However, if these results are expressed as parts per million or parts per thousand they become more plausible. For example the HCS-IN sample in Lab 6, Column 6, week 14 produced 6,700,000 parts per billion, which equals 6,700 parts per million, or 6.7 parts per thousand or 0.67 percent.

The rationale for obtaining very high concentration results can also be explained in terms of laboratory instrumentation and operational procedures. Sample results that are significantly higher than the documented calibration range of the method and instrument used to analyze samples are typically obtained using sample dilution or a decreased sample volume. If a sample contains an analyte concentration that is outside (higher than) the calibration range of the analytical method or instrument, the analyst can dilute the sample, analyze the diluted sample, and multiply the result by the dilution factor. Alternatively, the analyst can use a decreased sample size, analyze the decreased volume, and multiply the result to compensate for the decreased volume.

Iron (Fe)

The overall range in reported iron concentrations for all five rock types is 0 µg/L to 6,700,000 µg/L (HCS-IN). The MDL for iron is 9.9 µg/L, so all 0 values were replaced with half of the MDL (4.95) for plotting purposes. (The ML is 50 µg/L.) The extreme range of the iron data makes meaningful plotting of the data very difficult, as there are many low values mixed with extreme peaks. Figure 7.15 shows the iron data plotted in a logarithmic scale, which makes the individual data points discernable, but there is considerable scatter among the data points. On Figure 7.15 for the HCS-IN shale, a trend of increasing iron concentrations is evident for the last seven weeks of the weathering period, especially in Labs 4, 5 and 6. This trend is consistent with the great increase in conductivity and sulfates discussed previously for the HCS-IN shale.

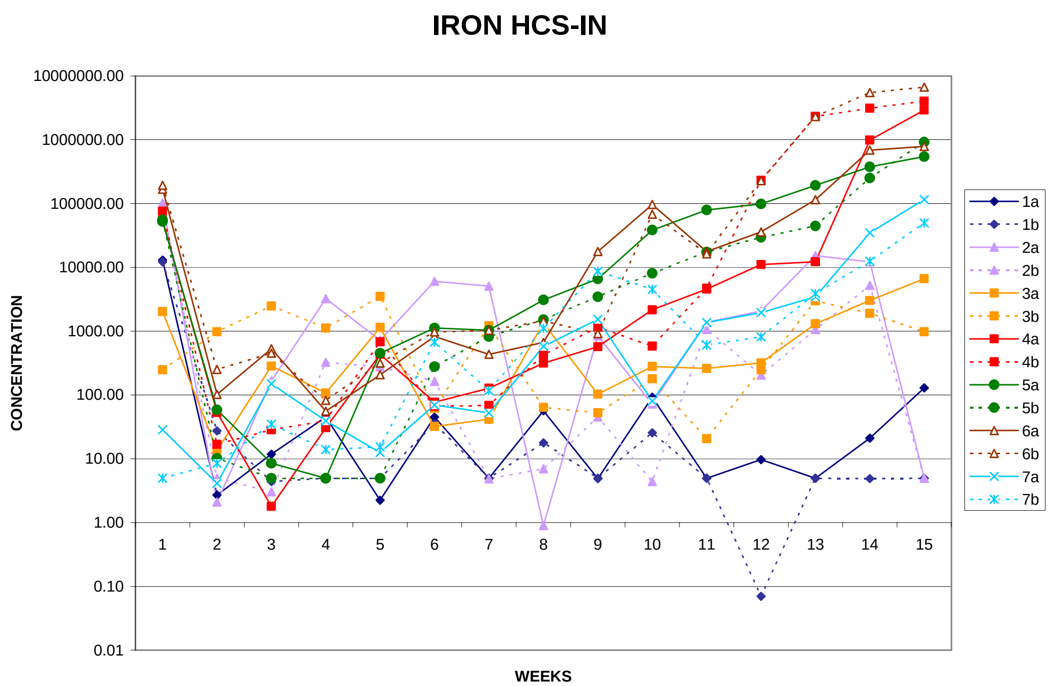

Figure 7.15. Range of iron concentrations (ug/l) of Houchin Creek Shale on a log scale.