

Waterlines

RURAL OTAGO'S WATER UPDATE



Autumn 2015



Effluent ponding is a prohibited activity under ORC's new water quality rules.

Checking water quality on your farm – what to look out for

Checking water quality on your farm now could save you a lot of bother later on.

There are a few easy steps you can take to understand how much impact your land use is having on waterways.

Otago's new water quality rules include thresholds for the amount of contaminant that can drain from a farm or from forestry to a waterway. These are detailed in Schedule 16 of the Water Plan.

They define the amount of nutrient (Ammoniacal nitrogen, (NH₄), Nitrite-nitrate nitrogen (NNN), Dissolved reactive phosphorus (DRP)) and *E.coli* that can be discharged from a property into waterways.

These thresholds will apply from 2020, but landholders are encouraged to start checking their water quality now, to help ensure they will be able to meet them come 2020. When your local representative flow site (go

to www.orc.govt.nz and follow the water drop logo to find it) is at or below median flow, the thresholds will apply.

The new Water Plan rules also include limits on the contamination of waterways by sediment. The sediment rules apply now and in all river flows. You need to ensure that sediment doesn't enter waterways causing a plume and discolouration of the water, or sediment buildup on the bed of the waterway.

continued on page 2

continued from cover

So how can landowners check that any water coming off their property into waterways is within these contaminant thresholds and avoiding sediment impacts?

The best way to make a no-nonsense appraisal of your water quality is to walk around the property during wet periods. This allows you to see where sources of water are moving, and what might be carried with it.

Take note of where runoff or discharge from open and closed drains, swales, and paddocks is entering or is at risk of entering a waterway.

Be on the lookout for problem areas and risky activities. Most farmers are so familiar with their land that they will already know where the hot spots are likely to be.

You can initially trust your senses to tell you if the water draining off your property from poorly-managed areas is likely to exceed the contaminant thresholds.

If any water running off the paddock, or from open or tile drains into waterways, looks dirty or has a foul smell, it will be adding excessive contamination to waterways, and is likely to be breaching the 2020 thresholds.

Check the water clarity to assess whether sediment runoff is a problem. If there is noticeable discolouration in the water colour, you'll need to do something to stop this immediately.

Cultivated land where there is an insufficient riparian barrier can be a source of nutrient, sediment, and bacterial runoff to waterways.

Check paddocks with pugging and erosion, and heavy or intensive stock access near waterways.

Yards and laneways sited near waterways with no measure or buffer to stop contaminants entering waterways are other less obvious sources of contaminants.

Farmers with tile drains should check these regularly. Discharge should be clear during dry conditions. During wet times the discharge should not cause noticeable discolouration of waterways. If it does, you'll need to address the causes.

In drier areas where irrigation is present, runoff from irrigation back into creeks can pick up E.coli and nutrients from the paddock. Minimise runoff as much as possible.

If, once you have fixed the obvious sources of sediment and contamination, you are still not sure what the state of water in your waterways is, you can take a sample and have a lab analyse it (for nutrients and *E.coli*).

Check out our website for a copy of our brochure – *Sampling water quality on your farm* – or call us.



The photo above is an example of a substantial sediment discharge into a stream causing major discolouration in the water.



ORC customer services officer Sarah Paterson with the water quality fact sheets that will be part of an ORC information pack delivered to Otago landholders.

Water quality information visits planned

ORC is visiting landholders in the Otago region to ensure they are aware of our new water quality rules and can start taking steps to comply if they don't already.

During the next few months all Otago landholders with at least 20 hectares will be delivered an information pack on the new rules. The key messages in the packs are that landholders should know the rules, get into the habit of regularly checking their water quality, and where there are issues, take action.

ORC chief executive Peter Bodeker said understanding the new water quality rules was crucial for all Otago farmers.

The council was investing in making sure everyone had access to the information so they could start making assessments around how their land use affected water quality.

While landholder awareness of the rules is already high at 78 percent, according to a recent survey

commissioned by ORC, we are keen to lift this further and get as close to 100 percent awareness as possible.

