

Sample Name:		Wanaka Spring	Wanaka Spring	Wanaka Spring	Water Quality Descriptors			Overview of 3 years data.
Date		Friday, January 12, 2018	Wednesday, April 24, 2024	Friday, August 2025, 2025				Note: 5 year time gap between 1st and 2nd Sample Stable Parameters E. coli: consistently <1 MPN/100mL → no sign of microbiological contamination. Turbidity: flat at 0.06 NTU → excellent clarity, no indication of sediment or particulate changes. pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Time		2.45pm	100pm	100pm	Aesthetic values	Water Standards for New Zealand) Regulations	Comment	
Routine Water + E.coli profile Kit						The Maximum Acceptable Values (MAV)		
Escherichia coli Turbidity	MPN / 100mL	< 1	< 1	< 1		Escherichia coli - Less than one in 100 mL of sample. ≤5	Compliant, safe	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Turbidity	NTU	0.06	0.06	0.06	<5		Very low, excellent clarity	
pH	pH Units	8	8.1	8	7.0 - 8.5	pH 7.0-8.5. Should be between 7 and 8. Most waters with a low pH have a high plumbosolvency. Waters with a high pH: have a soapy taste and feel. A pH less than 8 is preferable for effective disinfection with chlorine	Stable, slightly alkaline	
Total Alkalinity	g/m3 as CaCO3	91	93	91		Higher alkalinity is good to have in our drinking water because it keeps the water safe for us to drink. The amount of Alkalinity that should be in our water is 20-200 mg/L for typical drinking water.	Consistent, moderate	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Free Carbon Dioxide	g/m3 at 25°C	1.7	1.5	1.8			Very low, stable	
Total Hardness	g/m3 as CaCO3	92	89	98	<200	Hardness (total) [(Ca + Mg) as CaCO3 - 200 mg/L. High hardness causes scale deposition, scum formation. Low hardness (<100) may be more corrosive. 100-300	Moderate hardness, slight rise in S3	
Electrical Conductivity (EC)	mS/m	19.1	19.9	19.9		Very Low	Stable	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Electrical Conductivity (EC)	µS/cm	191	199	199	<250 µS/cm	Very Low	Stable	
Approx Total Dissolved Salts	g/m3	128	133	133	<1000	Total dissolved solids 1000 mg/L. Taste may become unacceptable from 600-1200 mg/L	Very low TDS, stable	
Total Arsenic	g/m3	<0.0011	<0.0011	<0.0011		0.01 MAV	Below detection	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Total Boron	g/m3	< 0.0053	< 0.0053	< 0.0053		Boron 1.4 MAV	Below detection	
Total Calcium	g/m3	33	32	36			Slight rise in S3	
Total Copper	g/m3	< 0.0053	< 0.0053	< 0.0053	<1	Copper 2 MAV	Below detection	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Total Iron	g/m3	< 0.021	< 0.021	< 0.022	<0.3	Iron 0.2 mg/L Staining of laundry and sanitary ware	Below detection	
Total Lead	g/m3	<0.00011	<0.00011	<0.00012		MAV 0.01	Below detection	
Total Manganese	g/m3	< 0.0053	< 0.0053	< 0.0054	≤ 0.04 (Staining) ≤ 0.10 (Taste)	Manganese 0.04 mg/L Staining of laundry. 0.10 Taste threshold (MAV 0.4 mg/L)	Below detection	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Total Magnesium	g/m3	2.3	2.3	2.4			Stable	
Total Potassium	g/m3	1.16	1.16	1.2			Stable	
Total Sodium	g/m3	3	3	3	<200	Sodium <200 mg/L. Taste threshold	Stable	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Total Zinc	g/m3	<0.00011	<0.00011	<0.00011	<1.5	Zinc 1.5 mg/L. Taste threshold. May affect appearance from 3 mg/L	Below detection	
Chloride	g/m3	1	0.9	1.2	<250	Chloride 250 mg/L. Taste, and causes corrosion	Stable (Very low)	
Nitrate-N	g/m3	0.65	0.67	1.04		Acceptable Value (MAV) of 50 milligrams per litre (mg/l) for nitrate, which is equivalent to 11.3 mg/l nitrate-nitrogen - Nitrite, long-term 0.2 mg/L. Expressed in mg/L as NO3. PMAV (long term)	Slight rise, still very low	pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Sulphate	g/m3			3.3	<250		Only measured in S3, very low	
The standards set limits for the concentration of determinands in drinking water. The Maximum Acceptable Values (MAVs) for any determinand must not be exceeded at any time.						Water Standards for New Zealand) Regulations		pH: very stable at ~8.0-8.1 → alkaline but within the normal range. Major ions (Na, K, Mg, Cl, etc.): essentially unchanged. Trace metals (As, Pb, Cu, Zn, Fe, Mn): all below detection limits across all samples. Slight Variations Alkalinity: 91 → 93 → 91 g/m³ CaCO₃ → small, natural variation only. Free CO₂: 1.7 → 1.5 → 1.8 g/m³ → fluctuating slightly but stable. Hardness: 92 → 89 → 98 g/m³ CaCO₃ → minor rise at the third test, still in "moderately hard" range. Electrical Conductivity & TDS: 191-199 µS/cm (19.1-19.9 mS/m) with TDS 128-133 g/m³ → stable, very minor increase from sample 1 to 2, then flat. Calcium: 33 → 32 → 36 g/m³ → small increase in third sample, aligned with hardness rise. Nitrate-N: 0.65 → 0.67 → 1.04 g/m³ → upward trend, but still low and well within drinking water guidelines. Sulphate: not reported in first two, present at 3.3 g/m³ in third. Likely just a one-off analysis, but low. Overall Trend Summary Water quality is very stable: no meaningful changes in microbiological safety, turbidity, or chemistry. Slight increase in hardness and nitrate in the third sample, but both remain well within safe limits. All trace metals remain below detection → no concern for heavy metal contamination. Overall profile: consistent, clean, moderately hard, slightly alkaline water with very low nutrient loading.
Aesthetic Values are specified in the publication Aesthetic Values for Drinking Water Notice 2022 issued by the Water Services Regulator (Taumata Arowai). These values set minimum or maximum levels for substances and characteristics that affect consumer acceptability of drinking water, such as appearance, taste, or odour.						2022', published under the authority of the New Zealand Government-2022. Copies of this publication are available from:		
Note: the units g/m³ are equivalent to mg/L and ppm.						https://www.legislation.govt.nz/regulation/public/2022/0168/latest/whole.html		