

Upper Mokau & Mangapehi – Quarterly River Monitoring

Sample Collection Days: 13th August 2024

Water quality was Fair. *E. coli* and dissolved inorganic nitrogen were slightly elevated at two sites and water clarity was low at all sites.

E. coli concentrations were low at two sites (≤ 150) and slightly elevated at 18-Mangapehi River (310). All sites fell well within recommend health limits for swimming (540). **Nitrate** concentrations were low at all sites, well below ecological toxicity levels (2.4 mg/L). Nitrates were lowest at 13-Mokau R. HWY 4 (0.42 mg/L) and highest at 18-Mangapehi River (0.80 mg/L). **Ammonia** concentrations were low at all sites (≤ 0.02 mg/L). **Dissolved inorganic nitrogen (DIN)** concentrations were low at 13-Mokau River (0.42 mg/L) but was slightly elevated at the other two sites (≥ 0.57 mg/L). DIN concentrations greater than 0.5 mg/L can cause ecological impacts like excessive growth of algae and aquatic plants, and loss of sensitive species. **Dissolved reactive phosphorus** concentrations were very low at all sites (≤ 0.006 mg/L). Water clarity was slightly low at 13-Mokau River (1.48 m) and poor at the other two sites (≤ 0.97 m), relative to the national bottom line (1.34 m).

Upper Mokau-Mangapehi	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: 13-Aug-24 Lab: Analytica	<i>E. coli</i> /100 ml						
13-Mokau R. HWY 4	88	0.42	0.006	0.42	0.003	1.48	1.34
14-Mangapehi R. HWY 4	150	0.56	0.01	0.57	0.006	0.82	1.34
18-Mangapehi R.	310	0.80	0.02	0.82	0.006	0.97	1.34

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

¹Water clarity has been converted from measured turbidity using the formular $\ln(\text{CLAR}) = 1.21 - 0.72 \ln(\text{TURB})$ (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)

Mokau River – Summary of water quality collected at 15 sites across the Mokau River catchment on 13th August 2024

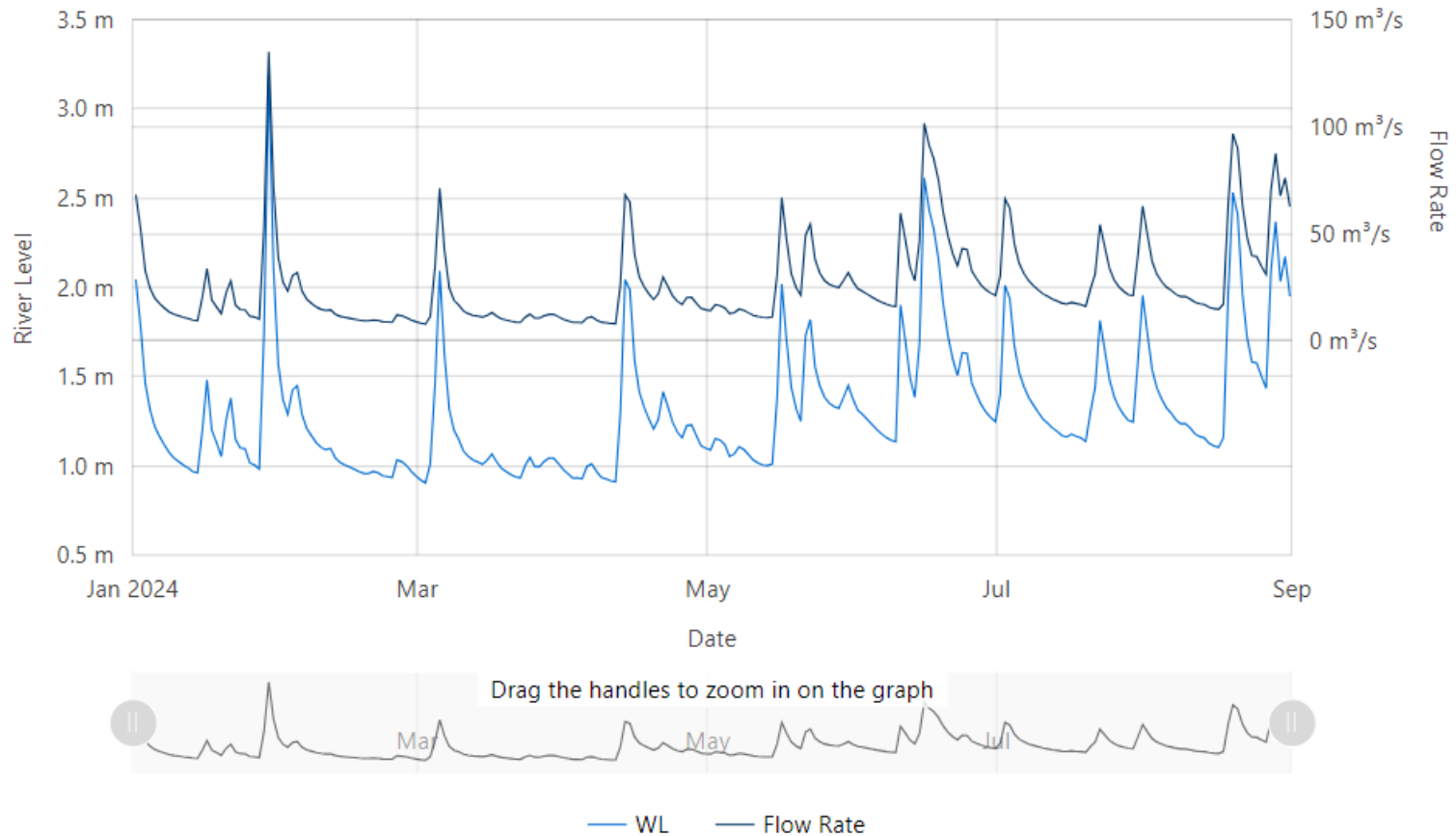
E. coli, ammonia and dissolved reactive phosphorus were low at most sites. The key contaminants were suspended sediment and nitrate.

