

Cedar Lane Water Service

2024 Annual Report



INTRODUCTION

This report provides a summary of the Cedar Lane Water Service for 2024. It includes a description of the service, summary of the water supply, demand, and production, drinking water quality, operations highlights, capital project updates and financial report.

SERVICE DESCRIPTION

The Cedar Lane Water Utility is a rural residential community located on Salt Spring Island. The service was created in 1970 and became a CRD service in 2007. The Cedar Lane Water Utility (Figure 1) is comprised of 37 parcels of land connected to the system with 39 single-family equivalents (SFE) as the use on some parcels represents more than one dwelling.

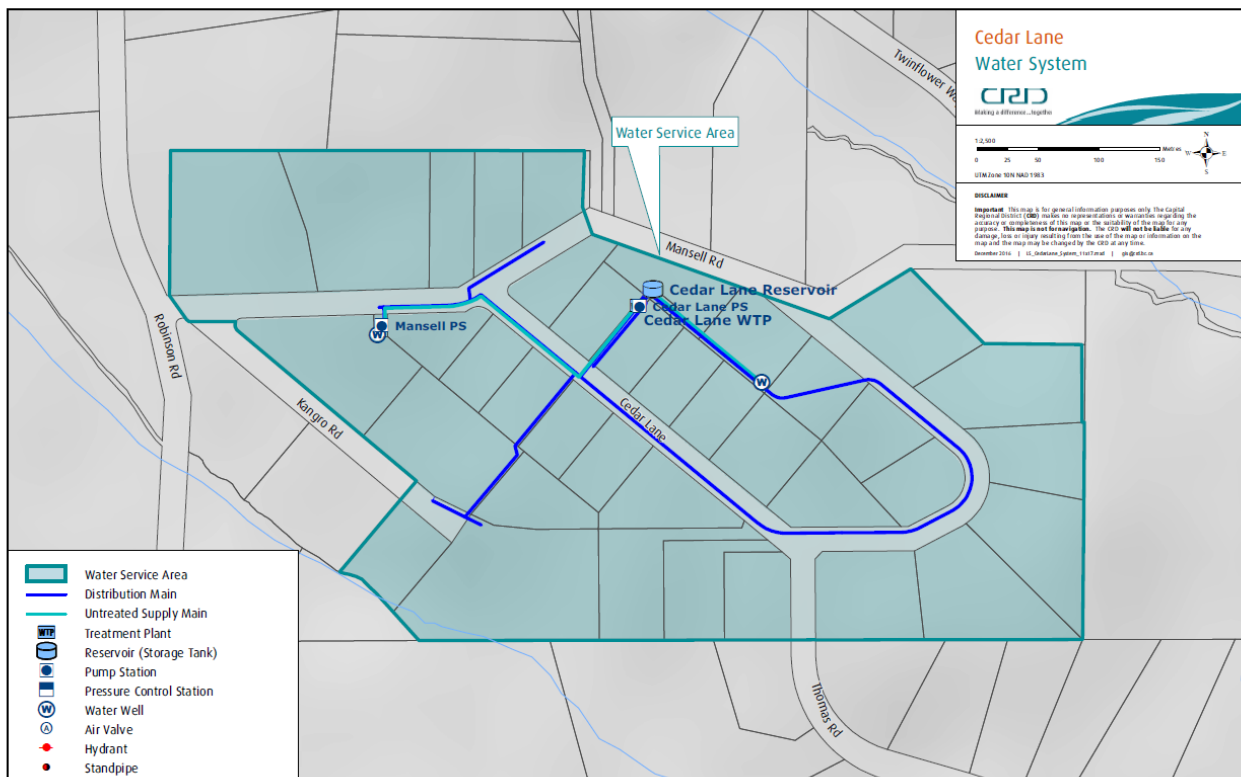


Figure 1: Cedar Lane Water Service

The Cedar Lane water system is primarily comprised of:

- two ground water source wells (#1 and #5)
- a water treatment plant (WTP) that provides primary disinfection with ultraviolet

- (UV) radiation and residual disinfection using sodium hypochlorite
- 1 water reservoir – 136 m³ (30,000 lg)
- 1,260 metres of water distribution pipe
- fire hydrant, standpipes, and gate valves
- water service connections complete with water meters

WATER PRODUCTION AND DEMAND

Referring to Figure 2, 3,872 cubic meters (m³) of water was extracted (water production) from two groundwater wells in 2024; a 13% increase from the previous year and a 14% increase in the five-year rolling average. Water demand (customer water billing) for the service totalled 3,549 m³ of water; a 9% increase from the previous year and a 9% increase in the five-year rolling average.

