Water Quality Event Monitoring

Regional Natural Resource Management in Queensland

ID: WQEM 0619

Event Summary Load Calculation

Condamine River (Chinchilla) December 2005

Introduction

This fact sheet presents Event Mean Concentration (EMC) and nutrient samples collected in the Condamine river, Chinchilla (Figure 1), following a storm event from the 30th November- 3rd December 2005.

Figure 1: Condamine River sampling location at Chinchilla Weir.

Methodology

Five suspended sediment and nutrient samples were collected manually from the Chinchilla Weir over a four day period (Figure 2). Samples were analysed at Queensland Health Scientific Services (QHSS) for TSS, laboratrory filtered nutrients and organic carbon. To derive pollutant loads for the event, flow weighted average concentrations were multiplied by the flow over the given period. EMC was calculated by dividing the total event load by the event flow volume. Historic discharge data was used to compare this event to historic flows.

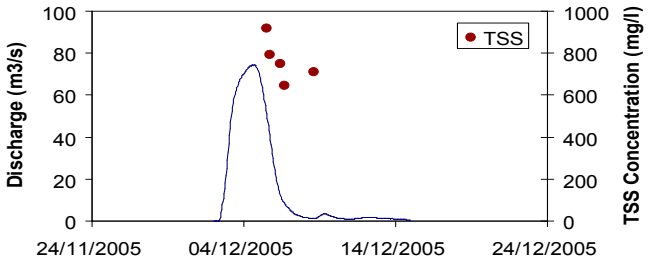

Figure 2. Discharge and TSS concentration for samples collected at Chinchilla weir from the 30th November-3rd December 2005

Flow Event Description

The runoff at Chinchilla was generated from falls of between 50 – 100mm in the mid section of the catchment particularly from Dalby to Chinchilla(Figure 3). (Chinchilla 68 mm Dalby 50 mm). Runoff was generated locally, with runoff also recorded at the Brigalow gauge, 52km upstream.

Catchment:	Condamine
Location:	GS 422308C, 26o 47' S 150o 34' E
Catchment Area:	19,190 km2
Dominant Land Use:	49% grazing, 30% dryland cropping,
(upstream of gauge)	9% irrigated cropping,
Event Duration:	02/12/2005 – 14/12/2005

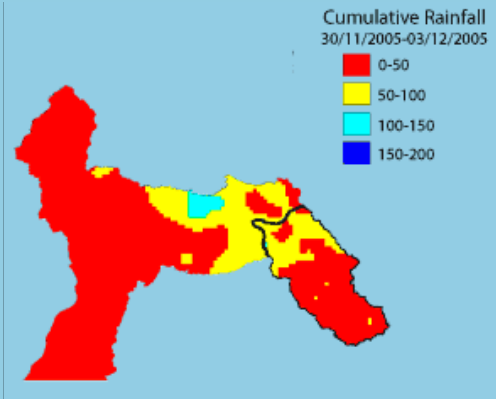

Figure 3. Cumulative rainfall upstream of Chinchilla sampling location

Results

Total suspended solids concentrations (TSS) ranged from 644 – 916 mg/L (Figure 2). It should be noted that no samples were collected on the rising stage of the hydrograph which may affect total load and EMC values. Approximately 16,460 tonnes of sediment passed the sample point during the 12 days of runoff (Table 1). The TSS EMC (884 mg/l) was lower than those previously reported in the region for flows of a similar magnitude. Particulate Phosphorus was 77% of total phosphorus which is similar to other events recorded in the Condamine and Balonne catchment. Dissolved organic carbon was 44% of total organic carbon.

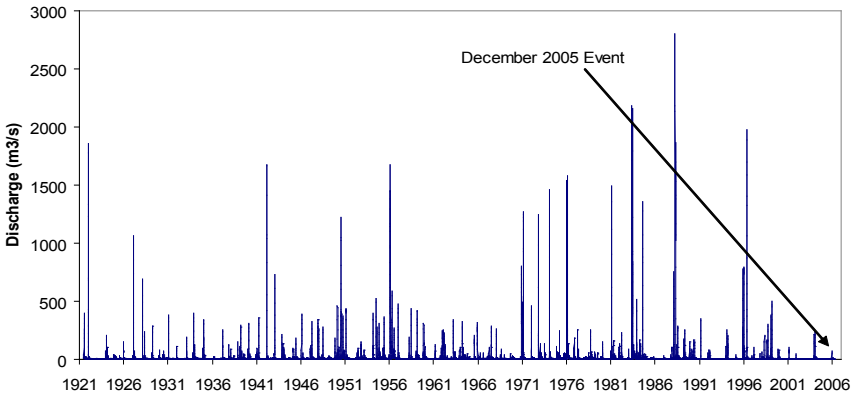

Figure 4. Condamine River, December 2005 event sampled at Chinchilla in context to historical mean daily discharge.

Table 2. Estimated load and event mean concentration (EMC) for the December 2005 Event at Chinchilla weir.

Total Event Discharge (ML)	18, 616
Number of samples	5
TSS Load (Tonnes)	16, 464
TP Load (Tonnes)	12
FRP Load (Tonnes)	2
TN Load (Tonnes)	44
TKN Load (Tonnes)	34
NOx Load (Tonnes)	10
NH_3 Load (Tonnes)	0
TOC LOAD (Tonnes)	361
TSS EMC (mg/L)	884
TP EMC (mg/L)	0.64
FRP EMC (mg/L)	0.10
TN EMC (mg/L)	2.34
TKN EMC (mg/L)	1.83
NOx EMC (mg/L)	0.53
NH_3 EMC (mg/L	0.02.
TOC EMC (mg/L)	19
DOC EMC (mg/L)	8
Maximum Event Discharge (m^3/s)	75
Period of record (yrs)	85
Average number of times peak Q exceeded (days/yr)	16
Return Period (partial series)	1.5 Years

For Further Information

Contact your regional NAP water quality officer.

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Or visit Water Quality Online, the NAP Water Quality website:

www.wqonline.info

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