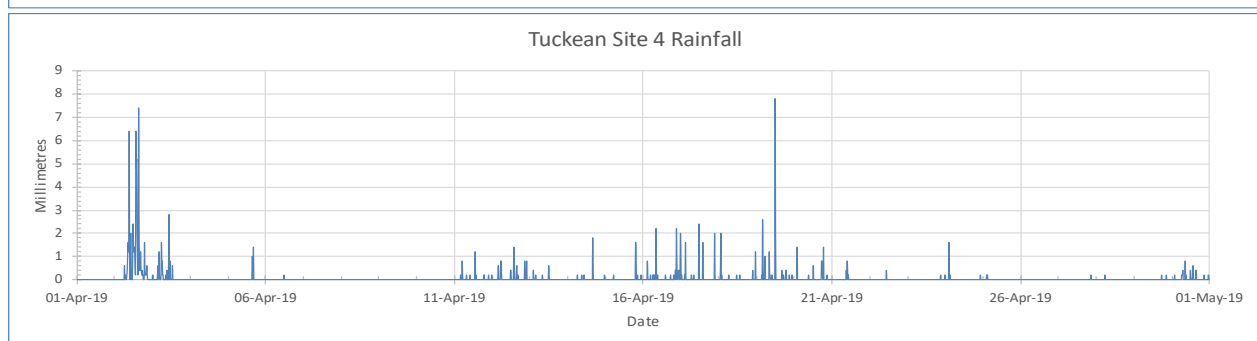
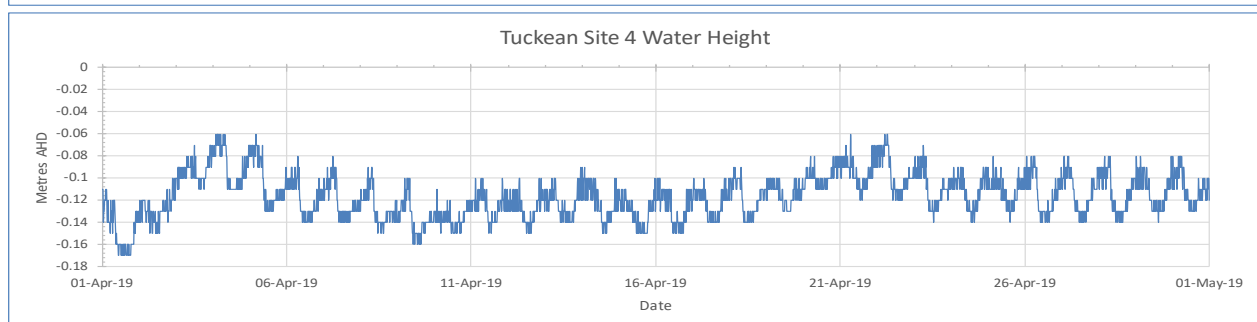
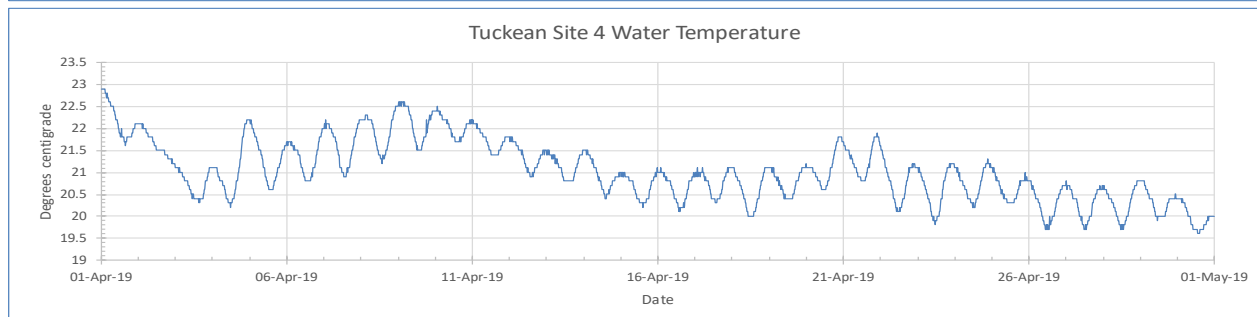
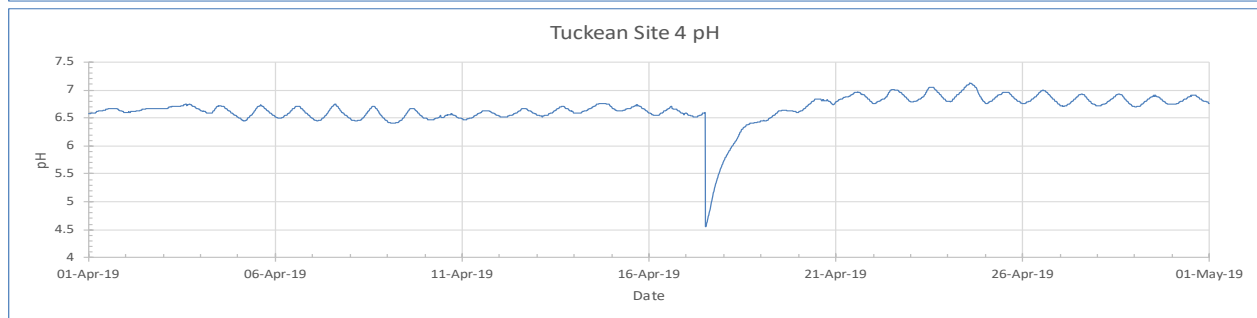
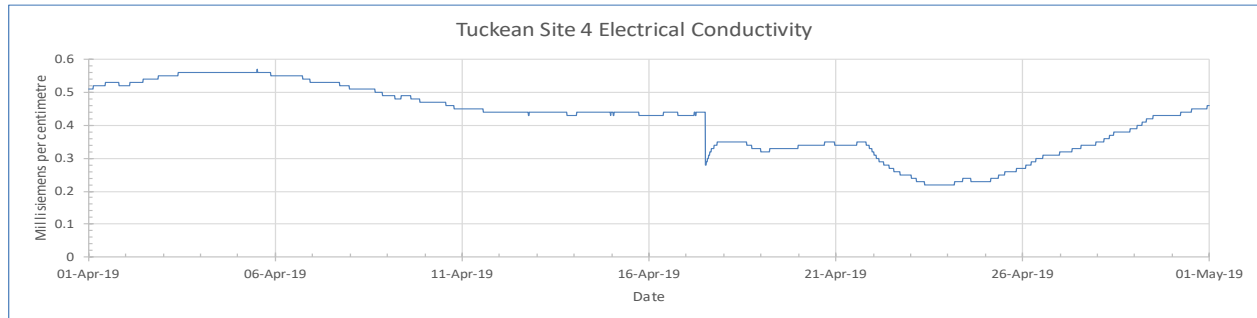


