

Quarterly Water Quality Monitoring – Summary Notes

Awakino River & Tasman, Upper Mangaokewa, Mokau River

Sampling occurred on the 6th and 12th February and 2nd March 2023

Awakino River & Tasman - *E. coli* concentrations were elevated at all sites (≥ 430). Nitrate concentrations were well below toxicity levels at all sites being exceptionally low at 1-Waikawau River and 2-Manganui River (< 0.04 mg/L) but were much greater at 3-Mangaorango Stream (0.56 mg/L). Ammonia concentrations were exceptionally low at all sites (< 0.005 mg/L). One site (3-Mangaorango Stream) had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L¹. Dissolved reactive phosphorus concentrations were low at 2-Manganui River (0.007 mg/L) and elevated at 1-Waikawau River and 3-Mangaorango Stream (between 0.016 and 0.012 mg/L). Water clarity was excellent at 1-Waikawau River (1.33 m) but poor at the other two locations (≤ 0.56 m), relative to the national bottom line (0.61 m).

Upper Mangaokewa - Please note, no data was available for site 4-Mangaokewa Stm (viaduct) due to the gate to the site was locked so no samples were collected.

E. coli concentrations were low at all five sites (≤ 160). Nitrate concentrations were below toxicity levels at all sites but exceeded regional PC1 targets (0.525 mg/L) at 4 out of 5 sites (between 0.59 - 1 mg/L). Nitrate concentrations were lowest at 46-Waiteti Stream-Upper (0.23 mg/L). Ammonia concentrations were exceptionally low at 2 out of 5 sites (< 0.005 mg/L) and exceeded PC1 targets (0.005 mg/L) at 5-Mangawhauhi Stm 071 and 46-Waiteti Stream-upper (0.007 mg/L) and 6-Waiteti Stm-viaduct (0.01 mg/L). Four out of five sites had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were exceptionally low at 3 out of 5 sites (≤ 0.006 mg/L) and elevated at 45-Mangaokewa Stream (0.014 mg/L) and 47-Waiteti stream-Middle (0.011 mg/L). Water clarity was poor at all five sites (between 0.36 m - 1.21 m), relative to the national bottom line (1.34 m).

Mokau River - all Sub-catchments

- *E. coli*: 79% of all sites had low concentrations (≤ 250) and 21% had elevated concentrations (≥ 500). Seventeen percent of all sites exceed health recommendations for human contact (> 550).
- Nitrate and Ammonia: 100% of sites had concentrations below toxicity levels (Nitrate ≤ 2 mg/L; Ammonia ≤ 0.04). However, 38% of sites had combined concentration of Nitrate and Ammonia exceed 0.5 mg/L. 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: 88% of sites had low concentrations (≤ 0.01 mg/L), 8% of sites had elevated concentrations (0.012 – 0.014 mg/L) and 4% of sites (one site) had concentrations ≥ 0.02 mg/L.
- Water clarity: 8% of sites had good water clarity (A or B band), 13% had moderate clarity (C band) and 79% of sites had poor clarity (D band). Bands for each site relate to the national

¹ 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.

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.

Lower Mokau - *E. coli* concentrations were exceptionally low at 7-Mokau R (3) and elevated at 8-Paraheka Stm (500). Nitrate and ammonia concentrations were well below toxicity levels, being lowest at 8-Paraheka Stream (Nitrate 0.19 mg/L; Ammonia 0.01 mg/L) and highest at 7-Mokau River (Nitrate 0.63 mg/L; Ammonia 0.01 mg/L). 7-Mokau River had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. 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 concentrations were exceptionally low at both sites (≤ 0.006 mg/L). Water clarity was poor at both sites (≤ 0.42 m), relative to the national bottom line (NBL). The NBL is 1.34 m at 7-Mokau River above Wairere Dam; 0.61 m at 8-Paraheka Stream.

Mokauiti-Aria - *E. coli* concentrations were low at all sites (≤ 250). Nitrate concentrations were below toxicity levels at all sites being lowest at 24-Mangawhata Stm (0.001 mg/L) and highest at 27-Ramaroa Stream (0.51 mg/L). Ammonia concentrations were exceptionally low at 3 out of 5 sites (≤ 0.006 mg/L) and higher at 27-Ramaroa stream and 28-Mokauiti stream (0.04 mg/L). One site (27-Ramaroa Stream) had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were low at all sites (≤ 0.009 mg/L). Water clarity was good at 23-Whareroa Stream (1.23 m) and poor at all other sites (≤ 0.61 m), relative to the national bottom line (NBL). The NBL is 1.34 m at 24-Mangawhata Stream and 28-Mokauiti Stream; and 0.61 m at all other sites.

Mangaotaki-Mairoa - *E. coli* concentrations were low at 29-Pungaki Stm (< 10) and elevated at all other sites (≥ 670). Nitrate concentrations were below toxicity levels at all sites being lowest at 29-Pungaki Stream (0.40 mg/L) and highest at 10-Waitanguru Stream (0.86 mg/L) and 30-Kihikihi Stm (0.89 mg/L). Ammonia concentrations were exceptionally low at four sites (≤ 0.006 mg/L) and highest at 29-Pungaki Stream (0.01 mg/L). Four out of five sites had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were low at 3 out of 5 sites (≤ 0.01 mg/L) and elevated at 10-Waitanguru Stream (0.014 mg/L) and 11-Mangaotaki R. (0.012 mg/L). Water clarity was poor at all sites (≤ 1.47 m), relative to the national bottom line (1.34 m).

Mid Mokau-Pio Pio - *E. coli* concentrations were exceptionally low at all sites (≤ 80). Nitrate concentrations were below toxicity levels at all sites being lowest at 13-Mokau River HWY 4 (0.30 mg/L) and highest at 12-Mangakowhai Stream (2 mg/L). Ammonia concentrations were exceptionally low at three sites (< 0.005 mg/L) and highest at 7-Mokau R. and 16-Mokau R. (0.02 mg/L). Three sites (7-Mokau R., 12-Mangakowhai Stream and 16-Mokau R.) had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were low at 5 out of 6 sites (≤ 0.008 mg/L) and elevated at 12-Mangakowhai Stream (0.020 mg/L). Water clarity was poor at all sites (≤ 1.0 m), relative to the national bottom line (1.34 m).

Mapiu-Mapara - *E. coli* concentrations were low at all sites (≤ 170). Nitrate concentrations were below toxicity levels at all sites being lowest at 21-Waewaepitau Stream (0.07 mg/L) and highest at 26-Puputaha Stream (0.41 mg/L). Ammonia concentrations were exceptionally low at 4 out of 6 sites (< 0.005 mg/L) and higher at 20-Mapiu Stm (0.01 mg/L) and 19-Mangaiti Stream (0.02 mg/L). No sites had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were exceptionally low at all sites (≤ 0.006 mg/L). Water clarity was excellent at 21-Waewaepitau Stm (2.10 m) and poor at all other sites (≤ 1.08 m), relative to the national bottom line (1.34 m).

Upper Mokau-Mangapehi - *E. coli* concentrations were low at all sites (≤ 160). Nitrate concentrations were below toxicity levels at all sites being lowest at 13-Mokau R. (0.30 mg/L) and highest at 18-Mangapehi River (0.68 mg/L). Ammonia concentrations were low at all sites (≤ 0.008 mg/L). 18-Mangapehi River had a combined concentration of Nitrate and Ammonia exceeding 0.5 mg/L. Dissolved reactive phosphorus concentrations were low at all sites (≤ 0.007 mg/L). Water clarity was poor at all sites (≤ 1.0 m), relative to the national bottom line (1.34 m).