

Figure 3.5b is the time plot of alkalinity concentrations of the Brush Creek shale from leaching columns. The plots resemble the leaching behavior of a combination of the initial linear and latter diffusion-controlled mechanisms, shown in White (1986). Laboratory 3, which evaluated different diameter columns, had similar alkalinities in the three columns.

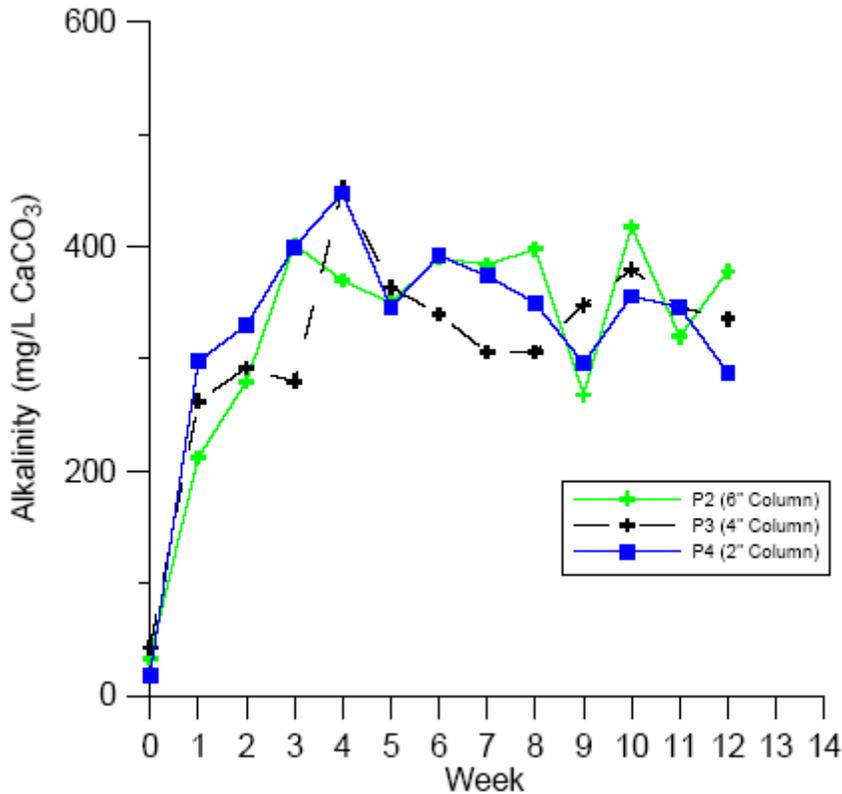


Figure 3.5b. Alkalinity concentrations of Brush Creek shale using two inch, four inch, and six inch column diameter.

Conclusions:

The results of this second phase of weathering tests indicate that the leaching columns are superior to the humidity cells in rock weathering performance, and the 2 inch diameter columns used in this second phase performed as well as the 6 inch diameter columns used in the first phase (2002) of weathering tests. The results also show that the continuous flow of CO₂-enhanced air was a superior gas handling method in comparison to the exposure of influent water saturated with CO₂-enhanced air. The standardized particle size distribution appears to be an improvement in the performance and the data interpretation of the method. The removal of fine (<35 mesh) particle components affected sulfate concentrations, but had essentially no effect upon alkalinity concentrations. The coal refuse sample exhibited the greatest change in effective surface area.