Alkalinity (Potentiometric Titration)

Background

In this analysis, you will determine the alkalinity of samples. To do this, you will perform a potentiometric titration. In such a method, a titrant (in this case the strong acid HCl) is slowly added to the sample, which contains a weak base ("alkalinity" – actually multiple chemical species that we treat as one thing). As the acid is added, the base becomes neutralized, and the volume of acid it takes to completely neutralize the sample is related to the alkalinity of the sample. You will use a pH probe to monitor the reaction and determine when you have reached the *endpoint*. The *equivalence point* can then be determined through either the inflection point method or the first-derivative method.

Procedure

- For this analysis, follow EPA Method 310.1 - Alkalinity (Titrimetric, pH 4.5). All the information you need is there, although it may take practice to learn to interpret EPA methods.
- Complete your titration as soon as possible after sample collection, and store it at 4°C prior to titration if you must store it at all.
- Use your **unaltered** sample for the titration.
- You should perform a titration to *standardize* your acid prior to use.
- Then, you should perform 3 titrations of each sample.

Data Analysis

- Data analysis will be discussed in lecture.
- Complete the assigned worksheet / Excel sheet and turn it in on Canvas.
