REGIONAL DISTRICT OF NANAIMO

San Pareil #1 Raw Well Water Analysis
1090 Plummer Road

CDWG=Canadian Drinking Water Guidelines
OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
AO= Asthetic Objective

Green font indicates a value flagged for operational considerations.
Orange font indicates non-compliance with the Aesthetic Objective in the Canadian Drinking Water Guidelines (CDWG)
Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG

	Units	CDWG		October 12 2016	September 20 2017	October 29 2018	October 3 2019	October 20 2020	October 14 2021	October 13 2022	October 12 2023
Miscellaneous Inorganics											
Fluoride	mg/L	1.5	MAC	0.015	0.023	0.02	<0.05	<0.05	<0.05	<0.05	<0.05
Alkalinity (total as CaCO)	mg/L			25.5	23.8	24.6	22	26	28	23	24
Anions											
Dissolved Sulphate	mg/L	500	AO	2	1.7	1.6	1.7	2.6	2.5	2	2.2
Dissolved Chloride	mg/L	250	AO	15	13	16	15	8.3	6.8	16	18
Nitrite	mg/L	1	MAC	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Miscellaneous											
Apparent Colour	Colour Unit			<5.0	5	5	5	10	<5	<5	
Nutrients											
Total Ammonia	mg/L			0.081	<0.020	<0.020	0.084	<0.015	<0.015	<0.015	<0.015
Physical Properties											
Conductivity	µS/cm			102	91.4	106	100	80	74	110	110
pH	pH	7.0:10.5	OG	7.31	7.59	7.42	**6.93**	7.38	7.13	**6.87**	**6.61**
TDS	mg/L	500	AO	64	54	72	66	58	68	72	62
Turbidity	NTU			0.16	0.14	0.13	<0.10	<0.10	<0.1	<.1	<0.1
Microbiological Parameters											
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	0	0	0	0	0
Total Coliforms	MPN/100mL	<1	MAC	**6.4**	**14**	<1.0	**4.2**	0	0	0	0
Calculated Parameters											
Total Hardness (CaCO)	mg/L			32.2	29.9	35.1	30.8	26.2	24.3	35.8	37.1
Nitrate	mg/L	10	MAC	0.149	0.090	0.090	0.114	0.104	0.087	0.092	0.18
Elements											
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	<0.000002	<0.000002	<0.000019	<0.0000019	<0.0000019	<0.0000019
Total Metals											
Total Aluminum	mg/L	0.1	OG	0.0058	0.008	0.008	0.0043	0.0084	0.0078	0.0046	0.0031
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Barium	mg/L	1	MAC	0.0055	0.005	0.0052	0.005	0.004	0.0036	0.0053	0.0057
Total Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.00634	0.00185	0.0106	0.00065	0.00083	0.00329	0.00094	0.00088
Total Iron	mg/L	0.3	AO	0.0065	0.0104	0.0289	0.0083	0.0148	0.0082	0.0085	<0.005
Total Lead	mg/L	0.01	MAC	0.00092	0.00065	0.00129	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Manganese	mg/L	0.02 0.12	AO MAC	<0.001	<0.001	0.0036	<0.001	0.0017	<0.001	<0.001	<0.001
Total Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			3.02	3.48	2.81	2.5	2.92	2.88	2.77	2.69
Total Silver	mg/L			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.000002	<0.00002
Total Strontium	mg/L			0.0489	0.042	0.0476	0.0418	0.0345	0.0341	0.0475	0.0494
Total Thallium	mg/L			<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	<0.005	<0.005	0.0072	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zirconium	mg/L			<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			10.4	9.75	11.5	10.1	8.44	7.94	11.7	12.1
Total Magnesium	mg/L			1.54	1.35	1.56	1.38	1.26	1.08	1.6	1.67
Total Potassium	mg/L			0.213	0.194	0.207	0.192	0.198	0.168	0.202	0.232
Total Sodium	mg/L	200	AO	5.82	4.64	4.99	5.1	4.55	3.94	5.46	6.19
Total Sulphur	mg/L			<3.0	<3.0	<3.0	<3	<3	<3	<3	<3
UVT	%T/cm			97.0	>97.7	97.4	95.3	93.7	95.0	97.0	98.0

Notes below about pH (2015) from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/summary-table-EN-2020-02-11.pdf

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.

REGIONAL DISTRICT OF NANAIMO

San Pareil #4 Raw Well Water Analysis
1090 Plummer Road

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OG= Operational Guidance Value
MAC=Maximum Acceptable Concentration
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Red font indicates non-compliance with the Maximum Acceptable Concentration (MAC) in the CDWG