The information packs contain a series of easy-to-follow fact sheets which explain the rules applying to various farm and forestry activities.

Drop-in sessions will be held to answer any questions people have after they have read the fact sheets and details will be advertised in due course.

ORC is working with key agencies including Dairy NZ, Beef and Lamb NZ, Horticulture NZ, and rural advisors (lawyers, engineers, and accountants among others), to ensure that those people advising landholders are familiar with the rules.

Mr Bodeker said the council was also keen to see these primary industry agencies and farm consultants take up the opportunity to help farmers deal with water quality issues.

"There is a great opportunity here for others to advise farmers. We are not in the best position to offer

farm management to affected landowners."

"We have a role as a regulator to establish rules for water quality, to consult the public and get community agreement to those rules, and then to monitor compliance, and, if required, to take enforcement action where there are breaches," Mr Bodeker said.

"Our role is also to make it clear to the third party agencies who work closely with farmers what the rules require."

"They can then convey the relatively straightforward message to farmers that they should be monitoring the effects their farming or forestry operation is having on the land, and if that's not in accordance with the rules, to resolve that themselves, or get some assistance to find out a way that they can."

Mr Bodeker said ORC's Long Term Plan for 2015-2025 would focus on effective water quality monitoring and developing systems to allow landowners to monitor their own water quality through telemetered systems.



A well-managed swale (a typical critical source area) left in long grass reduces the risk of sediment running off into waterways.

Planning vital for winter grazing

Winter forage grazing paddocks can be major sources of nutrients and sediment losses to waterways.

However, with careful planning, soil can be kept on paddocks, and nutrients and sediment out of our rivers. Our new water quality rules control contaminants and sediment coming off rural properties into waterways from runoff, leaching, and drains (non-point sources).

A key prohibited activity rule prevents the discharge of sediment from disturbed land to water in any lake, river, or Regionally Significant Wetland, or to any drain or water race that flows to them or the coast, if nothing has been done to control sediment runoff.

Putting in adequate buffer margins around waterways on your farm is a recommended first step – and the most effective in restricting the loss of nutrients and sediment.

Where a crop is too close to a waterway, think about how you can ensure sediment and nutrient runoff are managed. In some cases it may mean fencing these areas back, and grazing later when it is drier. Sometimes it may mean not grazing at all.

The majority of nutrients and sediments are lost from critical source areas.

A critical source area is a landscape feature like a gully or swale, or a depression that accumulates overland rain flow from adjacent flats and slopes, and delivers it to surface water bodies such as rivers and lakes, artificial waterways and field tiles.

Almost all farms have critical source areas, particularly those lying in hill, rolling, and undulating country. While there may be a dozen or more critical source areas on a farm, managing the most significant ones can reduce the greatest losses for farmers.

Strategic grazing – where paddocks are grazed from the top down towards gullies or swales – is the best approach here. Having a healthy buffer margin in place which is maintained at all times will mean any runoff is slowed down, or – even better – is trapped.

If the swale or low point of the paddock is cropped, then it is best to graze this as the “last bite”, when it is dry. Doing so quickly will maintain the soil integrity.

An AgResearch study based on trials at Telford Farm in South Otago confirmed that simple and low-cost management techniques, such as strategic grazing, can significantly reduce overland flow volumes and contaminant losses from grazed winter forage crop paddocks.

Farmers step up during water crisis

Most Otago farmers deserve credit for their stewardship and the responsible approach they have taken to conserving water during the dry conditions of recent weeks.

ORC had to impose a targeted Water Shortage Direction requiring a small number of farms to ration and roster water during January.

When flows continued to recede, a direction stopping all takes from the Taieri was planned.

At the time of writing rainfall has raised the river to minimum flow levels again. This meant the Water Shortage Direction was not imposed on the whole catchment.

Water Shortage Directions allow regional councils to restrict, suspend, or apportion water at times of serious shortage.

