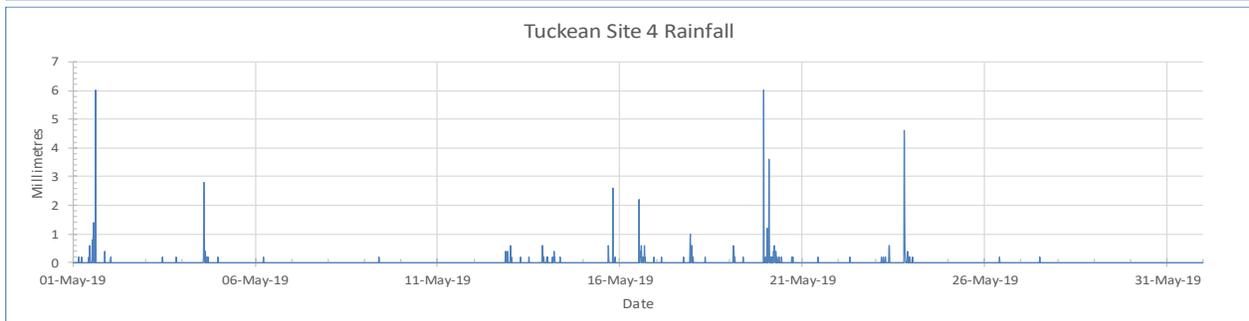
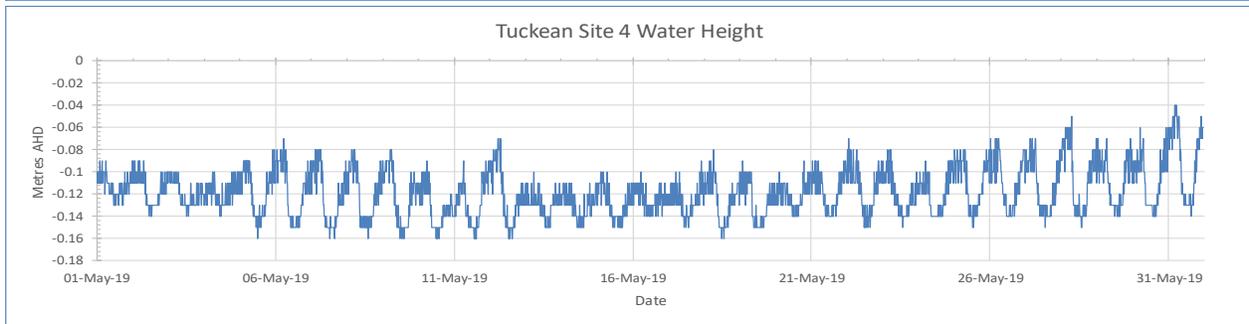
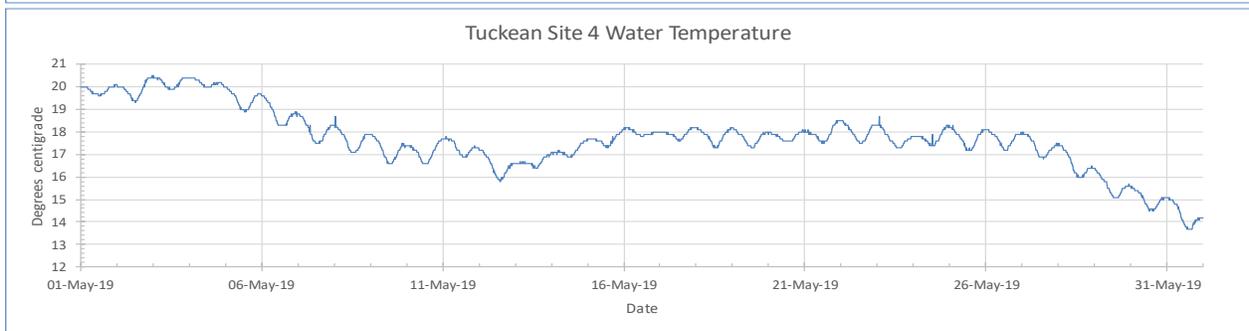
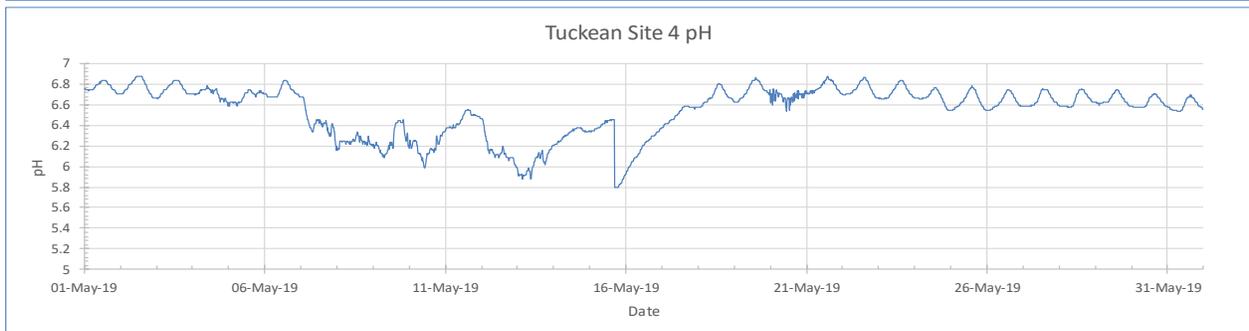
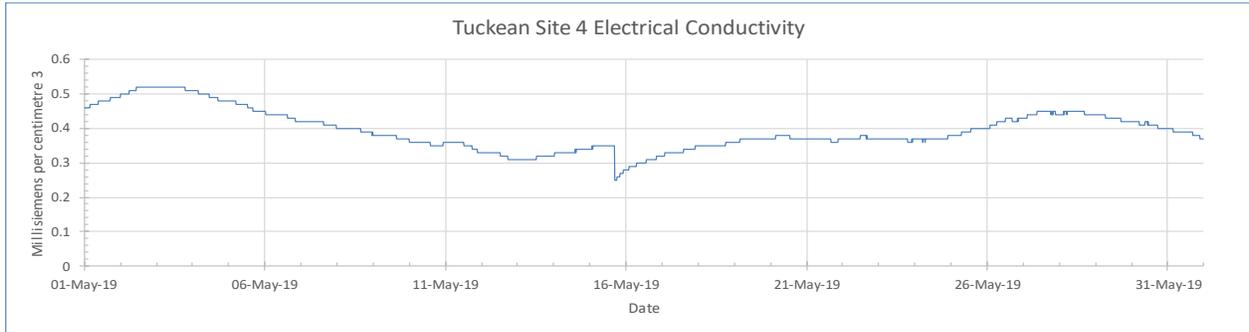


