Drinking Water Quality Regulator for Scotland

Incident Summary

Assynt WTW
Loss of disinfection
July 2019

DWQR Inspector:
Moira Malcolm

Event No. 10290

Event Category: Significant

On 11 July 2019 the Easter Ross area experienced extremely heavy rainfall. This affected the catchment of Loch Glass and by 07:45 that morning the raw colour entering Assynt WTW rose from approx. 30 Hazen to above 90. Following this increase, the combined permeate water quality deteriorated resulting in a plant shutdown for low post chlorine residual at 07:30. The standby operator attended the shutdown alarm with the senior operator. There is limited water storage at Assynt and the works was also supporting Newmore WTW which was also experiencing difficulties relating to the weather, so to maintain supply the decision was taken to restart the works – albeit on the backup generator due to the weather forecast. At this point the permeate colour was 78 Hazen (it is typically less than 7), so raw water flow was reduced and membrane run times reduced to increase backwash frequency.

A second autoshutdown occurred at 09:00 due to a generator fault and the works was restarted. At this time the permeate colour had dropped to 55 Hazen online/ 35 bench monitor so the operators thought that the water quality was improving. However they also noted that the dosed water chlorine residual was 1.0mg/l but post chlorine contact tank the value was 0.033mg/l, so escalated the issue to Operations Team Leader, Process Scientist and then to Public Health Team. After the restart the colour began to rise again, so the senior operator manually shut the plant at 09:55 as a precaution to allow for further raw water colour monitoring. At 10:15 with the raw colour at 37 Hazen and permeate colour 9.7 the works was restarted. At 11:30 with colour continuing to decrease, Mid Ross service reservoir (SR) was isolated and scoured to remove the bulk of the poorer quality water as

there is no run to waste facility at this works. Service was maintained via Black Isle and Easter Ross SRs. Mid Ross SR was completely drained and reopened at 16:10, and returned to service at 19:30.

It was established that the WTW was operating below the minimum disinfection contact time for almost three hours (not including plant shutdowns) during the incident. Sampling at consumers' taps was carried out over the next four days, the maximum colour recorded was 7 Hazen on 12th July; turbidity, chlorine residuals and microbiological results were all satisfactory.

The event has been categorised as Significant. Scottish Water has identified twelve actions which DWQR accepts are appropriate and will monitor to ensure they are completed prior to signing off the incident. DWQR made four additional recommendations.