A direction can be applied for up to 14 days and can be amended, revoked, or renewed as circumstances determine. They can be placed on individual takes or cover whole catchments.

In the lead-up to the issuing of these notices for the Taieri, ORC chief executive Peter Bodeker and other council staff met regularly with farmers throughout the region.

Updates were provided on the effect the lack of rain was having on minimum flows for the various rivers, and the council's expectations of irrigators in terms of water management.

This included the need for them to adhere to their resource consent conditions, and reminders about the process triggered by breaches of minimum flows.

Many farmers were proactive about voluntarily cutting back the volume of water they took for irrigation either in groups, or individually.

This high degree of co-operation was helpful at a time when minimum flow levels were being breached or threatened.

Strath Taieri irrigators were rationing water and rostering water use, Kakanui irrigators were rationing to ensure minimum flows were maintained, and Manuherikia catchment irrigators were also rationing while maintaining flows.

Voluntary rationing was also evident in the Waianakarua and Waiwera Rivers.

The voluntary reductions made by Kyeburn irrigators in releasing water to maintain flows at Tiroiti, and the work of the Maniototo Irrigation Company in releasing water to assist flows at Waipiata, were also noteworthy.

ORC's primary responsibility is to safeguard river ecosystems and ensure adherence to minimum flows, where these have been set through community consultation.

The proactive response of many farmers in conserving water plays a crucial part towards sustaining the river ecology.

The positive way in which groups of farmers have rallied to work jointly on water conservation bodes well for the implementation of new water allocation provisions in the Otago Water Plan.

These provisions encourage a collaborative approach to water management and allocation, particularly in Central Otago, where water allocation has been traditionally dominated by deemed permits (mining privileges) not

subject to minimum flows, and where water resources are limited in the dry months.

The provisions support the formation of community water management groups and promote local management of water takes during periods of water shortage by resource users, in the very circumstances we have just encountered.

Farmers have recently shown they are more than capable of successfully transitioning from deemed permits to resource consents.

An end date of October 2021 has been set for the life of deemed permits, which then become governed by the Resource Management Act.



ORC chief executive Peter Bodeker outlines the council's Water Shortage Direction process to a public meeting in Middlesmarch on February 2.



Diamond Lake near Glenorchy, the outlet for some of the tributaries where water quality sampling has been done by local farmers with assistance from ORC.

Lakes farmers get behind water quality efforts

A proactive group of farmers in the Wakatipu high country has been working with ORC to pinpoint and resolve water quality issues in the area.

The ORC and the Glenorchy Landcare Group have carried out water quality sampling within the tributaries of Lake Wakatipu, from Greenstone Station around to Closeburn Station near Queenstown.

The sub-catchments include both farmed and native non-farmed areas. The water quality limits in waterways around the Lakes are the toughest in Otago to maintain their pristine quality.

Testing was carried out during 2013-14 growing season for ammonia, nitrate/nitrite, dissolved reactive phosphate, turbidity and *E.coli*. Ammonia, nitrate/nitrite,

turbidity, and phosphate met the water quality limits for all farming tributaries.

The results showed that while *E.coli* was mostly within the limits, some occasional elevated *E.coli* levels occurred on intensively-farmed flat country.

Landcare group members are keen to follow up the sampling results by identifying the causes which gave rise to these higher levels. Observations will be made of areas where domestic stock could be contributing.

Work will also be done to identify if feral animals such as birds and deer are a factor as was the case in the Kakanui River in early 2013, when a colony of nesting gulls was found to be responsible for high concentrations of *E.coli* appearing in a popular swimming hole.

The results and detail about the group's work will be posted later in the year on a new community website being developed.

ORC's community liaison and education team first met group members in mid-2013 to discuss the contaminant limits set in the council's new water quality rules, limits for nitrogen leaching to groundwater, and prohibited and permitted activities.

Group members subsequently indicated they were keen to get more information about waterways in their area to see whether they complied with the new contaminant limits.

Historically, minimal information about water quality in the tributaries has been available, apart from for the Dart River.