Tuckean site 4 water quality – April 2019

Data logger located in Tuckean Swamp, Northern NSW



Interpretation

Note – Site 4 was cleaned and calibrated on 17th April which caused a drop in EC & pH.

Electrical conductivity (EC) was recorded in April between 0.22 and 0.56 millisiemens per cubic centimetre (ms/cm³) averaging 0.42 ms which compares to the March average of 0.49 ms. EC measures the ability of the water to conduct an electric current, which is the inverse of electrical resistance (R expressed in ohms) and is affected by rain and runoff, acid water, tidal brackish water and temperature.

pH was recorded in April between 6.5 and 7.0 (ignoring spike) with an average of 6.7 which is acid and has risen by 0.1 compared to the March pH average of 6.6. Low rainfall, high transpiration and evaporation and restricted tidal entry have resulted in low groundwater levels over summer. Falling groundwater exposes acid sulfate soils which oxidise, however during April low groundwater levels were restricting acid water from entering drains. Increased rainfall during April has so far been insufficient to raise ground water and flush acid water into drains upstream from site 4. Peaks of pH normally occur in late afternoon as plants draw CO₂ from the water, while troughs occur in early mornings as plants respire CO₂ forming carbonic acid. pH is measured on a logarithmic scale, therefore each consecutive whole number below neutral represents 10 times the acidity than the previous number.

Water temperature. Water temperature for April ranged between 19.6 and 22.8°C with an average of 21.03 deg C which has decreased by 3.12°C compared to the March average of 24.15 deg C due to cloud cover and seasonal change. Temperature variations are caused by season, time of day, solar radiation and air temperature, while cloud cover, rain, degree of shading also affect water temperature.

Water level was recorded for April between -0.17 and -0.06 m AHD giving a range of 0.11 m with a max daily tidal range of 0.06 m and average height of -0.12 m AHD which is 0.02 m higher than the March average of -0.14m due to increased rainfall. Average water level at site 4 is 0.27 m lower than site 1 due to low rainfall, evaporation, transpiration and the restricted entry of tidal water. For accuracy the depth sensor will need to be resurveyed in to AHD. Rainfall, tidal fluctuations, river level, sluice gate opening, in stream vegetation, sediment build up and drain blocks and to a lesser extent temperature, wind and barometric pressure can all affect the water level.

Rainfall: In April the site 4 data logger recorded 164.6 mm over 23 days which compares to 166.6 mm recorded over 17 days in March. Peak 15-minute rainfall of 7.8 mm was recorded between 11:30 am and 11:45 am on 19th April. The April 33-year average for this location is 185.6 mm therefore rainfall is below average. During April the Rocky Mouth Creek data logger located 19 km to the SSW recorded 211.8 mm over 23 days, while the Ballina AWS located 19 km to the NE recorded 158.8 mm over 21 days.