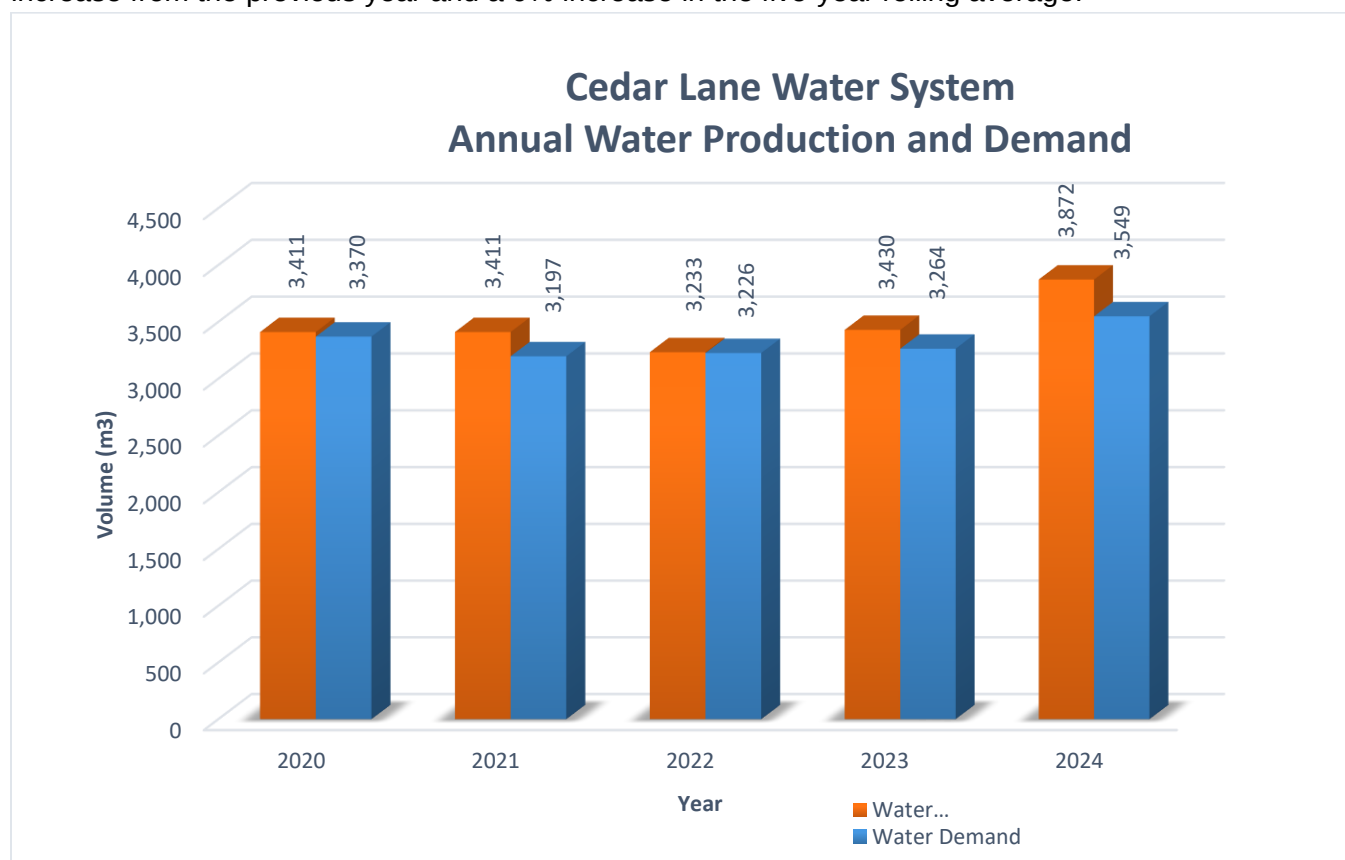


Figure 2: Cedar Lane Water Service Annual Water Production and Demand

Water production by month for the past five years is shown in Figure 3. Water consumption, for most water systems, is greatest during the summer months. Water usage for Cedar Lane is fairly consistent throughout the year likely the result of conservative indoor and outdoor water use.