Tuckean site 4 water quality – May 2019

Data logger located in Tuckean Swamp, Northern NSW



Interpretation

Note – Site 4 was cleaned and calibrated on 15th May which caused a drop in EC & pH.

Electrical conductivity (EC) was recorded in May between 0.25 and 0.52 millisiemens per cubic centimetre (ms/cm^3) averaging 0.39 ms which compares to the April average of 0.42 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 May between 5.8 and 6.9 with an average of 6.6 which is acid and has fallen by 0.1 compared to the April pH average of 6.7. 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 May low groundwater levels were restricting acid water from entering drains. Reduced rainfall during May has 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 CO_2 from the water, while troughs occur in early mornings as plants respire CO_2 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 May ranged between 13.7 and 20.3°C with an average of 17.7 deg C which has decreased by 3.3°C compared to the April average of 21.0 deg C due to decreasing air temperature and seasonal change. Temperature variations are caused by season, time of day, solar radiation and air temperature, while cloud cover, rain and degree of shading also affect water temperature.

Water level was recorded for May between -0.16 and -0.04 m AHD giving a range of 0.12 m with a max daily tidal range of 0.1 m and average height of -0.12 m AHD which is equal to the April average of -0.12m. Average water level at site 4 is 0.24 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 May the site 4 data logger recorded 68.8 mm over 21 days which compares to 164.6 mm recorded over 23 days in April. Peak 15-minute rainfall of 6.0 mm was recorded between 10:15 pm and 10:30 pm on 19th May. The May 33-year average for this location is 152.5 mm therefore rainfall is below average. During May the Rocky Mouth Creek data logger located 19 km to the SSW recorded 49.0 mm over 23 days, while the Ballina AWS located 19 km to the NE recorded 94.0 mm over 17 days.