

# ACCUFLOC CASE STUDY – NGARUAWAHIA

Accurate Measurement NZ Ltd.



NGARUAWAHIA WATER TREATMENT PLANT

“SCM is a vital tool for providing consistent water quality” - Craig (On Left)

Craig Peebles and Jannie Mostert with the AccuFloc SCM unit



“The unit hasn’t drifted off at all; it’s been good to us” - Jannie (On Right)

The NGARUAWAHIA WATER TREATMENT PLANT is run by the Waikato District Council and supplies water to the towns of Ngaruawahia and Horotiu, New Zealand.

It is a conventional Patterson Candy Style plant with a Rapid mixer, hopper bottom style clarifier, sand filtration and final chlorine dosing. It draws directly from the Waikato river and has a capacity of 200,000 liters/hour.

The raw water turbidity from the river is typically 12-16 NTU. Coagulant dosing is Aluminium Sulphate (alum) with a typical dose of around 22ppm.

Craig Peebles, the plant supervisor for 10 years, finds the Accufloc SCM an indispensable tool in “providing consistent high water quality”.

The Accufloc Streaming Current Meter (SCM) has its sample line right after the flash mixer. Between the flash mixer and the 15 meter sample line, alum dose changes are reflected in the Streaming Current (SC) reading after about one minute. A PID control loop adjusts the alum dosing pump speed to maintain the target SC.

The operators perform jar tests approximately once a week, using the results to occasionally tweak the Accufloc SCM’s target SC by a few percent. “The SCM takes care of the rest.” There is no need to manually adjust the alum dose rate in response to river turbidity fluctuations to maintain consistent clarifier operation.

There are high turbidity events approximately 3 to 4 times a year, after heavy rain which generally last a few days. The SCM shows its real benefit in these cases. Craig says it corrects for the turbidity increases “brilliantly”, generally without the need for operator intervention at all. This is particularly helpful in this plant, which is only manned 40 hours per week. Turbidity changes can occur with no warning at any time of the day or night.

The river’s turbidity is normally quite low, the Accufloc SCM only requires sensor cleaning about three times per year – once in the summer and twice in the winter. “It’s always pretty stable.” says Craig. At one point, after 2 years of operation, the Accufloc SCM reading did start to drift – the dose rate required to maintain a consistent SC reading would slowly change by a few ppm for no reason. This was quickly fixed by the standard and inexpensive maintenance operation of replacing the piston and piston rod connector.

Craig remembers one incident that demonstrates the benefits of having an SCM. It occurred when the Waikato river water had become significantly more turbid after heavy rain in the night, A dosing pump seal failure cut the alum flow rate being delivering by more than half. The Accufloc SCM immediately showed a large negative reading of -8.5, this caused the dosing controller to ramp the dosing speed up attempting to maintain the target SC at its normal -0.13. In the morning when the operator came in, the plant was still under control, but the pump was running at twice the normal speed. A failure like this would normally have caused a huge upset, probably resulting in loss of sludge blanket and filter fouling. The pump was repaired the next day without disruption to the process.

Craig says “we depend on this SCM unit and we know it will take care of the situation if anything happens, until we take over”.

The Ngaruawahia WTP has been using Streaming Current Meters for more than 10 years - they originally had a Chemtrac unit. Despite being knowledgeable about the correct use of SCMs, Craig and the other Waikato District Council operators were not able to get the Chemtrac to perform properly. Three years ago they replaced this unit with an Accufloc SCM. The Accufloc has shown itself to be “easier to use and maintain, have greater reading stability, and have more rapid response to changes” - Craig.

The Waikato District Council and neighboring District Councils have purchased several more Accufloc SCMs so that their other WTPs can have the same benefits that come from it.



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