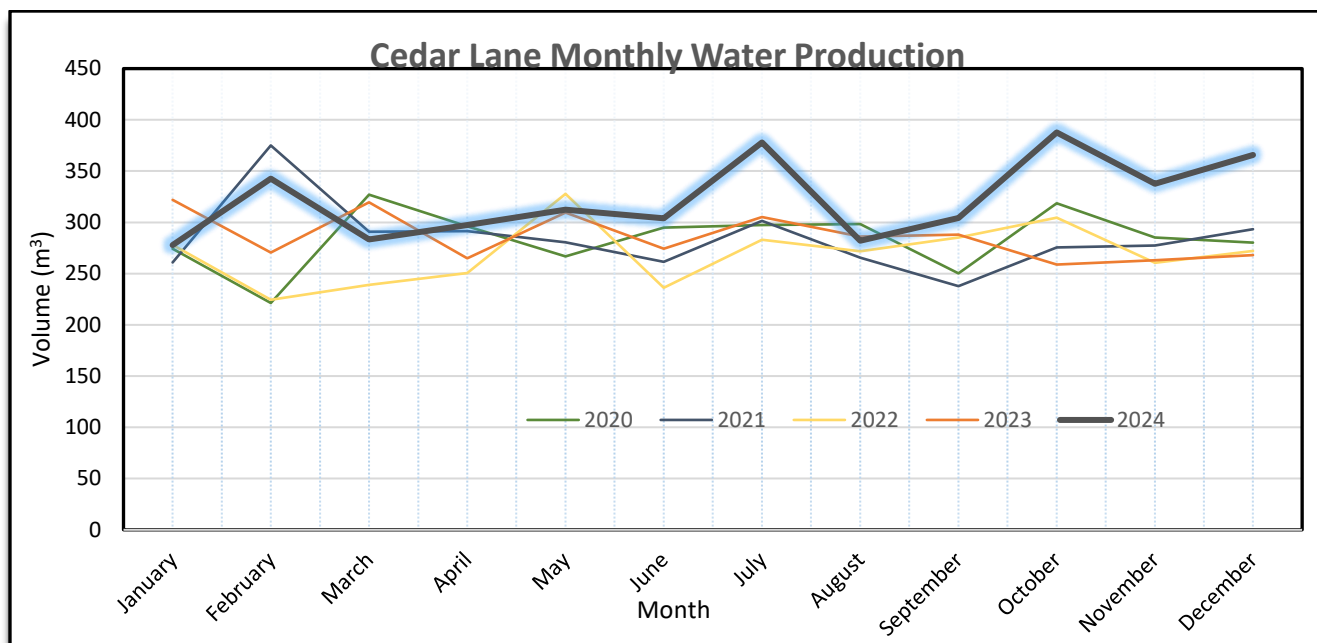


Figure 3: Cedar Lane Water Service Monthly Water Production

The Cedar Lane Water System is fully metered, and water meters are read quarterly. Water meter information enables water production and consumption to be compared in order to estimate leakage losses in the distribution system. The difference between water produced and water demand (total metered consumption) is called non-revenue water and includes distribution leaks, meter error, and unmetered uses such as fire hydrant usage, distribution system maintenance and process water for the treatment plant. Non-revenue water for 2024 was 9% which is a 4% increase from 2023 although this difference can be directly attributed to specific events that have since been resolved.

WATER QUALITY

The analytical results (biological, chemical and physical parameters) of water samples collected in 2024 from the Cedar Lane Water System indicated that the water was biologically safe to drink. Naturally high manganese concentrations in the well water remain insufficiently treated and regularly exceeded the aesthetic limits in most parts of the system, and frequently, in certain parts of the system, the health limits established in the Guidelines for Canadian Drinking Water Quality (GCDWQ). Particularly, areas immediately downstream from the treatment plant are vulnerable to manganese concentrations in exceedance of the health limit. Iron and manganese precipitates have been a significant nuisance problem in parts of the Cedar Lanewater system and have caused discolouration of the drinking water. In order to meet the newly introduced health limit for manganese concentrations in drinking water, the existing treatment system must be upgraded, or a new water source must be found. A public advisory for manganese exceedance in the drinking water has been in place since July 2021.

Both wells ran very low during the dry summer and fall months. Well #1 exhibited elevated turbidity throughout most of the year whereas Well #5 usually produced water with turbidity levels of 1 NTU or less.

