



Figure 7.14. Increase in alkalinity concentrations (mg/l) in duplicate at Labs 3, 4, and 5.

Detection and Quantification Limits

The raw data tables from the arrays of leaching columns of the 8 participating labs that are discussed in this section of the report, are contained in Tables 2A through 2N of Appendix E. The “less than” values (e.g. <20) in Tables 2N and 2M on acidity and alkalinity, respectively, are related to detection limits. To report acidity values as <20, for example, is to indicate that the detection limit used in the laboratory titration for acidity is 20 mg/L and any values less than that are not significantly different than zero, and should be interpreted as negligible. In the following discussion of iron and other metals, the use of Method Detection Limits (MDL) and Minimum Levels (ML) will be reported in the data tables and used in the interpretation of the data. The MDL is defined as the lowest value of a determinative signal that shows a constituent of interest to be greater than zero. The ML is defined as the lowest value on a calibration curve, or the lowest point of quantification. (A MDL of 0.1 and a ML and 1.0 were used in the determination and quantification of sulfate values but all of the sulfate values for all five rock types were greater than 1.0 mg/L) The MDL’s and ML’s will become more meaningful in the following discussion of iron and other metals. In the data tables in Appendix E, analytical results below the ML but above the MDL are shaded in light gray and analytical results below the MDL are shaded in dark gray.

The metals analytical results are expressed in micrograms per liter (parts per billion) as is typically done with mine drainage, surface-water and ground-water data because some of the water quality parameters of interest, such as selenium, are present at very low levels. Some very high concentrations of iron are present in the leachate from the HCS-IN shale samples in Labs 4 and 6, which initially appeared to be unlikely or impossible values.