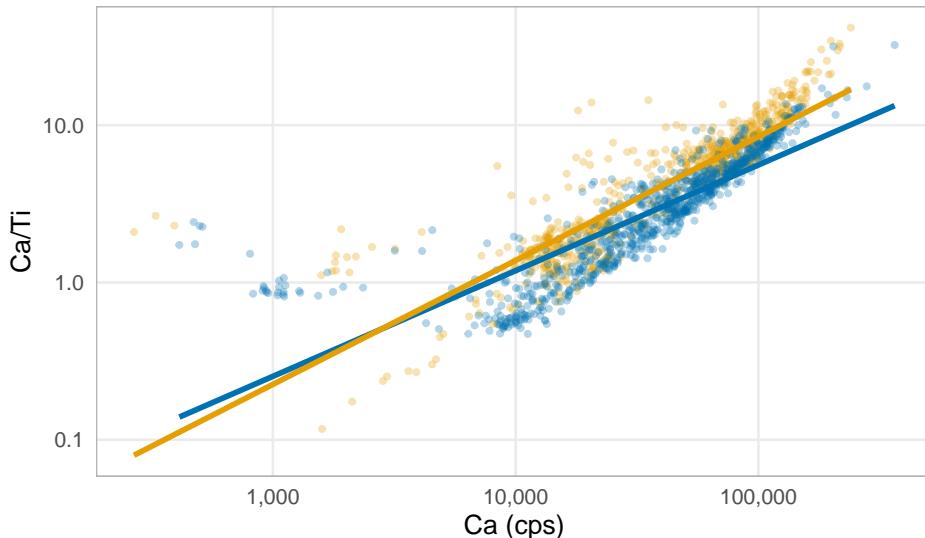# Figure S1: Proxy Redundancy Analysis

Empirical evaluation of ratio utility in Pebas Formation XRF data
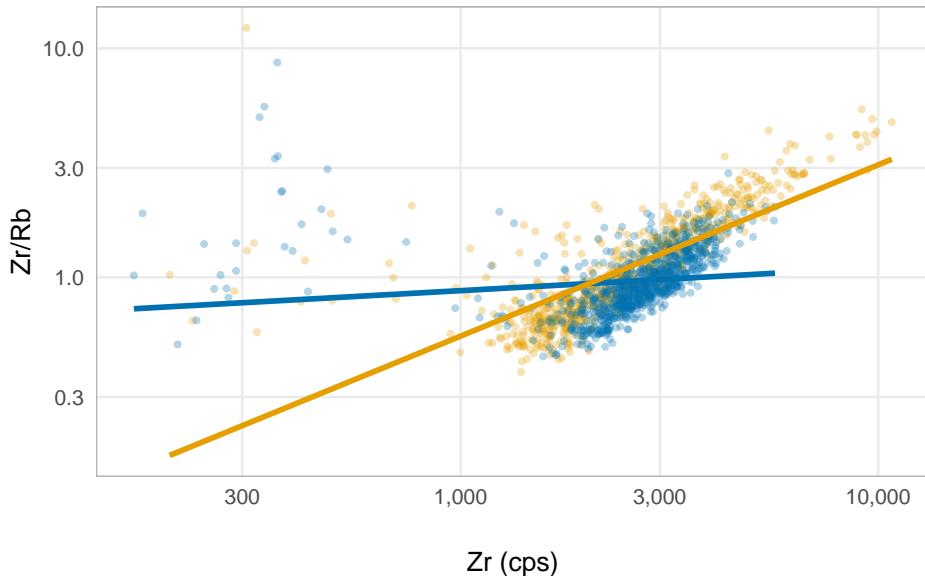
A) Ca/Ti is redundant with Ca

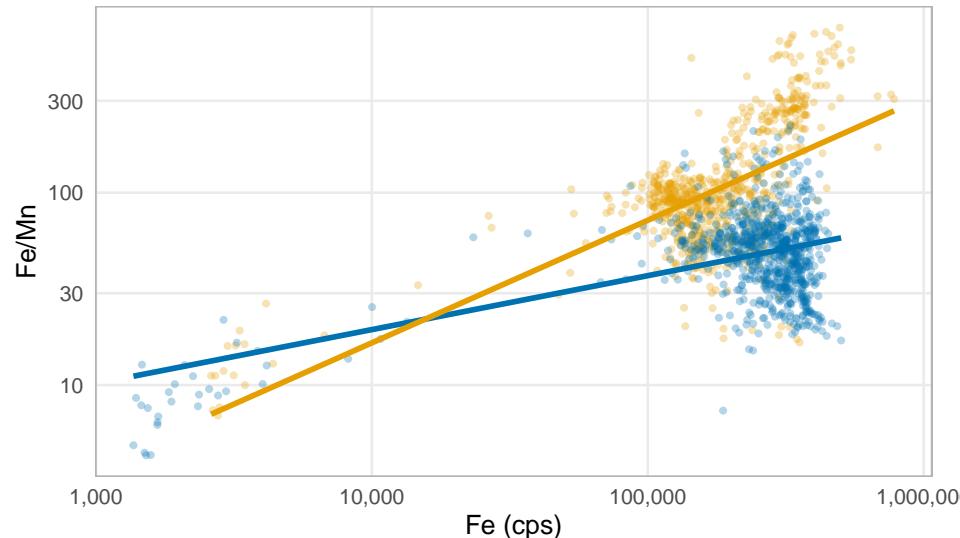r = 0.89 (ratio provides no additional information)

B) Fe/Mn adds information beyond Fe

r = 0.25 (Mn normalization differentiates signal)

C) Zr/Rb adds information beyond Zr

r = 0.60 (Rb normalization improves grain size signal)

D) Proxy redundancy summary

Ratios with |r| > 0.85 vs numerator are redundant

Redundant   Useful