



Water Quality Site Report

Alligator Creek Neighbourhood Catchment Unnamed Creek (CA1) Site Report 1 – July 2008

This Unnamed Creek is one of many tributaries of the Hedlow area of the Alligator Creek Neighbourhood Catchment (NC). The Unnamed Creek drains a section of the western side of the Berserker Range extension in the Barmoya district, and flows into Hedlow Creek.

Land use in the Catchment area of the Unnamed Creek is predominantly grazing of native & sown pastures.

The Unnamed Creek is one of four sites sampled by landholders in Alligator Creek NC between January 2006 and June 2008 as part of a collaborative capacity building project on water quality and Catchment health with interested landholders. Samples were event based only.

Local landholder Brad Jepson collected four (4) flow event samples (Please refer to map overleaf for CA1 site). Samples were tested for Total Suspended Sediments (TSS), Total Nitrogen (TN), Total Phosphorus (TP) and Dissolved Nutrients (NH_3 , NO_x , FRP).

Samples were taken from flow events on:

- 23rd January 2006 after 100mm rainfall in previous 48hrs;
- 8th November 2007 after 130mm rainfall in previous 36hrs;
- 1st February 2008 after 50mm in previous 24hrs; and
- 29th February 2008.

Results

Figures 1 to 3 chart the 4 samples of Unnamed Creek with the flow event mean (average) of sediments and nutrients of other NC's in the FRCC sub-region (sampled during the 2007-08 wet seasons) and the Fitzroy Basin region (sampled during 2005-6 wet seasons).

Alligator, Styx, Raglan and Emu Creek NC's are located in the FRCC sub-region. Data management and sampling of Alligator NC was co-ordinated by FRCC, and our partner organisation, Fitzroy Basin Association (FBA), managed sampling and data for all other NC's listed. In both instances, all sampling is undertaken by landholders.

It must be kept in mind that each NC has very different soils, land uses and management, which produce very different water quality results.

The NC results have been compared with Queensland Central Coast (Qld CC) guidelines in Figures 1 to 3; however guidelines are based upon ambient data and not flow data, so it can be expected that flow events will produce results above the guidelines.

Sediments

Samples taken from Unnamed Creek over the 2 year period were generally very good in relation to sediments. The 2006 and 2007 samples are still comparatively low despite being above the Qld CC guideline; they are below the mean TSS value for other NC's and just above the Alligator Creek NC. It is likely that they are higher than the 2008 samples because they are from heavier rainfall events after dry conditions with potentially lower ground cover.

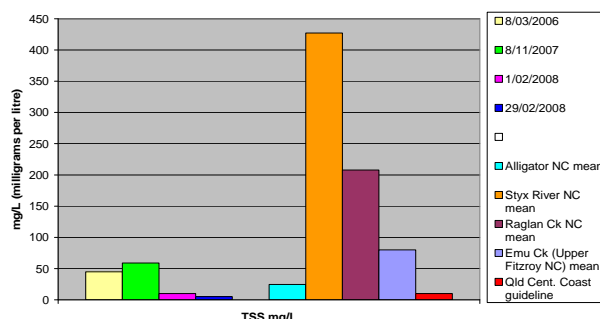


Figure 1: Comparison between TSS results for Unnamed Creek, FRCC NC means & Qld CC guideline



Nutrients – Nitrogen & Phosphorus

TN and TP results in [Figure 2](#) for the Unnamed Creek samples (pale yellow, green, pink & dark blue bars) were generally high and above the Qld CC guideline (red bars). Three of the four samples were above the Alligator Creek NC mean for TN and TP, however they are still within the mean range for the other NC's in the FRCC sub-region and below the FBA NC mean (bright yellow bar). This may be attributable to the higher amount of rainfall received for these 3 events; heavy rain after a dry spell can increase the level of soil erosion and nutrient movement (attached to soil particles) in run-off water.

Note: The FBA's NC mean results are derived from samples predominantly taken in the Central Highlands during the 2005 and 2006 wet seasons; as can be identified in [Figure 2](#), the soils and land use in this area produce much higher levels of sediment and nutrient levels.

