

## **E2-50 Water quality of inflows to Fitzroy Falls and Wingecarribee reservoirs in New South Wales, Australia**

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Fitzroy Falls and Wingecarribee reservoirs are parts of the Shoalhaven Water Supply system to Sydney Metropolitan during droughts. During such years, the water is pumped from Lake Yarrunga to Fitzroy Falls Reservoir, to Wingecarribee Reservoir and then to Sydney through Nepean and Avon reservoirs. When Warragamba Reservoir is flooded, the excess water from Wingecarribee Reservoir is made to flow down, generating power.

The main inflow to Wingecarribee Reservoir is Caalang Creek. The inflow water traverses a swamp before reaching the reservoir. The anthropogenic inputs to the inflows are from agriculture, stock grazing and domestic wastes. Natural processes that influence water quality are rainfall, ground water seepage and temperature. Rainfall increased the turbidity but decreased the pH. Ground water releases increased the concentration of Fe, Al and Mn. There was a seasonal variation in the concentration of total Kjeldahl nitrogen and bacterial densities, with summer-autumn maxima. For NO<sub>x</sub> higher concentrations were recorded in winter. Cations, silica and dissolved oxygen carbon concentrations fluctuated with short cycles of 3-6 months. Fe and total phosphorus increase were associated with increased turbidity. The overall inflow water quality was good except for iron and bacterial densities. It is expected that the swamp improves the inflow water quality before reaching the reservoir.

The main inflows to Fitzroy Falls Reservoir are Wildes Meadow Creek and a drainage channel. The processes controlling the water quality of Fitzroy Falls

are also similar to those of Wingecarribee Reservoir. The water quality at the reservoir was good except for Al, turbidity and bacterial densities. NO<sub>x</sub> concentration was high in cold months and bacterial densities were high in warm months. Turbidity was high during rainy periods. High Al concentration coincided with high PO<sub>4</sub>, and high conductivity values with high Cl and SO<sub>4</sub> concentrations.