Typical Cedar Lane Water System drinking water quality characteristics for 2024 are summarized as follows:

- Source water from both wells was free of *E. coli* bacteria. One sample in October collected from Well #1 recorded a very low concentration of total coliform bacteria.
- Well #1 registered periods with elevated turbidity throughout the year. The highest raw water turbidity levels were recorded in December (5.3 NTU) and July (3.9 NTU).
- Source water is characterized as hard (134.5 mg/L CaCO₃).
- Both wells exhibited elevated iron and especially high manganese concentrations throughout the year.
- Treated water was bacteriologically safe to drink. No sample tested positive for *E.coli* or total coliform bacteria.
- In March and August, turbidity exceedances in the distribution system at the end of Mansell Road were recorded, indicating an accumulation of particles in the far ends of the piping system. This should be addressed by regular flushing in strategic locations.
- Free chlorine residual concentrations were acceptable and within the desired range (i.e., 0.21 – 3.57 mg/L)
- Disinfection by-products: annual average trihalomethanes (THM) were well below (35.5 µg/L) the GCDWQ limit of 100 µg/L, haloacetic acids (HAA) were not tested in 2024. Typically, when THM concentrations are low, HAA concentrations are also low.
- Metals were typically below all limits except for elevated manganese concentrations. The median annual manganese concentration of 90.3 µg/L in the treated water indicates consistent exceedance of the aesthetic objective in the GCDWQ (20 µg/L) and also frequent exceedances of the health limit 120 µg/L. The health concerning exceedances occurred mostly in parts of the system that are immediately downstream of the treatment plant. A public health advisory has been in place since July 2021. CRD staff are working on mitigation strategies for this issue.
- Between July and September, the water temperature was in exceedance of the aesthetic objective (15°C) in the distribution system.

Table 1 and 2 below provide a summary of the 2024 raw and treated water test results.

Water Quality data collected from this drinking water system can be reviewed on the CRD website: <https://www.crd.bc.ca/about/data/drinking-water-quality-reports>

OPERATIONAL HIGHLIGHTS

The following is a summary of the major operational issues that were addressed during the 2024 operating period:

- Well Pump 1 was replaced
- Pump and Well house exterior painting and door maintenance
- Service line repair 146 Mansel Rd
- Kangro Rd leak response on private property

CAPITAL IMPROVEMENTS

The following is a summary of the major capital improvements, including year-end spending for 2024:

Back-up Power Design (CE.735.4503): The work scope includes a study to provide back-up power to the service.

Project	Spending
Budget	\$5,000
Project Management	(\$0)
Balance Remaining	\$5,000

Manganese Treatment System Design (CE.780.4501): This work scope includes the preliminary and detailed design for a manganese treatment system for the service.

Project	Spending
Budget	\$156,500
Project Management	(\$28,215)
Study and Design	(\$52,097)
Balance Remaining	\$76,188

Public Engagement for Manganese Treatment Project (CE.780.4502): Prepare and conduct public engagement presentations to inform residents of the project to seek their approval.

Project	Spending
Budget	\$5,000
Project Management	(\$0)
Balance Remaining	\$5,000

Referendum or AAP for Manganese Treatment Project (CE.780.4503): Undertake a referendum or AAP to borrow funds to carry out the construction of the manganese treatment project.

Project	Spending
Budget	\$5,000
Project Management	(\$0)
Balance Remaining	\$5,000

2024 FINANCIAL REPORT

Please refer to the attached 2024 Statement of Operations and Reserve Balances.

Revenue includes parcel taxes (Transfers from Government), fixed user fees (User Charges), water sales (Sale-Water), interest on savings (Interest earnings), transfers from the Operating Reserve Fund, and miscellaneous revenue such as late payment charges (Other revenue).

Expenses include all costs of providing the service. General Government Services includes budget preparation, financial management, utility billing and risk management services. CRD Labour and Operating Costs include CRD staff time as well as the costs of equipment, tools, and vehicles. Debt servicing costs are interest and principal payments on long-term debt. Other Expenses include all other costs to administer and operate the water system, including insurance, water testing, and electricity.

The difference between Revenue and Expenses is reported as Net revenue (expenses). Any transfers to or from capital or reserve funds for the service (Transfers to own funds) are deducted from this amount and it is then added to any surplus or deficit carry forward from the prior year, yielding an Accumulated Surplus (or deficit). In alignment with Local Government Act Section 374 (11), any deficit must be carried forward and included in the next year's financial plan.

