

**MURRAY RIVER  
ENVIRONMENT MONITORING  
1999 ANNUAL REPORT  
FOR  
FLETCHER CHALLENGE PAPER  
ALBURY**

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## 1.0 INTRODUCTION

Fletcher Challenge Paper, Albury is licensed to discharge treated wastewater to the Murray River under their “Winter Release Program.” The Murray Darling Freshwater Research Centre was contracted to conduct river water quality monitoring as a part of this program.

## 2.0 AIMS

To undertake biological and chemical monitoring of FCP’s wastewater discharged to the River Murray in accordance with proposals developed in consultation with EPA NSW and NSW Fisheries.

*Environment Protection Authority New South Wales Licence No.004889;*  
*Section “W21 Annual Management Report...The report shall include...(f) Murray River Environmental Monitoring and bioassay testing programs”.*

The null hypothesis tested “that wastewater discharges have no effect on the quality of the receiving water.”

### 3.0 METHODS

Three Murray River monitoring sites upstream of Albury were selected with reference to FCP's wastewater discharge:

- Mungabareena Reserve (4 km upstream)
- Railway Bridge (immediately downstream)
- Union Bridge (2 km downstream)

All three sites were used for a long-term water quality monitoring program conducted by the MDFRC for FCP (formerly, Australian Newsprint Mills Ltd) between 1991 and 1997.

Weekly monitoring of the sites was initiated on 19 April 1999, three days prior to the commencement of the discharge. The monitoring continued during the discharge period (21 April 1999 to 11 May 1999) and for four weeks following cessation of the discharge.

Grab samples of water were collected for chlorophyll, manganese, colour, total nitrogen, total phosphorus, zinc, mercury and DTPA.

Chlorophyll-*a* was determined at the MDFRC Algal Laboratory using the standard Boiling Ethanol Method. Manganese, total phosphorus, total nitrogen and true colour were determined at the MDFRC Chemistry Laboratory using standard methods (AS2769 – 1985, MDFRC 6, MDFRC 7, and APHA 2120B respectively). Total zinc and total mercury were analysed by EML (CHEM) Pty Ltd. DTPA was determined at Fletcher Challenge Paper, Process and Product Support Group, Boyer, Tasmania.

Physical parameters were measured *in situ* using a Horiba U10 water quality checker at the time of collection.

#### 4.0 RESULTS

Weekly physical parameters were measured once before the discharge commenced, twice during the discharge period and three times following cessation of the discharge (Figure 1). Dissolved oxygen, turbidity (NTU), temperature, conductivity (mS) and pH tracked consistently for the three sites on each sampling day except the last, where conductivity and turbidity readings from the upstream control were slightly elevated. Water temperatures at all sites demonstrated a downward trend (from 18 to 12 °C) consistent with the onset of winter conditions.

Weekly nutrient (total nitrogen and total phosphorus), and colour measurements were similar though out the sampling period for all sites (Figure 2). Manganese was slightly elevated downstream immediately following cessation of the discharge but had returned to background levels by the following week. Chlorophyll-*a* was not measured during the discharge, but was similar at all three sites before the discharge, and immediately following cessation of the discharge, and fell for the downstream sites in the last two samples.

Zinc, Mercury and DTPA were measured at the three sites on day 14 of the discharge. All were below detection limits (<0.02 mg Zn/L, <0.0001 mg Hg/L and 0.1 mg DTPA/L).

River flow (Figure 3) over the discharge period fell from 13460 to 8000 ML/day resulting in concentrations (Figure 4) of between ~ 0.04 % on the first day of the discharge to ~0.14% on the last day of the discharge.

## **5.0 DISCUSSION**

The suite of physical parameters, metals and nutrients was selected to best indicate any potential impact of Fletcher Challenge Paper's wastewater discharge on the water quality of the Murray River based on previous long term monitoring. All measurements were within the ranges measured for those sites during the monitoring program conducted by MDFRC from 1992 to 1997 (King and Baldwin 1997).

There was no measurable difference between the sites before, during or after the discharge. The impact of Fletcher Challenge Paper's temporary wastewater discharge was not detectable by water quality measurements in the Murray River. This is probably due in part to the level of dilution of the wastewater with cooling water and River water.

## **6.0 REFERENCE**

King, H. and Baldwin, D. 1997. Chemical and Biological Monitoring - 1997 Annual Report for Australian Newsprint Mills Ltd, Albury. The Murray-Darling Freshwater Research Centre.