

Incident Assessment

Newmore WTW, Easter Ross Treatment Failure June 2010

DWQR Inspector:
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Summary of Incident

Between 7th and 9th June 2010 problems were encountered with the polyelectrolyte preparation unit at Newmore Water Treatment Works (WTW) which prevented the automatic batching of polyelectrolyte. On 9th June the WTW shutdown due to high clarified water turbidity. After a number of unsuccessful attempts to restart the WTW the plant was finally re-started, with the product water running to waste for a period of time to establish plant stability. Once this was achieved flows were passed forward to the Clear Water Tank (CWT) and into supply. Whilst initial events surrounding the polyelectrolyte preparation unit had led Scottish water to believe the polyelectrolyte unit was the root cause of the problems, it was subsequently identified that a cap on the caustic dosing pumps had prevented

adequate dosing during a period of high colour and high flow. Hunting of the pH control due to the setup of the control mechanism was identified as another issue which had delayed the restoration of supply. During the period of the event, contingencies were implemented in the zone and at strategic

Service Reservoirs (SRs) in order to sustain treated water storage at the treatment works and therefore protect customers' supplies.

Problems were additionally encountered on the 14th and 15th June, with the WTW shutting down in the early hours of 14th June. The site was, at this time, still operating on a temporary polyelectrolyte preparation system establish to solve the problems encountered on 9th June, and it was found that this temporary dosing system had also malfunctioned causing treatment to fail, resulting in elevated levels of turbidity and aluminium. On the 14th July 2010, Newmore WTW again shut down due to high clarified turbidity. An investigation of this further shutdown identified the polyelectrolyte

batching hopper as the root cause of the problem. A build-up of polyelectrolyte residue on the low level sensor within the hopper was preventing it from alarming when it reached a low level. The batching system continued to operate, but without polyelectrolyte being added to the water batch tank. The solution in the batch tank became increasingly diluted reducing the polyelectrolyte dose to the water leading to failure of the treatment process and increased turbidity and aluminium levels. Regular cleaning of the sensor rectified the problem.

DWQR Assessment of Actions Taken by Scottish Water

DWQR audited Newmore WTW on 10th November 2010. As a result of that audit DWQR has made a number of recommendations to Scottish Water on improvements at the works to minimise the chance of a re-occurrence of failure at this works. These recommendations are additional to any improvements that Scottish Water have, or intend to, make as a result of their own investigations into the incident. DWQR will monitor the implementation of all improvements against the agreed timescale.