Upper Mokau & Mangapehi – Quarterly River Monitoring

Sample Collection Day: 12th September 2023

Overall, water quality on 12th September was fair to good. Suspended sediment was elevated at two out of three sites and E. coli and dissolved inorganic nitrogen were slightly elevated at some sites.

E. coli concentrations were low at 2 out of 3 sites (≤ 170) and were elevated at 18-Mangapehi River (320). **Nitrate** concentrations were below toxicity levels at all sites being lowest at 13-Mokau R. HWY 4 (0.38 mg/L) and highest at 18-Mangapehi River (0.70 mg/L). **Ammonia** concentrations were low at all sites (≤ 0.02 mg/L). Two sites (14 and 18 on Mangapehi River) had **dissolved inorganic nitrogen** concentrations exceeding 0.5 mg/L, potentially impacting the health of the river. **Dissolved reactive phosphorus** concentrations were low at all sites (≤ 0.007 mg/L). Water clarity was very good at 13-Mokau R. HWY 4 and poor at all sites (≤ 1.25 m), relative to the national bottom line (1.34 m).

Upper Mokau-Mangapehi	Human Contact	Ecosystem Health					
		Water Quality				Sediment	
Sample Dates: 12-Sep-23 Lab: Analytica	E. coli/100 ml	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
13-Mokau R. HWY 4	130	0.38	<0.005	0.38	0.003	1.92	1.34
14-Mangapehi R. HWY 4	170	0.50	0.007	0.51	0.005	1.25	1.34
18-Mangapehi R.	320	0.70	0.02	0.72	0.007	1.01	1.34

[1]Water clarity has been converted from measured turbidity using the formular ln(CLAR) = 1.21 – 0.72 ln(TURB) (Franklin, Booker & Stoffels, 2020).
[2]Guideline values to assess ecological impacts of nitrogen on freshwater life. Attribute band limits are from the NPS-FM consultation draft (2019)

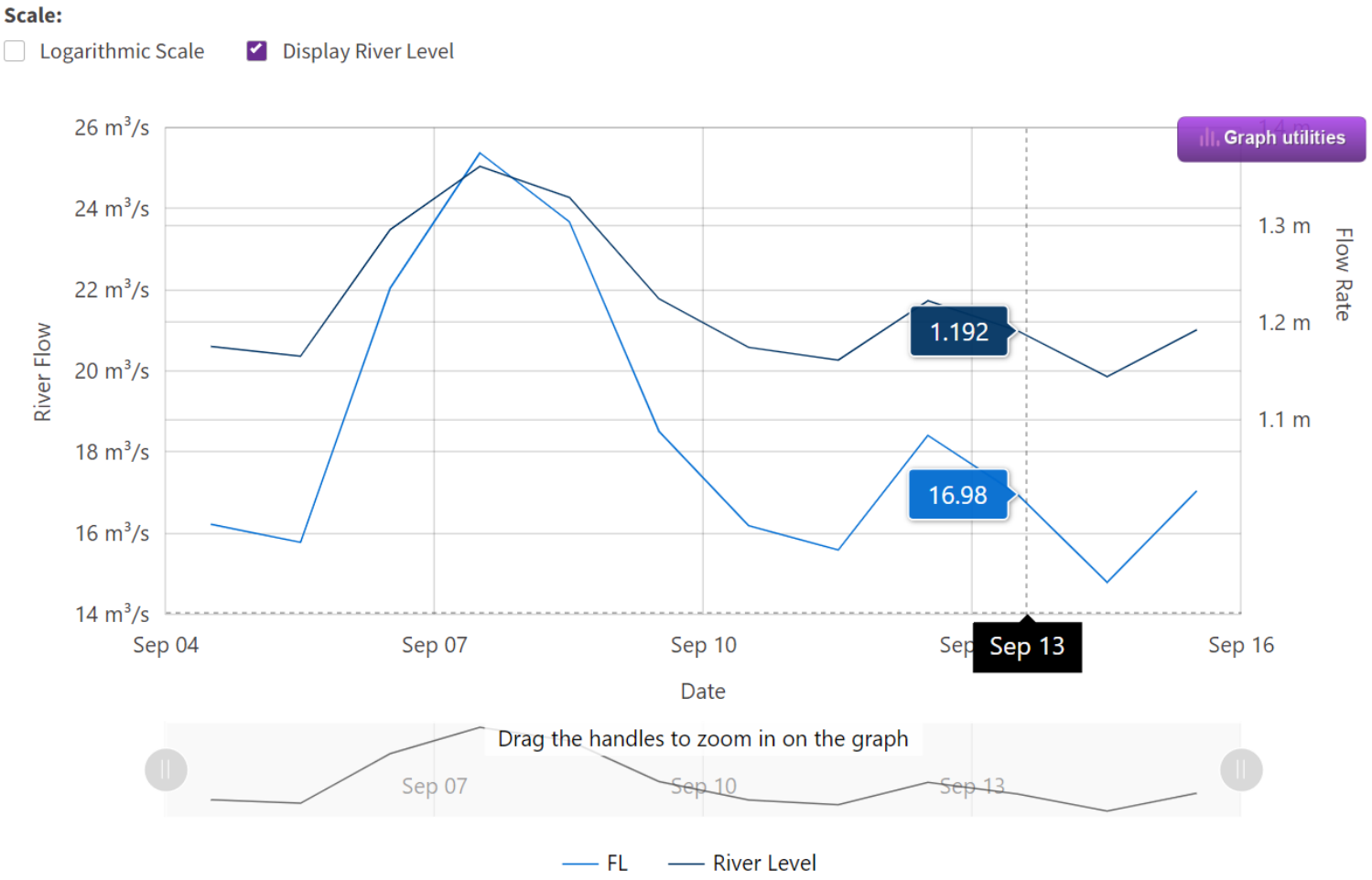
Attribute Band		
A	Ecosystem Health	Human Contact
B		
C		
D		
E	Human Contact only	

Mokau River – All sites in all sub-catchments

Summary of water quality collected at 16 sites located across the Mokau River catchment sampled on 12th or 13th of September.

E. coli: 63% of all sites had low concentrations (≤220), 25% had slightly elevated concentrations (between 270 - 380) and 13% of sites had elevated concentrations (> 550). **Nitrate and Ammonia:** 100% of sites had concentrations below toxicity levels (Nitrate ≤ 0.79 mg/L; Ammonia ≤ 0.09). However, 50% of sites had Dissolved Inorganic Nitrogen (DIN) concentrations over 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 DIN regularly exceed 0.5 mg/L.
Dissolved reactive phosphorus: 94% of sites had low concentrations (≤ 0.009 mg/L) and one site (16%) had an elevated concentration (0.011 mg/L).
Water clarity: 56% of sites had good water clarity (A or B band) and 44% 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.

Prepared by Freshwater Ecologist Merrin Whatley (PhD)



Data source: Waikato Regional Council [envirohub website] for environmental data.

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