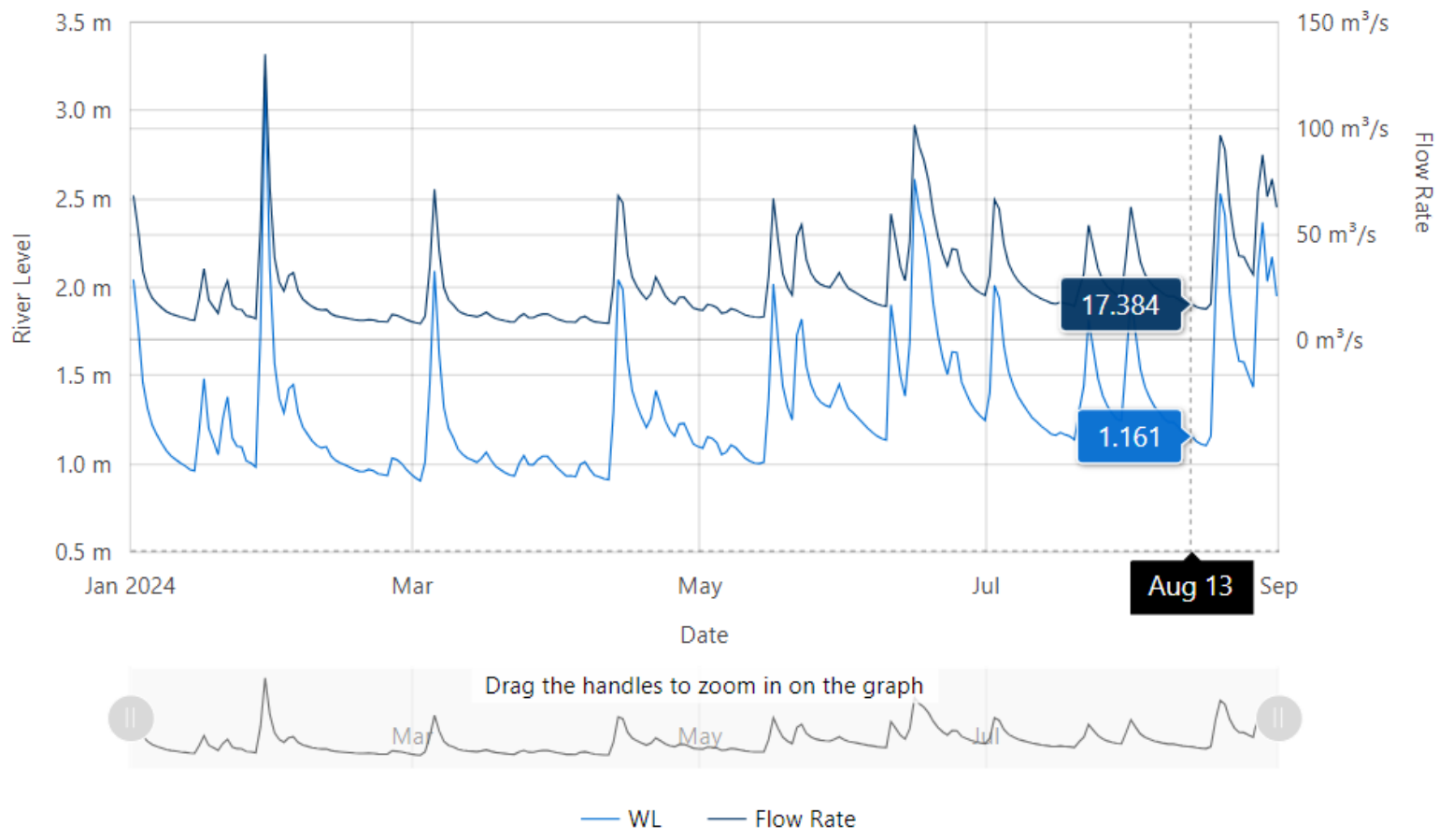
E. coli: 73% of all sites had low concentrations (≤ 210), while 27% (4 sites) had slightly elevated concentrations (between 310 to 410). **Nitrate and Ammonia**: 100% of sites were well below toxicity levels. Nitrate range (0.2 – 0.92 mg/L); Ammonia range ($<0.005 - 0.03$). **Dissolved inorganic nitrogen (DIN)**: 53% of sites had low concentrations (≤ 0.47 mg/L) and 47% fell above the ecological impact threshold of 0.5 mg/L. The highest DIN concentration was 0.93 mg/L. **Dissolved reactive phosphorus**: 93% of sites had low concentrations (between <0.002 to 0.009 mg/L), 7% (1 site) had slightly elevated concentrations 0.012 mg/L. **Water clarity**: 27% (4 sites) had good water clarity (A or B band), 7% (1 site) had reduced water clarity (C band) and the remaining 67% 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 on the local landscape characteristics.

River Level and Flow Rate – Mokau River, Totoro Road

The below charts present continuous data collected by the Waikato Regional Council for Mokau River between 1st January and 31st August 2024. River Level and Flow Rate on the day of sampling (13-August) are highlighted on the second chart.





Data source: Waikato Regional Council [envirohub website](https://www.waikato.govt.nz/whareroa/whareroa-2024) for environmental data.