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Report to Rural Services and Wairarapa Committee
from Dave Cameron, Regional Soil Conservator

Soil Quality Monitoring 2000/2001

1. Purpose

To inform the Committee of the results of soil quality monitoring undertaken during 2000/2001 and suggest that additional funding be sought at the six months review to replace lost revenue.

2. Background

The Regional Policy Statement for the Wellington Region outlines a vision for future. In relation to soil this vision is:

"The soils are able to maintain their desirable physical, chemical and biological characteristics."

In "*Measuring Up*", the State of the Environment Report for the Wellington Region 1999, we tried to measure how we were progressing towards attaining this vision. Our conclusion was that we did not have sufficient information available about the quality of soils around the Region to make this assessment.

To rectify this situation in the Long Term Financial Strategy, \$25,000 per year for three years was provided to establish a baseline soil quality monitoring programme. This amount was determined on the basis that the monitoring programme would be partially funded through a grant from Ministry for the Environment's Sustainable Management Fund.

Our original intention was to take 25 soil samples each year for a period of three years. Samples were to be taken from a range of soil types under differing land uses.

The Region's soils were condensed into eight groups. Soils within each group, although originating from different parent materials, have similar nutrient status, structural properties, and geomorphology. Of the eight groups, three were intensively used flat land, three under intensive hill country grazing or forestry use, and two with extensive grazing, forestry or protection uses.

The sampling programme began with the most widespread soil in each of the intensively used groups on both the Wairarapa and Otaki plains. Intensive uses included dairying, market gardening, cropping, grazing, orchards, and indigenous bush.

After the initial three year programme, sites were to be revisited every five years to determine trends and to address any adverse impacts on soil quality from the present use.

3. Method

Most of the sampling was undertaken by Landcare Research as part of "500 Soils" the Ministry for the Environment's national soil quality monitoring programme.

Twenty eight samples were taken from sites with seven different land uses and six different soil orders. Not all soil orders are represented by all land uses. The most widespread soils in each part of the Region were targeted; Ahikouka and Kokatau in the Wairarapa, and Manawatu and Te Horo soils on the Otaki plains.

These samples were analysed for a range of physical, chemical and biological parameters.

4. Main Findings

- 4.1 The soil quality issues in the Wellington Region are similar to those found elsewhere in the country.
- 4.2 The majority of soils sampled were suitable for their existing use and were not considered at risk. Soils at most risk of soil physical deterioration were those under cropping (loss of aggregates) or dairy farming (compaction)
- 4.3 Intensively farmed Wairarapa soils were inferior to their Otaki counterparts in terms of bulk density, macroporosity and aggregate stability.
- 4.4 Low soil macroporosity under pasture was the most common problem and is probably caused by compaction of soils by cattle treading on it.
- 4.5 There has been marked loss of organic matter from soils under arable crops compared to the same soils in other land uses.

- 4.6 Indigenous bush sites score very well against all target limits, however they tend to have less available moisture than all other land uses except arable cropping.
- 4.7 High levels of available Phosphorous and mineralisable Nitrogen were found in some dairy pastures. These high levels are not a direct risk to soils but there is an increased risk of soluble nutrients reaching receiving waters.
- 4.8 Most of the problems identified are reversible and could be brought about by a change in land management, but recovery of some characteristics will take many years.

5. Where to From Here?

We have two more years of funding to do further monitoring. Unfortunately, the Ministry for the Environment have changed their focus and priority in this area of work. As a consequence, this work is no longer eligible for support from the Sustainable Management Fund. This means that we either reduce the amount of monitoring we do and extend the term of the project to suit the present funding, or seek additional funds to ensure the project meets its original timeframe.

It would be desirable to proceed as planned, seeking additional funding (estimated to be \$12,500) at the Six Month Review. The collection of baseline data is the most important part of the programme. Any delay to this aspect of the project will prevent trend analysis for two to three years.

In the coming year we intend to complete sampling on the Region's most widespread and intensively used soils. These are located on the Otaki and Wairarapa plains and are significant for the Region's economy and environment. We will also begin to sample the Wairarapa hill country and the western hills between Wellington and the Horowhenua.

6. Communication

Several landowners have granted us access to their properties to undertake this monitoring. Copies of the monitoring results will be distributed to these people once the final report is received.

The result of monitoring undertaken in the Wellington Region will be added to a national soil quality database. This provides a useful tool for comparative and predictive purposes.

7. RPS Implementation

This report gives effect to Soil Policies 9 and 10 in the Regional Policy Statement and Method 6.2.8 of the Regional Soil Plan.

8. Recommendations

- (1) *That the report be received and its contents noted.*
- (2) *That additional funding of \$12,500 be sought at the six months review to enable the soil quality monitoring programme to progress according to the original time table.*

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