# Mokau River - Water Quality Summary 2022

Sampling occurred between January and December 2022

**All sub-catchments**

* ***E. coli*** was low in 28% of all sites (A & B band, ≤ 246) and 24% had moderate (C band, concentrations between 295 - 512), 48% of all sites exceed health recommendations for human contact (D & E band, >550). Across all sub-catchments Mangaotaki-Mairoa had the highest proportion of sites (67%) with low concentrations (147 - 227) and the Lower Mokau had the highest proportion of sites (100%) with elevated concentrations (352 – 10,050).
* **Nitrate** concentrations were below toxicity levels at 100% of all sites (A & B band, median ≤ 1.88 mg/L; 95th percentile ≤ 2 mg/L).
* **Ammonia** concentrations were below toxicity levels at 100% of all sites (A & B band, median ≤ 0.070 mg/L; 95th percentile ≤ 0.262 mg/L).
* **The combined concentration of Nitrate and Ammonia** exceeded 0.5 mg/L at 52% of all sites. Ecological impacts, including problematic growth of algae and/or aquatic plants and loss of sensitive aquatic species are likely when the combined concentration of nitrate and ammonia regularly exceed 0.5 mg/L. Across all sub-catchments Mokauiti-Aria and Mapiu-Mapara had the most sites (83%) with low concentrations (< 0.002 – 0.010 mg/L) and Lower Mokau had more sites (100%) with elevated concentrations (0.54 – 1 mg/L).
* **Median dissolved reactive phosphorus (DRP)** was low in 83% of sites (A & B band, ≤ 0.010 mg/L) and 17% of sites had elevated concentrations (C band, between 0.012 - 0.017 mg/L). 95th percentile DRP concentrations were low in 97% sites (A & B band, ≤ 0.026 mg/L) and one site had elevated concentrations (D band, 0.153 mg/L). Across all sub-catchments Mokauiti-Aria and Mapiu-Mapara had the highest proportion of sites (83%) with low concentrations (0.1 – 0.4 mg/L) while Mangaotaki-Mairoa and Upper Mokau-Mangapehi each had two sites with elevated concentrations (0.012 – 0.017 mg/L).
* **Water clarity** was good in 24% of sites (A or B band), 3% had moderate clarity (C band) and 72% of sites had poor clarity (D band). Bands for each site relate to the national bottom line for water clarity, which is either 1.34 m or 0.61 m, and is dependent on the local geology, climate and elevation. Across all sub-catchments Mangaotaki-Mairoa had the most sites (67%) with good water clarity (165 – 3.21 m) while Lower Mokau and Mid Mokau-Pio Pio had 100% of sites with poor water clarity (≤ 0.98).

**Mapiu-Mapara**

Water quality over 2022 was generally moderate across sites. Results indicate that *E. coli* and sediment are the main contaminants to be aware of. Analysis of samples collected over 2021 and 2022 indicate that *E. coli* concentrations were higher in spring and lower in winter. Nitrate concentrations peaked in winter and were lower in summer and autumn. Suspended sediment (as indicated by water clarity) was higher in spring and variable throughout the other seasons.

* ***E. coli*** was exceptionally low at 21-Waewaepitau Stm (128) and elevated at all other sites (≥ 377). The highest values were recorded at 25-Mapiu Stm - Waitataura Rd (689). No sites had values greater than the sub-catchment (SC) baseline (5yr baseline = 5,000). Concentrations peaked in spring and were lower in winter.
* **Nitrate** concentrations were below toxicity levels at all sites. Concentrations were lowest at 21-Waewaepitau Stm (median 0.10 mg/L; 95th percentile ≤ 0.18 mg/L) and highest at 26-Puputaha Stream (median 0.50 mg/L; 95th percentile 0.98 mg/L). No sites had median or 95th percentile value values above the baseline (5yr baseline = median 0.54 mg/L; 95th percentile ≤ 1.00 mg/L). Concentrations were higher in winter (>0.6 mg/L at all sites except 21-Waewaepitau Stm) and lower in summer (<0.4 mg/L).
* **Ammonia** concentrations were below toxicity levels at all sites and were exceptionally low at 15-Mapara Stm and 21-Waewaepitau Stm (median < 0.005 mg/L; 95th percentile ≤ 0.008 mg/L). The highest concentration was calculated for 19-Mangaiti Stm (median 0.025 mg/L; 95th percentile 0.039 mg/L). Two sites (25-Mapiu Stm - Waitataura Rd and 19-Mangaiti Stm) had median values greater than the SC baseline and no sites had a 95th percentile value above the SC baseline (5yr baseline = median 0.009 mg/L; 95th percentile ≤ 0.047 mg/L).
* **The combined concentration of nitrate and ammonia** was 0.5 mg/L at 26-Puputaha Stream. Ecological impacts, including problematic growth of algae and/or aquatic plants and loss of sensitive aquatic species are likely when the combined concentration of nitrate and ammonia regularly exceed 0.5 mg/L.
* **Dissolved reactive phosphorus (DRP)** concentrations were low at all sites (median ≤ 0.007 mg/L; 95th percentile ≤ 0.011 mg/L). No sites had either median or 95th percentile values greater than the SC baseline (5yr SC baseline = median 0.009 mg/L; 95th percentile ≤ 0.022 mg/L). DRP was higher from spring through to autumn and lower in winter.
* **Water clarity** was poor at 5 out of 6 sites (≤ 1.25 m) and low at 21-Waewaepitau Stm (1.46 m) relative to the national bottom line (1.34 m). Three sites (15-Mapara Stm, 19-Mangaiti Stm and 20-Mapiu Stm) had median annual water clarity values less than the SC baseline (5yr SC baseline 0.79 m). Water clarity was fairly consistent throughout the seasons but slightly higher in winter and summer and lower in spring.







