

Soil health and contaminated land 2007/08

Key points:

- Just over half the soil quality monitoring sites tested last year had at least one soil quality indicator outside the target range for their pastoral land use and soil type. In the majority of instances the poor soil quality can be remedied with appropriate management.
- Over 26,000 poplars and willows were planted on 370 hectares of erosion-prone land, assisting with soil conservation in the region.
- A successful trial clean-up of contaminated sediments in the Waioheta Stream was completed, with a full clean-up of the stream planned to begin in March 2009.

What happened in 2007/08?

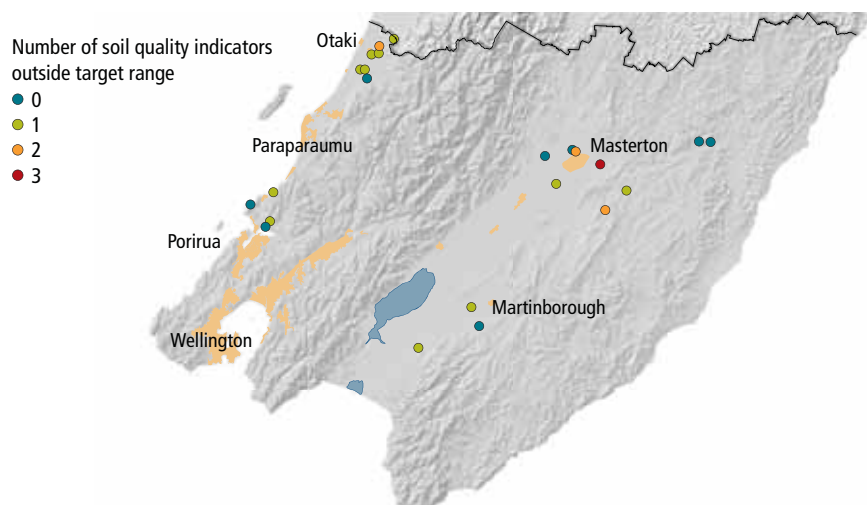
Soil quality monitoring

Greater Wellington began its soil quality monitoring programme in 2001, covering 118 sites on a range of land uses across the region. Last year we re-sampled 23 drystock/pastoral sites that had previously been sampled between 2001 and 2004. Soil health was assessed using a set of seven physical, chemical and biological properties – such as soil structure, nutrients, organic matter and heavy metal content.

The main findings from 2007/08 were:

- Fifteen out of the 23 sites sampled had at least one indicator outside the target range for drystock/pastoral farming and soil type, with just one site outside the target range for three or more soil quality indicators.
- Low macroporosity (an indication of soil compaction) was the soil quality indicator most often outside of target ranges. Other indicators outside target ranges were Olsen P (an indication of soil fertility) and total nitrogen. In most cases, Olsen P and nitrogen concentrations were too high.
- Heavy metal (arsenic, cadmium, chromium, nickel, lead and zinc) concentrations in the soil were slightly higher in 2007/08 compared with 2001-2004.

The low macroporosity values mirror findings from other regions around New Zealand, and generally result from the intensification of land use practices. Compacted soils combined with high nutrient levels increases the risk of nutrient and sediment-rich runoff contaminating nearby streams. There are land management practices that can be used to reduce soil compaction and high nutrient levels in soils. Greater Wellington will discuss the results of our monitoring with landowners so that they have the opportunity to adopt techniques or measures to improve soil quality and safeguard the productivity of the soil.



Summary of the results of last year's soil quality sampling. The sites sampled are colour-coded according to the number of indicators that tests found were outside the target range for their drystock/pastoral land use and soil type.



One of the soil quality monitoring sites – a drystock farm in the Wairarapa. At each site, samples (taken from a depth of 0-10cm) are tested for various parameters and the results compared with the optimum range for the soil type. The soil at this site was compacted but nutrient levels were satisfactory.

Soil conservation

Greater Wellington continues to work with landowners to help control soil erosion, particularly in the Wairarapa hill country. This includes the preparation of individual farm plans and soil conservation programmes. Last year we helped 139 landowners plant over 26,000 poplars and willows on 370 hectares of erosion-prone pastoral land. A further 42 hectares were established as conservation woodlots and 3 kilometres of shelterbelts were established to decrease the effects of wind erosion on alluvial soils within the Wairarapa valley. Greater Wellington also assists landowners fence and plant streamsides to improve water quality and increase biodiversity. Last year 3 kilometres of new fencing and planting, and 1.5 kilometres of maintenance planting were completed.

What can you do?

- Ensure that animal effluent disposal systems and fertiliser application rates are appropriate for your soil type.
- Compost your kitchen scraps and garden waste and add it to your soil.
- Plant trees on erosion-prone land to promote soil conservation, enhance biodiversity and provide shelter and shade for stock.
- Ensure hazardous waste – such as old paints and used oil – is taken to the hazardous waste collection facility at the landfill or to the household hazardous waste collection run by your city or district council.
- If you have any banned or unwanted agrichemicals, contact Greater Wellington to register for our annual agrichemical collections.

Waiwhetu Stream clean-up

The sediments in the bed of the lower reaches of the Waiwhetu Stream contain high levels of heavy metals and pesticides. This is a legacy of past practices when the stream was used to dispose of trade waste from the industries in Gracefield and Seaview.

A successful trial clean-up of a section of the stream was completed in March 2008. The clean-up method involved dividing an 80 metre length of the stream into two cells by driving sheet piles into the bed. The cells were then dewatered and the contaminated sediment excavated from the upstream cell. In all, 423 tonnes of contaminated sediment was safely taken to the Silverstream Landfill for disposal. The clean-up of the full 800 metre reach of the stream is planned to commence in March 2009. This work is being jointly funded by Greater Wellington, Hutt City Council and the Ministry for the Environment's Contaminated Sites Remediation Fund.



Contamination in this section of the Waiwhetu Stream in Lower Hutt was successfully cleaned up earlier this year. The stream was divided into two cells using sheet piles (left). The cells were then de-watered before the contaminated sediment was excavated from the upstream cell (right) and disposed of to landfill. The next stage of this project will be to remove the contaminants from the remainder of the stream.

What is Greater Wellington doing?

- Sampling and testing soils under various land uses to monitor the quality of soils across the region.
- Regulating large-scale vegetation removal and soil disturbance on erosion-prone land (district and city councils control vegetation removal and soil disturbance on all other land).
- Providing advice to landowners and subsidising tree planting, so landowners can reduce soil erosion on their land.
- Maintaining, on behalf of the city and district councils, a database known as the Selected Land Use Register, which contains a list of sites in the region that have (currently or historically) used, stored or disposed of hazardous substances (e.g. landfills, petrol stations, timber treatment sites).
- Leading the Waiwhetu Stream sediment clean-up project.

More information

The soil quality information on this card is a summary of the more detailed 2007/08 annual soil quality monitoring report, which is available on our website at www.gw.govt.nz/envreports

For any further information visit our website or contact:

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