

# HARDNESS AND ALKALINITY IN RAW RIVER WATER

## BACKGROUND

Total Hardness ( $\text{Ca}^{+2}$  &  $\text{Mg}^{+2}$ ) and Total Alkalinity (M-Alkalinity) are two very important parameters use to determine and control the quality of drinking water. This is especially true for drinking water plants which add lime to promote softening and coagulation. In many drinking plants lime can be the most used chemical for water treatment. However, these measurements can be very difficult to place on-line because of the great amount of mud and other materials in the sample.

## ANALYZER SETUP

An Indiana Water Treatment plant placed a HANDYChem analyzer on their raw river inlet for the measurement of total hardness, total alkalinity as well as the initial pH of the sample. The HANDYChem analyzer utilizes very large bore tubing (1/2" OD) as well as our proprietary non-dilution measurement cell. The non-dilution measurement cell allows the analyzer to collect very dirty



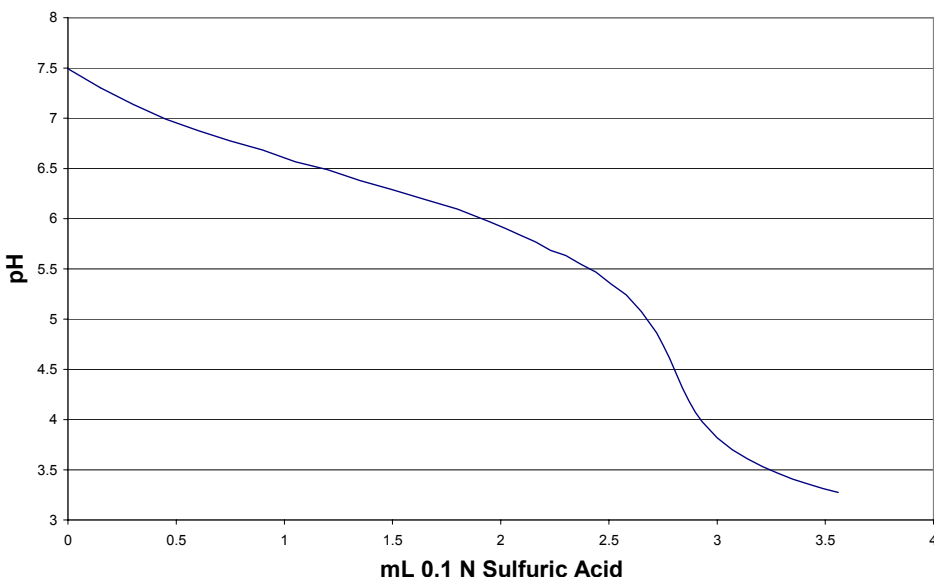
samples for testing without plugging. During the sample collection procedure large amounts of the sample freely flow through the non-dilution measurement cell. This process exchanges the previously measured sample with the new sample to be analyzed. The total alkalinity measurement was made with a glass pH electrode and titrated with sulfuric acid. For the total hardness measurement a new sample was collected. The hardness measurement was made with a color probe (630 nm) and titrated with EDTA. Our unique color probe allows the analyzer to make color measurements in "muddy" but translucent samples. The end-user

decided to only connect the analog outputs (4-20 mA) to their data collection system. However, the HANDYChem can also use Modbus RTU as well as Ethernet to transfer data.

## ADVANTAGES

- 1) Lab Accuracy On-line
- 2) Reliable Analyzer On-line
- 3) Rapid Measurements
- 4) Reduced Lab Man-Hours
- 5) Probes Washed Between Tests

Alkalinity Titration



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