

Mid Mokau-Pio Pio – Quarterly River Monitoring

Sample Collection Day: 28th February 2024

Overall, water quality was Good, *E. coli* was slightly elevated at one site and water clarity was low at two sites.

E. coli concentrations were low at 3 sites (≤ 260) and slightly elevated at 7-Mokau River, above Wairere Dam (320). All sites fell within recommended health levels for swimming (540). **Nitrate** concentrations were low at all sites, falling well below ecological toxicity levels (2.4 mg/L). Nitrates were lowest at 13-Mokau R. HWY 4 (0.08 mg/L) and highest at sites 7 and 15 (0.13 mg/L). **Ammonia** concentrations were low at all sites (< 0.03 mg/L). **Dissolved inorganic nitrogen** concentrations were very low at all sites (≤ 0.16 mg/L). **Dissolved reactive phosphorus** concentrations were very low at all sites (≤ 0.003 mg/L). **Water clarity** was excellent at 13-Mokau River (1.79 m), good at 14-Mangapehi River and poor at the remaining two sites (1.24 m), relative to the national bottom line (1.34 m).

Mid Mokau-Pio Pio	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
		Nitrates Toxicity (mg N/L)	Ammonia Toxicity (mg N/L)	Dissolved Inorganic Nitrogen (mg N/L) ²	Dissolved Reactive Phosphorus (mg/L)	Water Clarity (m) ¹	National Bottom Line
Sample Date: 28-Feb-24 Lab: Analytica	E. coli/100 ml						
7-Mokau R, above Wairere Dam	320	0.13	0.03	0.16	0.002	1.24	1.34
13-Mokau R. HWY 4	260	0.08	<0.005	0.08	0.003	1.79	1.34
14-Mangapehi R. HWY 4	240	0.10	<0.005	0.10	0.003	1.56	1.34
15-Mapara Stm	170	0.13	<0.005	0.13	0.003	1.24	1.34

¹Water clarity has been converted from measured turbidity using the formula $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (Franklin, Booker & Stoffels, 2020).

²Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

Attribute Band	Ecosystem Health	Human Contact
A		
B		
C		
D		
E	Human Contact only	

Mokau River – Summary of water quality collected at 15 sites across the Mokau River catchment February 2024

Nutrient concentrations (nitrate, ammonia and dissolved reactive phosphorus) were low at most sites. Key contaminants were *E. coli* and suspended sediment.

E. coli: 60% of all sites had low concentrations (≤ 260) and 40% had slightly elevated concentrations (between 300 - 450). **Nitrate and Ammonia:** 100% of sites were well below toxicity levels. Nitrate range (0.04 – 0.53 mg/L); Ammonia range (<0.005 - 0.03). **Dissolved inorganic nitrogen:** 87% of sites had low concentrations (≤ 0.4 mg/L) and 13% (2 sites) fell above the ecological impact threshold of 0.5 mg/L with the highest concentration being 0.54 mg/L. **Dissolved reactive phosphorus:** 100% of sites had low concentrations (between <0.002 - 0.01 mg/L). **Water clarity:** 53% of sites had good water clarity (A or B band), 13% (2 sites) had reduced water clarity (C band) and 33% of sites had poor water clarity (D band). Bands for each site relate to the national bottom line (NBL) for water clarity and are dependent on landscape characteristics including geology, climate and elevation. The NBL for Mokau River’s monitoring sites are either 1.34 m or 0.61 m, dependant the local landscape characteristics.