Wee Stinky Monitor Sensors

# Water

## Conductivity

Conductivity is measured by immersing two graphite electrodes into the flow stream at a known distance from one another. These two electrodes are part of a voltage divider circuit, such that the signal line is held at +5 VDC and attached to the ADC input, while the other electrode is held at ground. The magnitude of current flowing between the two electrodes is evidenced by the difference in voltage, ∆V, such that the conductivity will be inversely proportional to the output from the ADC.

## Flow Rate

The linear flow rate in L/min is measured by a small waterwheel-style flowmeter. This device has known surface area, and issues a pulse every time that the wheel makes a full revolution. This allows for timing of pulses to map the flow rate, Q.

## Depth

The depth gauge is comprised of an outer housing with its inside coated with flat black paint and a slit cut continuously down one side to allow for pressure equalization. A reflective float is set in this housing, and an IR proximity sensor is set at the top of the housing with a cap. The voltage from the proximity sensor is directly proportional to the distance between the float and the streambed.

## Turbidity

The turbidity sensor is made up of a single white LED and a CdS photocell in a voltage divider. As water flows between the LED and photocell, the voltage output from the voltage divider varies proportionally to the turbidity.

## pH

The pH gauge is simply a standard pH electrode connected to a serial pH meter.

## Temperature

Temperature is measured using a waterproof DS18S20 digital thermometer. The output is a direct number in °C, which is processed with the rest of the incoming data.

# Air

## Pressure

## Relative Humidity

## Temperature

## Wind Speed

## Wind Direction

## Rainfall Amount