

Water Quality Event Monitoring



Regional Natural Resource Management in Queensland

ID: WQEM 0618

Event Summary Load Calculation

Charley's Creek (Chinchilla) December 2005

Introduction

This fact sheet presents Event Mean Concentration (EMC) and load estimates for sediment and nutrient samples collected during a storm event from the 30th November-3rd December 2005 in the Charley's Creek, Chinchilla (Figure 1).

Methodology

Three suspended sediment and nutrient samples were collected manually from Charley's Creek, Chinchilla over a four day period (Figure 2). Samples were analysed at Queensland Health Scientific Services (QHSS) for TSS, lab 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. No historic discharge data was available for this site as the site has only been operational for two years.



Figure 1. Charley's Creek sampling location at Chinchilla.

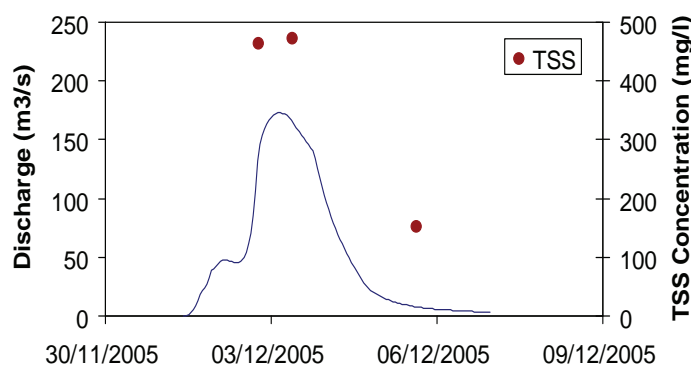


Figure 2. Discharge and TSS concentration for samples collected from Charley's Creek, Chinchilla from the 30th November- 03rd December 2005

Flow Event Description

The runoff at Chinchilla was generated from good falls of between 50 – 100mm in the mid section of Charley's Creek catchment(Figure 3). This was the largest event (peak discharge 150 m3/s) that had been recorded at the site in the two years the gauge has been in operation.

Catchment: Condamine
Location: GS 422343A
 226o 44' 31' ' S 150o 36' 15' ' E
Catchment Area: 3,562 km²
Dominant Land Use: 50% grazing, 35% State Forest, 13% dryland (upstream of gauge) cropping
Event Duration: 02/12/2005 – 14/12/2005

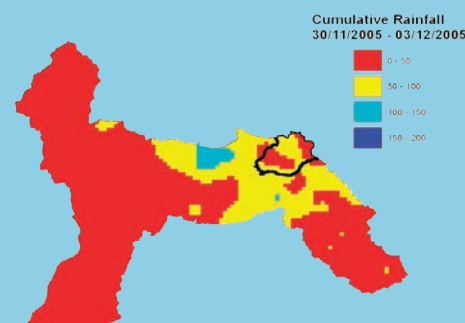


Figure 3. Cumulative rainfall upstream of Charley's Creek sampling location

Results

Total suspended solids concentrations (TSS) ranged from 152 – 464 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 12,000 tonnes of sediment passed the sample point during the 6 days of runoff (Table 1). The TSS EMC (442 mg/l) was approximately half that calculated at the next downstream gauge. Particulate Phosphorus was 85% of total phosphorus which was similar to that recorded at the Chinchilla weir gauging station in the adjacent catchment. Dissolved organic carbon was 43% of total organic carbon indicating that slightly over half of the organic carbon was attached to particulate matter.

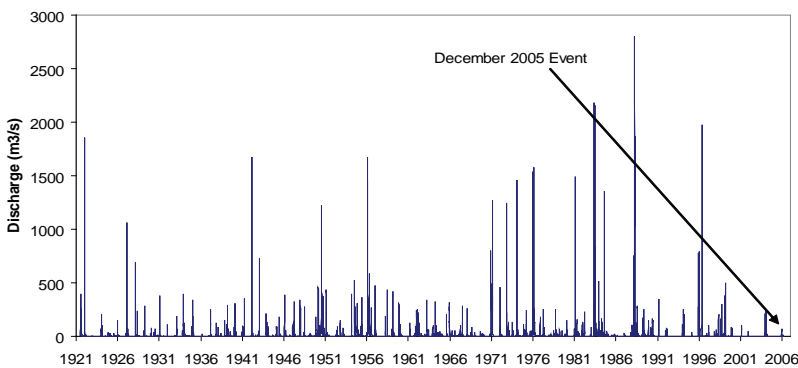


Figure 4. Condamine River, Chinchilla, December 2005 event in context to historical mean daily discharge (Note no historic data available at Charley's Creek gauge as it is a new gauge).



Table 1. Estimated load and event mean concentration (EMC) for the December 2005 Event at Charleys Creek gauge.

Total Event Discharge (ML)	26,204
Number of samples	3
TSS Load (Tonnes)	11,585
TP Load (Tonnes)	5
FRP Load (Tonnes)	0.2
TN Load (Tonnes)	36
TKN Load (Tonnes)	35
NOx Load (Tonnes)	0.7
NH ₃ Load (Tonnes)	0.6
TOC LOAD (Tonnes)	354
TSS EMC (mg/L)	442
TP EMC (mg/L)	0.19
FRP EMC (mg/L)	0.01
TN EMC (mg/L)	1.37
TKN EMC (mg/L)	1.34
NOx EMC (mg/L)	0.03
NH ₃ EMC (mg/L)	0.02
TOC EMC (mg/L)	14
DOC EMC (mg/L)	6
Maximum Event Discharge (m ³ /s)	173
Period of record (yrs)	2
Average Number of times peak Q exceeded (days/yr)	NA

For Further Information

Contact your regional NAP water quality officer.

Condamine and Old Murray Darling

Dave Waters

Phone: (07) 4688 1598

david.waters@nrm.qld.gov.au

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

www.wqonline.info

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