The high TN value for Unnamed Creek on the 01/02/2008 (pink bars), when compared to the NO_x and NH₃ results in [Figure 3](#) for the same sample date, suggests that most of the nitrogen was in organic form and may have been associated with movement of leaf litter or other natural forms.

TN is a measure of both dissolved (Nitrate & Nitrite – NO_x and Ammonia – NH₃) and organic nitrogen (attached to carbon and can include leaf litter) in the water column. TP is a measure of both dissolved (FRP – Filtered Reactable Phosphorous) and organic phosphorus.

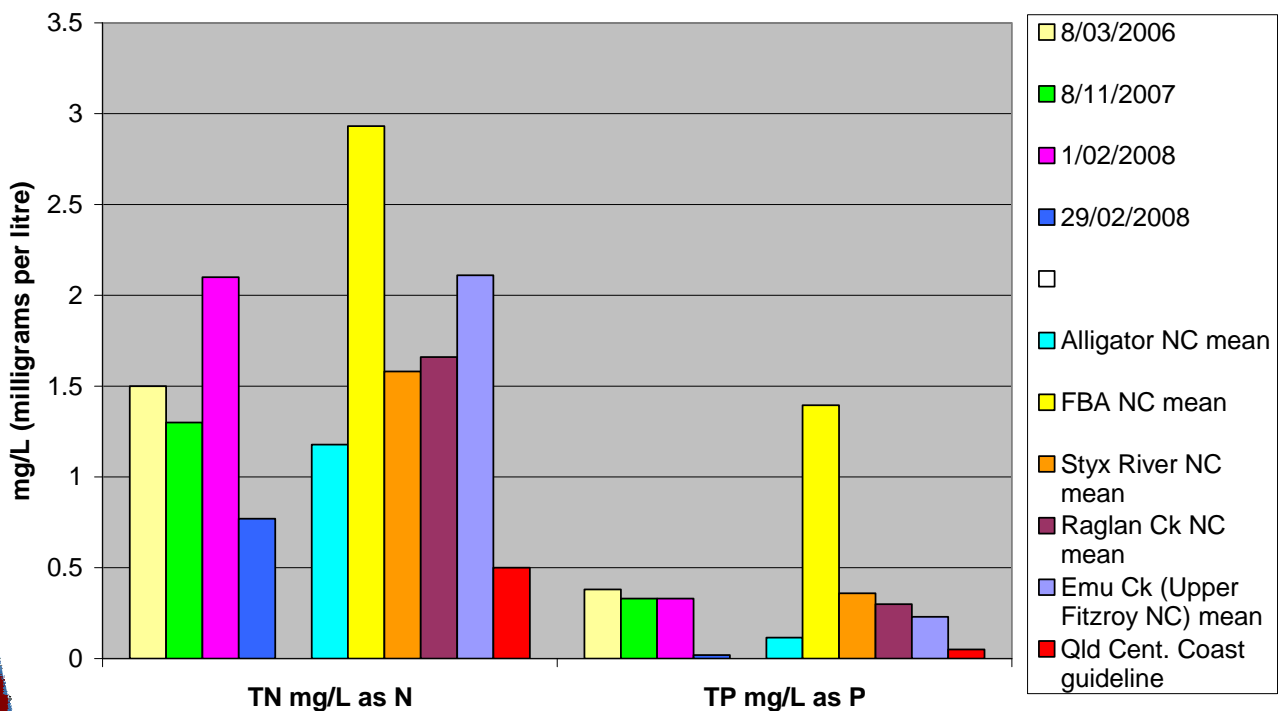


Figure 2: Comparison between Total Nutrient result for Unnamed Creek, FBA & FRCC NC means and Qld CC guidelines.



Compared to other creeks sampled as part of this water quality monitoring program in the Alligator Creek NC, Phosphorus levels (both TP and FRP) in Unnamed Creek were consistently above the Alligator Creek NC mean. When the 2006 and 2007 sample results (pale yellow and green bars) for TP in [Figure 2](#) are compared with the FRP results for the same sample dates in [Figure 3](#), you will notice that the dissolved form of Phosphorus (FRP) accounts for a high percentage (70%) of the TP result. It is difficult to substantiate what may be causing the higher FRP levels; it may be from previous applications of fertiliser that have increased the Dissolved Phosphorus levels in the soil and/or natural levels of phosphorous in the soil.