WATER SYSTEM PROBLEMS - WHO TO CALL:

To report any event or to leave a message regarding the Cedar Lane water system, call either:

CRD water system emergency call centre:	1-855-822-4426 (toll free) 1-250-474-9630 (toll)
CRD water system general enquiries (toll free):	1-800-663-4425

When phoning with respect to an emergency, please specify to the operator, the service area in which the emergency has occurred.

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Concurrence:	Ted Robbins, B. Sc., C. Tech., Chief Administrative Officer

Appendix A: [2024 Statement of Operations and Reserve Balances](#)

For questions related to this Annual Report please email saltspring@crd.bc.ca

Table 1: 2024 Summary of Raw Water Test Results, Cedar Lane Water System

PARAMETER		2024 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2014 - 2023 ANALYTICAL RESULTS			
Parameter	Units of	Annual	Samples	Range		≤ = Less than or equal to	Median	Samples	Range	
Name	Measure	Median	Analyzed	Minimum	Maximum		Median	Analyzed	Minimum	Maximum
ND means Not Detected by analytical method used										
Physical Parameters/Biological										
Colour, True	TCU	Last analyzed in 2013				≤ 15 AO	Last analyzed in 2013			
Hardness as CaCO ₃	mg/L	134.5	8	109	173	No Guideline Required	131	74	98.1	188
Conductivity @ 25C	uS/cm	471	6	462	570					
pH	pH Units	Last analyzed in 2023				7.0-10.5 AO	7.4	52	6.1	8.6
Total Organic Carbon	mg/L	1.03	8	0.64	1.5	Guideline Archived	1.1	56	< 0.5	2.35
Turbidity	NTU	0.85	24	0.1	5.3	1.0 NTU	0.55	165	0.05	23
Water Temperature	Degrees C	13	59	10	16	≤ 15 AO	12.5	324	6	17
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	24	< 1	1	0 MAC	< 1	236	<1	291
<i>E. coli</i>	CFU/100 mL	< 1	24	< 1	< 1	0 MAC	< 1	235	<1	19
Hetero. Plate Count, 35C (2 day)	CFU/1 mL	Last tested in 2014					28	1	28	28
Parasites										
<i>Cryptosporidium</i> , Total oocysts	oocysts/100 L	Last tested in 2014				Zero detection desirable	<1	1	<1	<1
<i>Giardia</i> , Total cysts	cysts/100 L	Last tested in 2014				Zero detection desirable	<1	1	<1	<1
Metals										
Aluminum	ug/L as Al	< 3	8	< 3	4	2900 MAC / 100 OG	< 3	74	< 3	96
Antimony	ug/L as Sb	< 0.5	8	< 0.5	< 0.5	6 MAC	< 0.5	74	< 0.5	< 0.5
Arsenic	ug/L as As	0.325	8	0.19	0.63	10 MAC	0.33	74	0.14	1.64
Barium	ug/L as Ba	7.9	8	4.6	11.8	1000 MAC	9.85	74	4.4	15
Beryllium	ug/L as Be	< 0.1	8	< 0.1	< 0.1		< 0.1	74	< 0.1	< 3
Bismuth	ug/L as Bi	< 1	8	< 1	< 1		< 1	72	< 1	< 1
Boron	ug/L as B	55	8	< 50	85	5000 MAC	56.5	74	< 50	494
Cadmium	ug/L as Cd	< 0.01	8	< 0.01	< 0.01	7 MAC	< 0.01	74	< 0.01	< 0.1
Calcium	mg/L as Ca	41.2	8	32.6	53.4	No Guideline Required	39.65	74	29.1	58.3
Chromium	ug/L as Cr	< 1	8	< 1	< 1	50 MAC	< 1	74	< 1	< 10
Cobalt	ug/L as Co	< 0.2	8	< 0.2	< 0.2		< 0.2	74	< 0.2	< 20
Copper	ug/L as Cu	1.98	8	0.82	3.44	2000 MAC / ≤ 1000 AO	2.125	74	0.46	21.5
Iron	ug/L as Fe	141.5	8	26.2	696	≤ 100 AO	119.5	74	11.4	4170
Lead	ug/L as Pb	0.515	8	< 0.2	0.96	5 MAC	0.49	74	< 0.2	9.29
Lithium	ug/L as Li	17.2	8	15.2	19.2		17.7	47	14.5	21.4
Magnesium	mg/L as Mg	7.635	8	6.56	9.64	No Guideline Required	7.94	74	6.15	10.8
Manganese	ug/L as Mn	376	8	330	444	120 MAC / ≤ 20 AO	395.5	84	4.1	1140
Molybdenum	ug/L as Mo	< 1	8	< 1	< 1		< 1	74	< 1	< 20
Nickel	ug/L as Ni	1.05	8	< 1	6.6		< 1	74	< 1	< 50
Potassium	mg/L as K	0.258	8	0.201	0.282		0.2515	74	< 0.03	0.358
Selenium	ug/L as Se	< 0.1	8	< 0.1	< 0.1	50 MAC	< 0.1	74	< 0.1	< 0.5
Silicon	mg/L as Si	9180	8	8240	10600		9680	74	7610	11700
Silver	ug/L as Ag	< 0.02	8	< 0.02	< 0.02	No Guideline Required	< 0.02	74	< 0.02	< 10
Sodium	mg/L as Na	51.45	8	41.7	58.3	≤ 200 AO	53.2	74	37.6	78.9
Strontium	ug/L as Sr	421.5	8	334	552	7000 MAC	401.5	74	328	578
Sulphur	mg/L as S	5.75	8	4.2	6.4		6.35	72	3.7	8.8
Tin	ug/L as Sn	< 5	8	< 5	< 5		< 5	74	< 5	< 20
Titanium	ug/L as Ti	< 5	8	< 5	< 5		< 5	74	< 5	< 10
Thallium	ug as Tl	< 0.01	8	< 0.01	< 0.01		< 0.01	72	< 0.01	< 0.05
Uranium	ug/L as U	< 0.1	8	< 0.1	< 0.1	20 MAC	< 0.1	72	< 0.1	0.14
Vanadium	ug/L as V	< 5	8	< 5	< 5		< 5	74	< 5	< 10
Zinc	ug/L as Zn	5.15	8	< 5	18.3	≤ 5000 AO	9.05	74	< 5	211
Zirconium	ug/L as Zr	< 0.1	8	< 0.1	< 0.1		< 0.1	72	< 0.1	< 0.5

