Effects of Capital Grant Scheme improvements on water quality in the Ribble Catchment

River Ribble Catchment
CSFO: Michael Graham

The yard prior to work commencing

The yard after work completed – new rainwater goods, underground drainage and concreting – making it easier to keep clear of mud and muck.

Catchment Sensitive Farming (CSF) works with farmers and land managers in 77 Priority Catchments in England, to raise awareness of Diffuse Water Pollution from Agriculture (DWPA) and encourage voluntary action to tackle DWPA. For a number of years the project has been supported by a Capital Grant Scheme (CGS) which funds relatively low cost infrastructure investments to help improve water quality.

Farm improvement works are funded with up to 50% grant aid, up to £10,000 per holding, and more than 40 types of capital items are eligible for funding.

Background

Blackfield End Farm, located near Preston and in the Ribble catchment, has 50ha with mixed beef and sheep, 30 suckler cows with reared calves and 90 ewes. During the winter months most of the livestock are brought in from the fields and housed.

Capital Grant Scheme applications are prioritised to ensure funding is targeted to achieve the maximum environmental benefits to reduce the risk of pollution to water as part of Water Framework Directive (WFD) objectives. Working closely with Michael Graham, Catchment Sensitive Farming Officer for the Ribble, an £8,000 capital grant was secured to address specific DWPA issues. Rainwater goods (gutters & downspouts) were installed on roofs diverting rainwater away from the yard areas and into new underground drainage. The uneven yard which had been difficult to keep clean was concreted, creating an even surface which is easier to maintain clear of mud and muck.

Evidence

The CSF Evidence Team collected a month of baseline data before the capital works commenced and then installed monitoring equipment to detect changes in water quality. Rainfall levels and turbidity readings were recorded in a farm ditch approximately 175m below the farm yard and monitoring continued for several months, before the farm ditch dried up due to insufficient rainfall.

Blackfield End Farm - yard area

Monitoring – 175m below yard area

Results and discussion
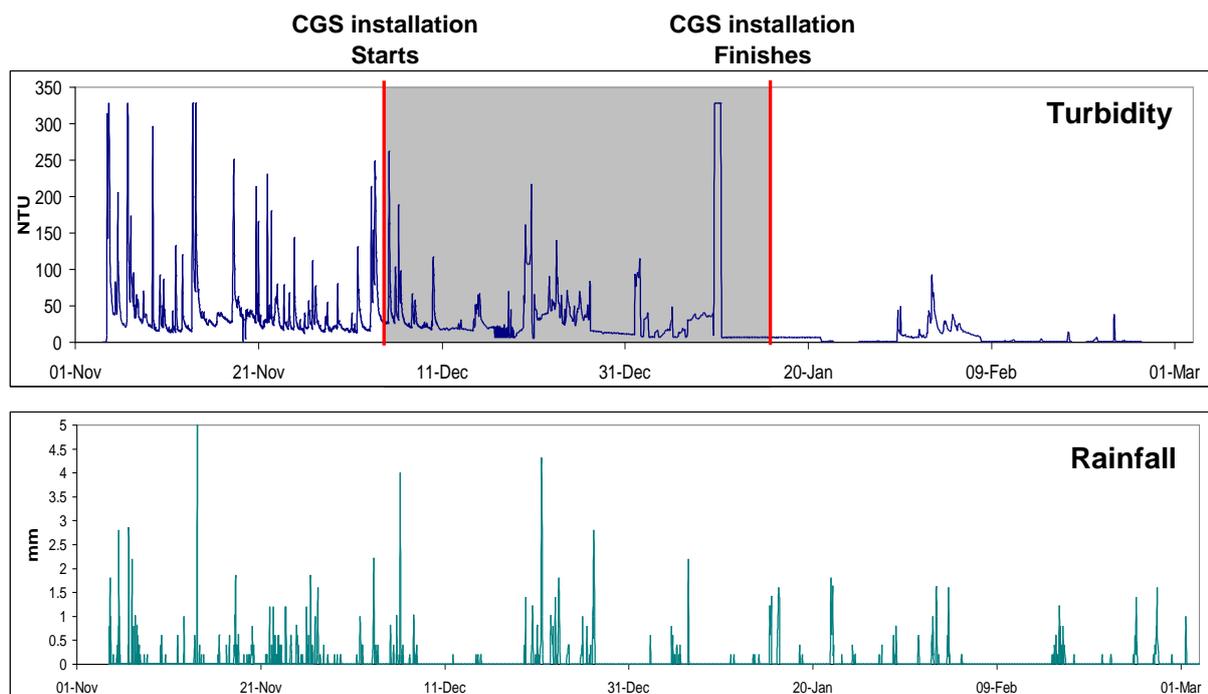
Before CGS installation

November was the wettest month during the investigation with 91.4mm of rain recorded on site. Turbidity spikes regularly exceed 200 NTU and average turbidity readings are 38.5 NTU. As expected spikes clearly correspond with rainfall events as rain water washes mud and muck into the farm ditch.

During CGS installation

62mm of rain fell in December and although turbidity spikes correspond to rainfall events few exceed 200 NTU with average turbidity levels during this period (25.1 NTU) lower. The high turbidity readings (327 NTU) at the beginning of January are attributed to yard runoff during concreting.

After CGS installation

30mm of rain fell in February and the number and magnitude of turbidity spikes are greatly reduced. Average turbidity levels were again lower (6.8 NTU).

Conclusion

Overall findings showed a clear reduction in turbidity levels. Run-off from the farm yard has reduced through a combination of diverting clean rainwater away from the yard area and creating an even base enabling the yard to be kept clear of mud and muck. Equipment was tested to the limits with extreme freezing conditions, though data collected was not compromised.

The reduction in the number and magnitude of turbidity spikes shows that the Catchment Sensitive Farming capital grant works have reduced the farm's levels of DWPA. The extent of the

reduction is not easily quantified as runoff is intricately linked with rainfall events which declined across the course of this study.

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