

EXECUTIVE SUMMARY

1. Air Quality

- In general, Northland has a high standard of natural air quality
- Monitoring of particulate matter (PM₁₀) using a high volume sampler at Kaitaia has been conducted over the past year. Sample results reveal that the PM₁₀ concentrations vary considerably on a daily basis, and according to national air quality guidelines are acceptable or better 96% of the time
- Deposition gauge results provide a measure of dust nuisance within the Whangarei urban area. The 2002-03 results indicate that the concentrations of dust are good or acceptable for the majority of the time and do not differ significantly from previous years
- Continuous monitoring of SO₂ in Onerahi has commenced. This will provide important data regarding SO₂ concentrations in a residential area

2. Surface Water Quality

- The quality of freshwaters in Northland varies from pristine in indigenous forest catchments, to very poor in lowland agricultural areas. Guideline values for aquatic ecosystem health are not met in many areas, in particular the Mangahuru, Mangere and Whakapara Rivers
- The Summer Recreational Bathing Survey has shown that many of the Region's lowland recreational areas can be unsuitable for bathing. Some sites, such as the Otiria River site, should not be used at all until work is carried out to mitigate the effects of upstream sewage disposal
- A study at Ruawai has shown excessively high levels of both *E. Coli* and Faecal Coliforms are present in the township's stormwater. Household sewage is the most likely source of this contamination
- Changes in macroinvertebrate communities over the last six years indicate that six of the 15 sites monitored in the region have decreased in stream health, two have improved and seven have stayed relatively stable. Waiarohia catchment sites have either deteriorated or remained reasonably stable
- Macroinvertebrate biotic indices for 2002/03 consistently showed the sites at the Victoria, Waipapa and Waitangi Rivers had relatively good stream health, while sites on the Mangahuru Stream, Wairua River, Kamo Tributary culvert and at the Provan Bridge on the Waiarohia Stream are of concern with respect to stream health

3. Surface Water Quantities and Flows

- The Northland Regional Council operates a hydrometric network consisting of 18 automatic rainfall stations and 36 automatic water level stations. In addition, a daily rainfall reader network provides a further 67 manual rainfall stations, 35 manual groundwater stations and 14 lake level stations water-level sites. Out of these 172 sites, 13 rainfall sites and 14 water level stations form part of a radio telemetry network
- Two new automatic rainfall telemetry stations were installed at Maungakawakawa on the northern side of the Maungamuka Hills and in the upper Kaeo River Catchment
- During 2002-03 a total of 25 weather and one wind warning were issued of which 3 weather warnings resulted in major rain events in January, March and May 2003
- Generally, the Northland region received 5-10 % above the expected annual rainfall for the 2002-03 period. The driest months were from September to December. Media releases were made advising Northland residents of the possibility of drier than normal summer conditions, to warn of potential water shortages and to urge water conservation. The dry spell ended with heavy rain in January and March. These rainfall events caused some localised flooding and elevated most Northland Rivers
- A total of 175 flow measurements were carried out during 2002-03

4. Lakes

- The monitoring of Lake Omapere showed that the algal bloom observed during 2001/2001 has abated and that general water quality improved over winter, but that algal blooms were again experienced during the 2002-03 summer
- Sampling at several lakes throughout Northland has shown that the region's lakes are in variable health

5. Groundwater

- Groundwater levels in Northland are recorded continuously at six sites and monthly at another 35 sites
- The groundwater quality network has been expanded, and now encompasses 25 sites sampled throughout Northland
- In general, groundwater quality at sampling sites meets New Zealand drinking water standards
- NRC is currently undertaking specific groundwater investigations in the Ruawai, Taipa and Russell areas. Areas of saline (saltwater) contamination have been discovered at Ruawai, elevated nitrate levels have been found in a number of bores in the Taipa settlement area, and monitoring at Russell has indicated bacterial contamination and the potential for saline contamination
- Future groundwater monitoring work includes the installation of a telemetry system at a monitoring bore in Russell. This will enable access to up to date saline (saltwater) and water level information

6. Coastal Monitoring

- The bacteriological water quality survey conducted over the summer of 2002/2003 showed that 9% of sites were potentially unsafe for bathing
- A survey of boat anti-fouling residues found elevated levels of diuron in the Tutukaka and Whangarei harbours. While below guideline values, an extension of current heavy metal monitoring programmes will be necessary to determine if such levels are restricted to the studied harbours or in fact reflect a widespread problem
- Heavy metal concentrations in the Whangarei harbour have declined at some sites, and are below “low effect” levels at all sampled locations
- The Coastal Hazard Review Programme has continued over the 2002/2003 period
- A study of sedimentation rates within the Hokianga Harbour has shown an increased accumulation rate in the northern (Tapuwae) catchment since the 1950s and a corresponding decreased rate in the major southern (Whirinaki) catchment over the same period

7. Land Use Sustainability Monitoring

- The first stage of Otarao Catchment Project is underway, and a baseline for water quality in the catchment is hoped to be established in December 2003
- Preliminary results indicate that rainfall and run-off appear to significantly affect stream health in the catchment
- The second stage of the project will concentrate upon changes to land management

8. Farm Dairy Effluent

- During the year, 391 non-consented farms were visually inspected. The majority of these farms received grades of 3 or poorer
- For both the consented and non-consented farm dairy effluent systems, there were **264** instances of **significant non-compliance** identified during the season. 246 of these were re-visited
- During the year 153 resource consents were issued, bringing the total number of farm dairy effluent consents to 585

9. Incidents

- 811 environmental incidents were reported between July 1, 2002 and June 30, 2003, below the average 836 incidents per year reported since November 1993
- Air related incidents accounted for 42 % of all incidents, particularly concerning complaints about industrial emissions, burning and dust nuisance, and odour
- Incidents involving sewage, vegetation and earthworks clearance, and refuse have increased across all relevant sub-types (freshwater, coastal, and land related incidents)

10. Ngawha Geothermal Field

- In order to gauge any potential environmental impact it may have, the geothermal power station operating at Ngawha is continually monitored
- Chemical indicators suggest slight changes to Ngawha's environment over 2002-03. In general these changes have been driven by natural processes, rather than by any action of the power station
- Biological indicators such as mudfish population and wetland rush density suggest that ecosystems downstream of the power station are not adversely affected by current activities

11. Iwi Monitoring

- Funding from the Joint Iwi Monitoring Fund was granted to Te Mahurehure Roopu Whenua Taonga Trust, the Utakura Maori Committee and Te Whanau o Rangiwakaahu
- The Ngatiwai Trust Board was funded separately from the Iwi Monitoring Fund, through the general monitoring pool, and has continued their macroinvertebrate sampling programme. FDE and Industrial discharges have been shown to have the greatest adverse impact upon streams within the Ngatiwai's rohe

12. Waste Hazardous Substances and Contaminated Sites

- During 2002-2003 5.4 tonnes of waste hazardous substances were collected from throughout the Northland Region
- 657 kg of intractable material was collected during 2002-2003
- Since 1993 over 35 tonnes of waste hazardous substances have been collected, recycled, disposed of or placed into long-term storage
- All or part of the Councils stockpile of intractable wastes will be disposed of overseas during the 2003-2004 financial year
- During 2002-2003 approximately 100 sites listed on the Selected Landuse Register were visited and inspected
- Work continued on developing a consistent approach to the management of contaminated sites in New Zealand