Table 2: 2024 Summary of Treated Water Test Results, Cedar Lane Water System

PARAMETER		2024 ANALYTICAL RESULTS				CANADIAN GUIDELINES	2014 - 2023 ANALYTICAL RESULTS			
Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum Maximum		≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum Maximum	
ND means Not Detected by analytical method used										
Physical Parameters										
Alkalinity, Total	mg/L	Last analyzed in 2012					211	1	211	211
Carbon, Total Organic Colour, True	mg/L as C TCU	1.03	4	0.77	1.3		1.1	32	0.66	2.52
Conductivity @ 25C	uS/cm	Last analyzed in 2009				≤ 15 AO	Last analyzed in 2009			
Hardness as CaCO ₃	mg/L	Last analyzed in 2009					Last analyzed in 2009			
pH	pH units	144	16	140	148	No Guideline Required	142	99	62.9	161
Turbidity	NTU	7.3	1	7.3	7.3	7.0-10.5 AO	7.62	33	6.4	8.1
Water Temperature	Degress C	0.525	16	0.28	1.3	1 MAC and ≤ 5 AO	0.41	135	0.1	110
		11	128	4.5	22	≤ 15 AO	12	2343	4	23
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	47	< 1	< 1	0 MAC	< 1	349	<1	120
E. coli	CFU/100 mL	< 1	47	< 1	< 1	0 MAC	< 1	350	<1	< 1
Hetero. Plate Count 7 day	CFU/1 mL	Not tested in 2024				No Guideline Required	< 10	44	< 10	2600
Disinfectants										
Disinfectants										
Chlorine, Free Residual	mg/L as Cl ₂	0.68	163	0.21	3.57	No Guideline Required	0.64	2364	0.18	2.2
Chlorine, Total Residual	mg/L as Cl ₂	0.84	8	0.59	1.2	No Guideline Required	0.75	1905	0.22	2.2
Disinfection By-Products										
Trihalomethanes (THMs)										
Bromodichloromethane	ug/L	12.5	4	9.4	16		10.45	4	8.3	11
Bromoform	ug/L	1.05	4	< 1	1.6		< 1	35	< 0.1	1.1
Chloroform	ug/L	14.5	4	12	18		13.5	4	11	16
Chlorodibromomethane	ug/L	6.95	4	5.1	11		4.6	4	3.8	6.7
Total Trihalomethanes	ug/L	35	4	27	45	100 MAC	30.5	34	20	185
Haloacetic Acids (HAA)										
HAA5	ug/L	Not tested in 2024				80 MAC	6.025	6	0.958	7.4
Metals										
Aluminum	ug/L as Al	< 3	16	< 3	15.3	2900 MAC / 100 OG	< 3	99	< 3	119