Ashok, Ariyana, and Nishan Ormandy are ready to get cracking planting trees.



NZ Landcare Trust Kakanui project co-ordinator Nicola Holmes (left of centre with orange vest) speaks to Kakanui community members as Kakanui Ratepayers Association co-ordinator Lucianne White (centre with orange vest) looks on.

Community understanding key to environmental awareness

The quality of the water in the Kakanui catchment in North Otago has gradually declined over the past 20 years.

The main stem of the Kakanui River has seen nitrogen levels increase, while the Waiareka Creek contributes increasing amounts of nitrogen, phosphorus, and *E.coli* to the Kakanui Estuary.

The mixing of nutrient-rich water in the Kakanui Estuary is causing algal blooms to occur.

However, a community-led project is under way to get everyone working out ways to reverse this trend.

The project's focus is on improving awareness and understanding of techniques landholders can apply to improve water quality, reduce erosion, and increase biodiversity (aquatic life and native plants) within the catchment.

The catchment includes the main Kakanui River, and its sub-catchments: Waiareka Creek, Fuchsia Creek, and Kauru River.

The three-year project is being managed by the NZ Landcare Trust and funded by the Ministry for the Environment, North Otago Irrigation Company, Beef and Lamb NZ, and Ravensdown.

Responses from 13 community residents and 30 local farmers to a survey in August indicated that both groups are keen to see the catchment's ecosystem and water quality improve, producing a safer, more enjoyable environment for recreational water users.

A successful community event was held near the Kakanui River mouth in October.

Representatives of key organisations, and community members of all ages – from both farming and urban backgrounds – worked together planting native plants alongside the estuary.

The project's next steps include: developing plans to encourage greater use of good management practices on farm, producing a riparian planting guide for the catchment, further water quality-related community events, and continuing the environmental

monitoring programme which began in December.

The full results of this monitoring will be available in 2016.

ORC is among various stakeholders making 'in kind' contributions to the project such as technical support, scientific advice, and peer review of project outputs.

These stakeholders include Fonterra, Dairy NZ, the Department of Conservation, Fish and Game, Otago Regional Council, Waitaki Irrigators Collective, Te Runanga o Moeraki, Kakanui Ratepayers Association, Federated Farmers, NOSLAM and Waitaki District Council.

If you'd like to know more about the project and who's involved, visit the Landcare website at <http://bit.ly/1CkUIBz>



Andrew Innes (right) and Associate Professor Barrie Peake of Otago University take samples from the Water of Leith.



Dunstan Creek was the top Otago waterway and the fourth most-improved nationally based on measurement of DRP, in the 2014 NZ River Awards.

South features in river awards

A Central Otago waterway and two Dunedin teachers featured in the second annual New Zealand River awards presented in Wellington in November.

The Morgan Foundation, which organises the awards, gets two expert judges - Dr Roger Young (Cawthron Institute), and Dr Clive Howard-Williams (NIWA) - to screen data on the LAWA site (www.lawa.org.nz) to identify rivers with the greatest percentage improvement over the last decade.

Dunstan Creek – the largest of the Manuherikia River's tributaries – was the most improved Otago waterway based on measurement of dissolved reactive phosphorus

(DRP) at the Beattie Road monitoring site.

It was also the fourth most-improved river nationally, showing the greatest equal decline in DRP (14.5 percent p.a.) of the regional award winners – alongside Northland's Mangere Creek.

This is a significant achievement for a high country catchment and reinforces that positive action taken by landholders does achieve results.

Dunedin teachers Andrew Innes and Simon McMillan were finalists in the NZ River Story Award for their work with Otago University scientists to produce rigorous

water testing procedures for school students.

The judges cited their work as a "great example" of young "citizen scientists" being nurtured and developed. They have integrated their science teaching with field work over a long period, and have done much to improve community understanding of Dunedin's streams and the Otago harbour.

At last year's inaugural awards, the Shag River was named most improved river in NZ, while the Waikouaiti River was placed third in this category.

