



Douglas Creek Sampling Project Report

An AquaValid machine has been deployed at Douglas Creek for around three months, starting on September 28th, 2023, when the unit was deployed to the location. Initially, problems were being found with sampling, pumping, and network. However, these were addressed and the machine began to function as intended.

Over the span of October 24 to December 6, 2023, 912 samples were taken. These were taken in bursts, as the machine is battery powered and periodically the battery had to be recharged. The Ca and Mg concentrations were measured in these samples and are shown in **Figure 1**.

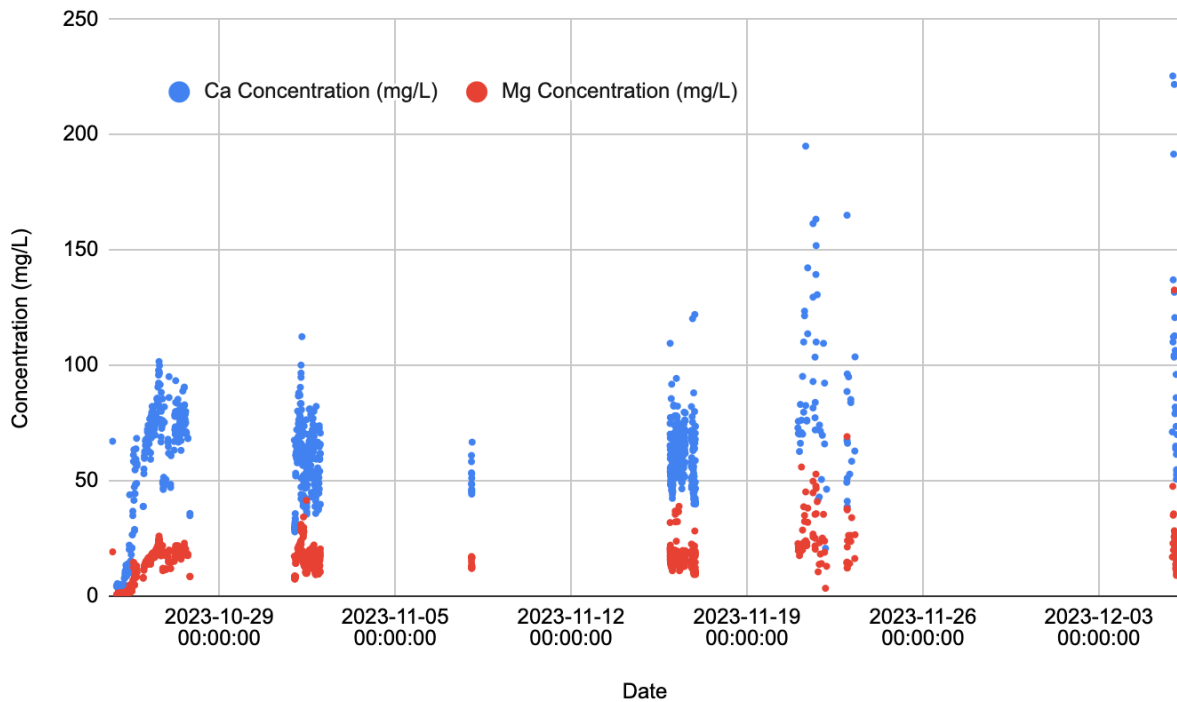


Figure 1: Doug Creek Ca and Mg data from October 24 to December 6, 2023.

The variability in the data is very clear, with many of the sets having RSDs as high as 40%. The plasma was also found to be regularly unstable, with many readings failing. However, despite this, there is a significant difference between the measurements taken after November 19, 2023 compared to those before. This significant increase in signal taken with the drastic increase in the standard deviation of the measurements could be a result of the increased precipitation.

The data set is also more sparse than we usually like to collect due to the battery operated nature of this install, we did get six groups, though with the wide range of estimated results we believe that the environmental case has not kept the hardware as stable as we had intended and suggests we should revisit its design.