Antimony	ug/L as Sb	< 0.5	16	< 0.5	< 0.5	6 MAC	< 0.5	99	< 0.5	< 0.5
Arsenic	ug/L as As	0.305	16	0.25	0.4	10 MAC	0.28	99	0.19	9.4
Barium	ug/L as Ba	7.2	16	5	14.3	1000 MAC	6.5	99	2.9	29
Beryllium	ug/L as Be	< 0.1	16	< 0.1	< 0.1		< 0.1	99	< 0.1	< 3
Bismuth	ug/L as Bi	< 1	16	< 1	< 1		< 1	98	< 1	< 1
Boron	ug/L as B	52	16	< 50	64	5000 MAC	53	99	< 50	448
Cadmium	ug/L as Cd	< 0.01	16	< 0.01	< 0.01	5 MAC	< 0.01	99	< 0.01	< 0.1
Calcium	mg/L as Ca	44.4	16	43.4	47.6	No Guideline Required	44.5	99	20.7	51.5
Chromium	ug/L as Cr	< 1	16	< 1	< 1	50 MAC	< 1	99	< 1	13
Cobalt	ug/L as Co	< 0.2	16	< 0.2	< 0.2		< 0.2	99	< 0.2	< 20
Copper	ug/L as Cu	15.35	16	6.13	85.8	2000 MAC / ≤ 1000 AO	16	99	5.83	48.8
Iron	ug/L as Fe	36.05	16	< 5	58.4	≤ 100 AO	24.9	99	< 5	24800
Lead	ug/L as Pb	0.445	16	< 0.2	2.32	5 MAC	0.52	99	< 0.2	5.04
Lithium	ug/L as Li	17.1	16	15.3	18.2		17.15	70	9.4	19.7
Potassium	ug/L as K	0.252	16	0.239	0.284		0.261	99	0.235	0.41
Magnesium	mg/L as Mg	7.67	16	6.5	8.3	No Guideline Required	7.62	99	2.71	8.89
Manganese	ug/L as Mn	90.3	16	2	266	120 MAC / ≤ 20 AO	79.4	119	< 1	1790
Molybdenum	ug/L as Mo	< 1	16	< 1	< 1		< 1	99	< 1	< 20
Nickel	ug/L as Ni	< 1	16	< 1	< 1		< 1	99	< 1	< 50
Selenium	ug/L as Se	< 0.1	16	< 0.1	< 0.1	50 MAC	< 0.1	99	< 0.1	< 0.5
Silicon	ug/L as Si	9410	16	8850	9750		9730	99	5370	12000
Silver	ug/L as Ag	< 0.02	16	< 0.02	< 0.02	No Guideline Required	< 0.02	99	< 0.02	< 10
Sodium	mg/L as Na	51	16	49.7	56.2	≤ 200 AO	52.9	99	25.9	68
Strontium	ug/L as Sr	434	16	402	469	7000 MAC	424	99	196	497
Sulphur	mg/L as S	5.8	16	4.7	6.1		6.1	98	4.8	8.9
Tin	ug/L as Sn	< 5	16	< 5	< 5		< 5	99	< 5	< 20
Titanium	ug/L as Ti	< 5	16	< 5	< 5		< 5	99	< 5	< 10
Thallium	ug/L as Tl	< 0.01	16	< 0.01	< 0.01		< 0.01	98	< 0.01	< 0.05
Uranium	ug/L as U	< 0.1	16	< 0.1	< 0.1	20 MAC	< 0.1	98	< 0.1	< 0.1
Vanadium	ug/L as V	< 5	16	< 5	< 5		< 5	99	< 5	< 10
Zinc	ug/L as Zn	12.05	16	6.7	102	≤ 5000 AO	15.7	99	< 5	207
Zirconium	ug/L as Zr	< 0.1	16	< 0.1	< 0.1		< 0.1	98	< 0.1	< 5