[Figure 3](#) shows that all Dissolved Nutrient (NH_3 , NO_x , FRP) values for the 2006 and 2007 samples in Unnamed Creek were generally higher than the 2008 samples; this correlates with the higher levels of TSS results for 2006 and 2007 in [Figure 1](#), supporting the relationship between sediment and nutrient movement in the water column.

Ammonia (NH_3) levels for all 4 samples in Unnamed Creek were close to (slightly above of below) the Qld CC guideline and the Alligator Creek NC mean.

Dissolved Nutrients are available for use by plants and algae. No analyses for Dissolved Nutrients were undertaken in other NC areas in the FRCC sub-region or FBA region.

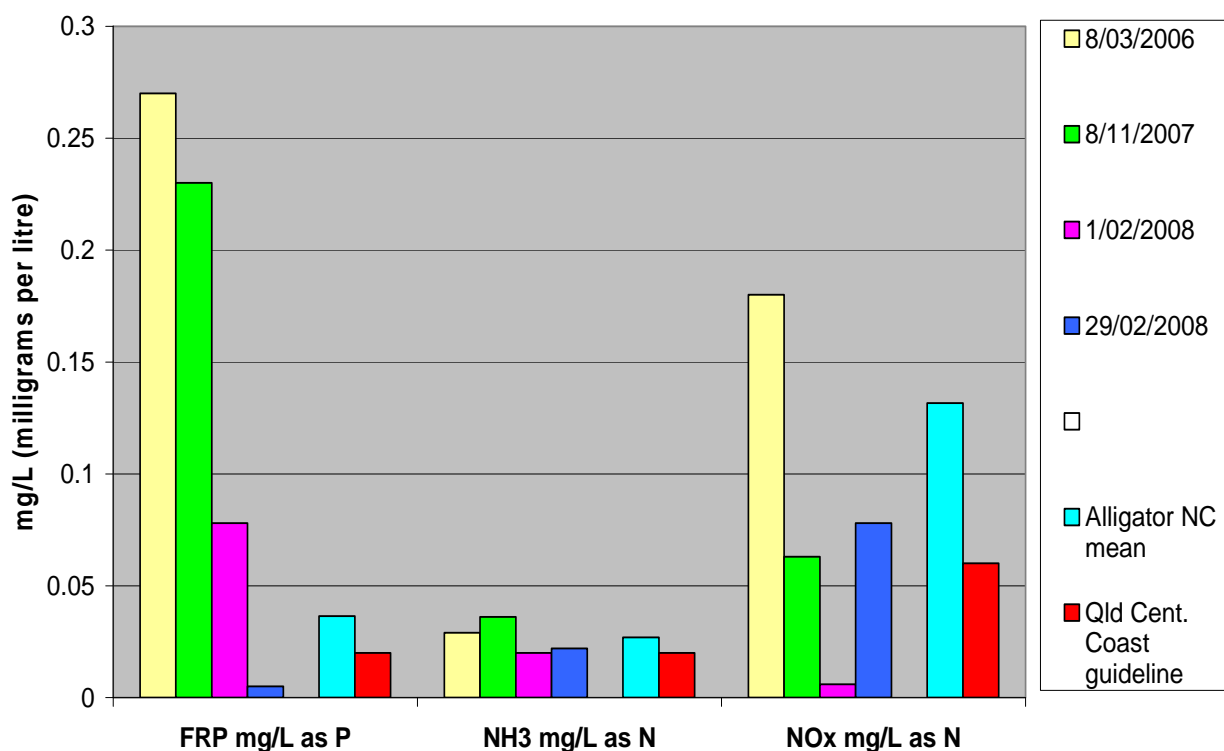
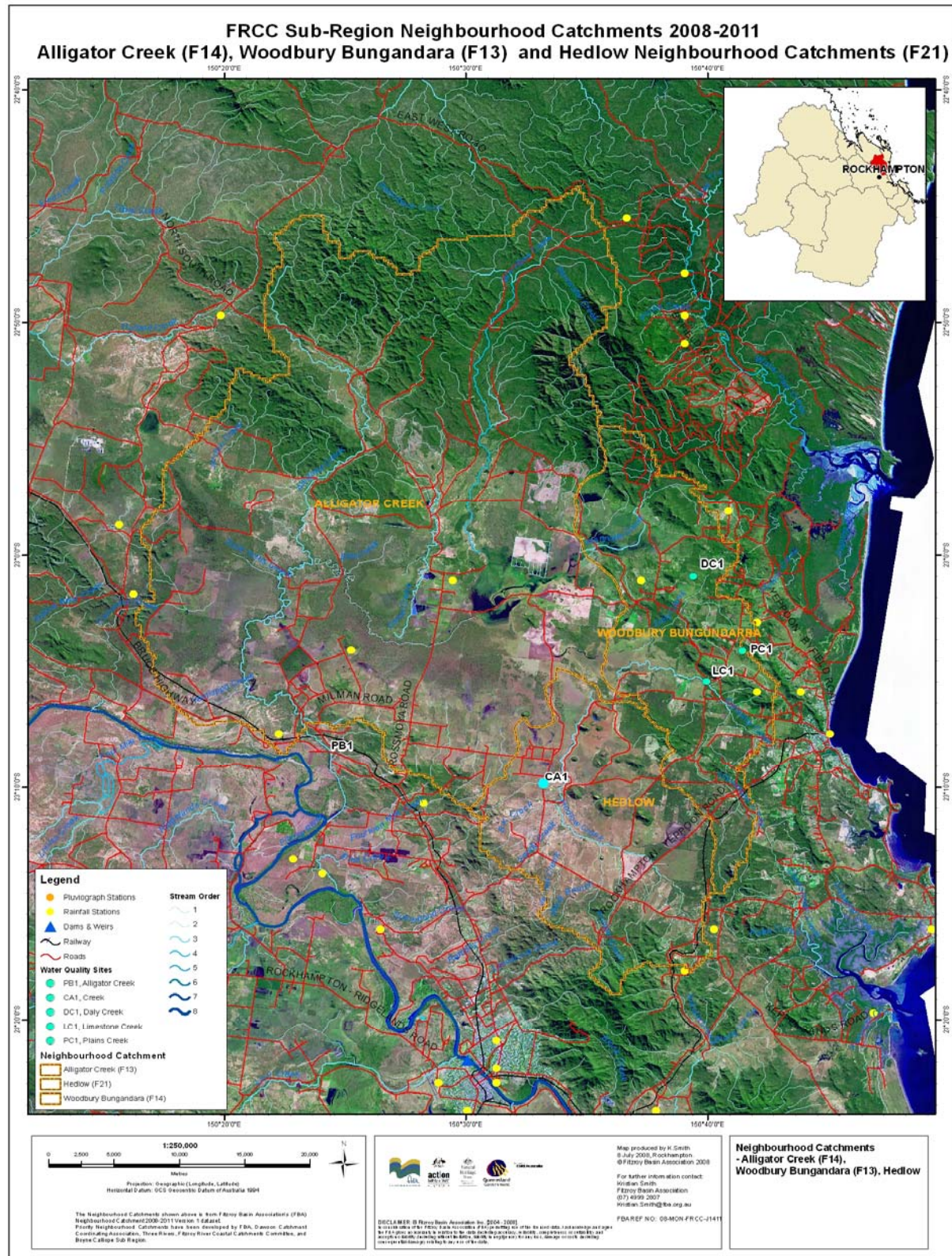


Figure 3: Comparison between Dissolved Nutrient analyses for Unnamed Creek, Alligator NC & Qld CC guidelines



Figure 4: Map of Alligator Neighbourhood Catchment with all FRCC water quality sampling sites. Plains Creek is PC1. Please note this map includes three areas; Hedlow, Woodbury Bungundarra and Alligator Creek.



Future water quality monitoring and reports

Phone the FRCC office on (07) 4921 0573 or refer to our website www.frcc.org.au for the most up to date information on monitoring in the FRCC sub-region.