	Units	CDWG		October 12 2016	September 20 2017	October 29 2018	October 17 2019	October 20 2020	October 14 2021	October 13 2022	October 12 2023
Miscellaneous Inorganics											
Fluoride	mg/L	1.5	MAC	0.015	0.026	0.021	<0.05	<0.05	<0.05	<0.05	<0.05
Alkalinity (total as CaCO)	mg/L			22.1	24	22.4	21	26	27	23	27
Anions											
Dissolved Sulphate	mg/L	500	AO	1.8	1.7	1.4	1.5	2.3	3.7	2	2.1
Dissolved Chloride	mg/L	250	AO	16	12	14	14	7.8	8.4	14	18
Nitrite	mg/L	1	MAC	<0.0050	<0.0050	<0.0050	<0.005	<0.005	<0.005	<0.005	<0.005
Miscellaneous											
Apparent Colour	Colour Unit			5	5	5	5	10	<5	<5	<5
Nutrients											
Total Ammonia	mg/L			0.084	<0.020	<0.020	0.064	<0.015	<0.015	<0.015	<0.015
Physical Properties											
Conductivity	µS/cm			100	91.3	96	96	77	79	100	110
pH	pH	7.0:10.5	OG	7.21	7.66	7.39	**6.97**	7.36	7.22	**6.89**	**6.54**
TDS	mg/L	500	AO	70	66	58	70	62	62	74	60
Turbidity	NTU			0.17	0.25	0.25	<0.1	<0.1	0.1	<0.1	<0.1
Microbiological Parameters											
E.coli	MPN/100mL	<1	MAC	<1.0	<1.0	<1.0	0	0	0	0	0
Total Coliforms	MPN/100mL	<1	MAC	**5.3**	<1.0	<1.0	0	0	0	0	0
Calculated Parameters											
Total Hardness (CaCO)	mg/L			31.1	30.3	31.9	29	25.5	25.8	33.5	36.5
Nitrate	mg/L	10	MAC	0.229	0.111	0.113	0.135	0.1	0.108	0.099	0.187
Elements											
Total Mercury	mg/L	0.001	MAC	<0.00001	<0.00001	0.0000048	<0.000002	<0.0000019	<0.0000019	<0.0000019	<0.0000019
Total Metals											
Total Aluminum	mg/L	0.1	OG	0.0069	0.0067	0.0083	0.0045	0.008	0.0104	0.0057	0.0042
Total Antimony	mg/L	0.006	MAC	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005	<0.0005
Total Arsenic	mg/L	0.01	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Barium	mg/L	1	MAC	0.0034	0.0028	0.0032	0.0031	0.004	0.0029	0.0032	0.0037
Total Beryllium	mg/L			<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Bismuth	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Boron	mg/L	5	MAC	<0.050	<0.050	<0.050	<0.05	<0.05	<0.05	<0.05	<0.05
Total Cadmium	mg/L	0.005	MAC	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Chromium	mg/L	0.05	MAC	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Cobalt	mg/L			<0.0005	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Copper	mg/L	1	AO	0.00623	0.00153	0.0103	0.00085	0.00078	0.00353	0.00105	0.00098
Total Iron	mg/L	0.3	AO	0.0218	0.026	0.0206	0.0151	0.0101	0.0221	0.015	0.0135
Total Lead	mg/L	0.01	MAC	0.0007	0.00053	0.00071	<0.0002	<0.0002	<0.0002	<0.0002	<0.0002
Total Manganese	mg/L	0.02 0.12	AO MAC	0.0077	0.0092	0.0022	0.0024	0.0013	0.0033	0.0045	0.0046
Total Molybdenum	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Nickel	mg/L			<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Total Selenium	mg/L	0.05	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Silicon	mg/L			3.37	4.05	3.31	2.96	2.87	3.56	3.55	3.48
Total Silver	mg/L			<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002	<0.00002
Total Strontium	mg/L			0.047	0.0414	0.0436	0.0382	0.0346	0.0366	0.0438	0.0477
Total Thallium	mg/L			<0.00005	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001	<0.00001
Total Tin	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Titanium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Uranium	mg/L	0.02	MAC	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Vanadium	mg/L			<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zinc	mg/L	5	AO	<0.005	<0.005	0.0097	<0.005	<0.005	<0.005	<0.005	<0.005
Total Zirconium	mg/L			<0.0005	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001
Total Calcium	mg/L			9.83	9.73	10.5	9.37	8.24	8.31	10.7	11.7
Total Magnesium	mg/L			1.6	1.47	1.41	1.36	1.21	1.23	1.61	1.73
Total Potassium	mg/L			0.339	0.285	0.31	0.287	0.175	0.306	0.314	0.324
Total Sodium	mg/L	200	AO	5.54	4.7	4.55	4.91	4.55	4.18	4.58	5.63
Total Sulphur	mg/L			<3.0	<3.0	<3.0	<3.0	<3	<3	<3	<3
UVT	%T/cm			97.2	97.5	97.4	95.1	93.4	95.0	97.0	98.0

Notes below about pH (2015) from https://www.canada.ca/content/dam/hc-sc/migration/hc-sc/ewh-semt/alt_formats/pdf/pubs/water-eau/sum_guide-res_recom/summary-table-EN-2020-02-11.pdf

Type	Parameter (published, reaffirmed)	MAC (mg/L)	Other value (mg/L)	Common sources of parameter in water	Health considerations	Comments
Treatment-related	pH (2015)	None	7.0-10.5	Not applicable	Not applicable	The control of pH is important to maximize treatment effectiveness, control corrosion and reduce leaching from distribution system and plumbing components.