

Cedars of Tuam Water Service

2024 Annual Report



INTRODUCTION

This report provides a summary of the Cedars of Tuam 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 Cedars of Tuam Water Utility is a rural residential community located on Salt Spring Island. The service was created in 1970 and became a CRD service in 2002. The Cedars of Tuam Water Utility (Figure 1) is comprised of 16 parcels of land 17 single-family equivalent connections.



Figure 1: Cedars of Tuam Water Service

The Cedars of Tuam water system is primarily comprised of:

- One ground water source well
- a water treatment plant (WTP) that has a vortex sand separator and provides disinfection using sodium hypochlorite;
- 1 water reservoir – 46 m^3 (10,000 Ig);
- 650 meters of water distribution pipe;

- standpipes and gate valves;
- water service connections complete with water meters.

WATER PRODUCTION AND DEMAND

Referring to Figure 2, the amount of water extracted (water production) from the groundwater well prior to 2024 is unknown. This is the result of inaccurate water meter readings due to sand intrusion of the groundwater source. Sand from the well was creating a false read. As of late 2023, a new water meter was installed that is not influenced by the sand. Following the meter replacement the production flow to the reservoir was measured as 2,671 m³ through 2024.

Water demand (customer water billing) for the service totaled 1,164 cubic meters (m³) of water; a 12% decrease from the previous year and a 17% decrease from the 5-year rolling average.

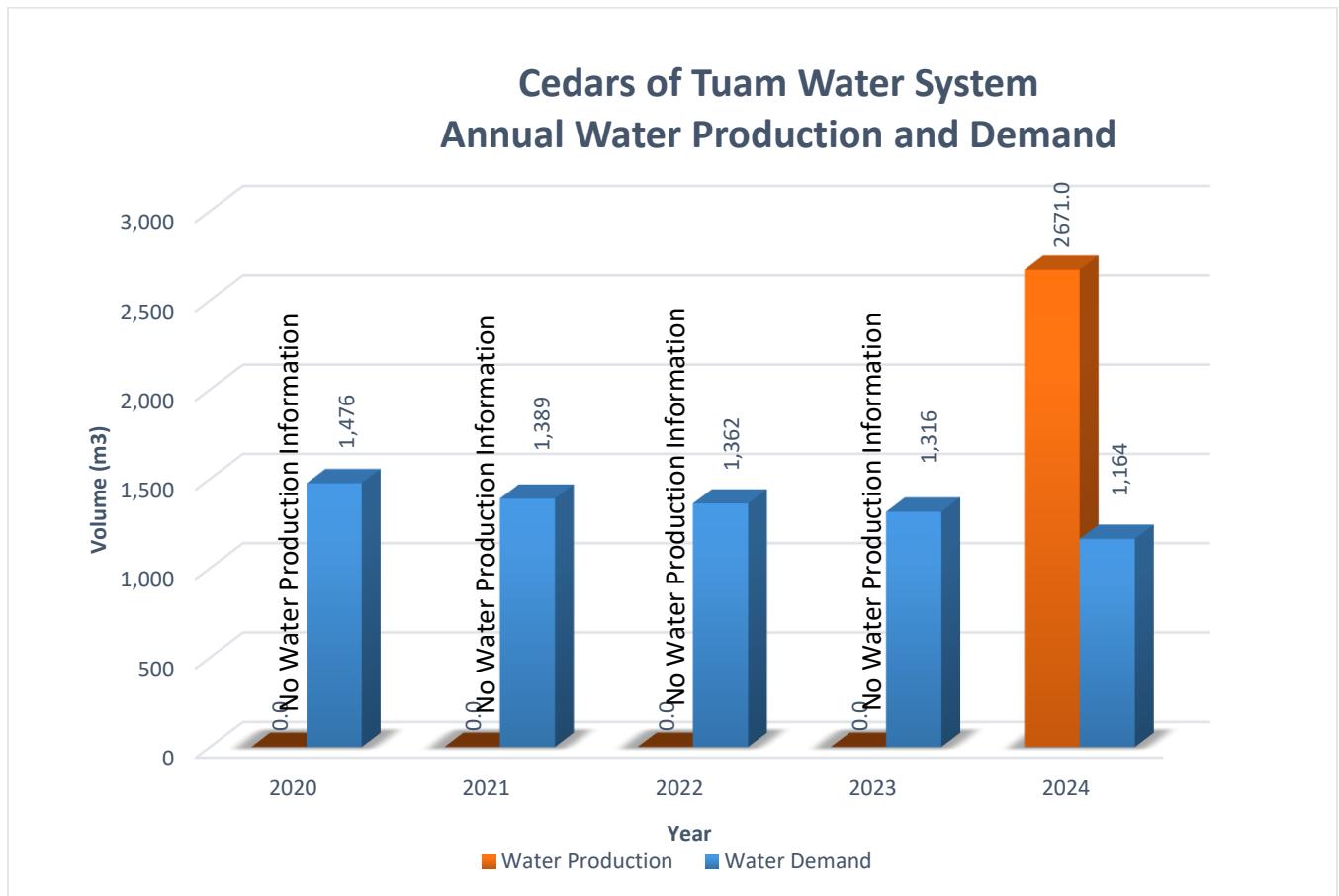


Figure 2: Cedars of Tuam Water Service Annual Water Production and Demand

The Cedars of Tuam Water System is fully metered, and water meters are read quarterly. Water meter information enables water production and consumption to be compared to estimated 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 standpipe usage, distribution system maintenance and process water for the treatment plant. Non-revenue water for 2024 was 1,507 m³ which represents 56% of the total water produced. Most of this volume lost was attributed to several leaks in the distribution system which are detailed below under “Operational Highlights”. The CRD will continue to monitor the non-revenue water by comparing quarterly meter reads to water production over periods of time.

WATER QUALITY

The analytical results (biological, chemical and physical parameters) of water samples collected in 2024 from the Cedars of Tuam Water System indicated that the drinking water was safe to drink and within Guidelines for Canadian Drinking Water Quality (GCDWQ) limits, including disinfection by-products. The treated water temperature exceeded the aesthetic objective during July and August. No indicator bacteria were found in the treated water in 2024.

Typical Cedars of Tuam Water System drinking water quality characteristics for 2024 are summarized as follows:

- Source water from the well was free of *E.coli* and total coliform bacteria throughout the year.
- The raw water turbidity was above 1 NTU during August, September and December but well below this threshold during the rest of the year.
- Manganese concentrations were low throughout the year as usual, but iron concentrations in the raw water spiked in August exceeding the aesthetic objective of 300 µg/L (921 µg/L). The timing of this iron spike was unusual compared to previous years, but it did not result in an exceedance in the treated water.
- pH of the raw water seemed to be well below the guideline range with a median of 4.4. The treated water after disinfection exhibited a much higher pH (7.25) which was also consistent with historic records. It is assumed the low pH readings in the raw water were due to testing errors.
- Treated water was bacteriologically safe to drink all year in 2024, no indicator bacteria were found in any sample.
- The treated water turbidity leaving the treatment plant was consistently below 1 NTU during the year. This is an improvement compared to previous years.
- Disinfection by-product concentrations were well below the GCDWQ limits. Total organic carbon concentrations were very low throughout 2024.
- The median annual free chlorine concentration in the system was an acceptable 0.63 mg/L.

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 reporting period:

- 186 Roland Rd service line repair
- 227 Roland Rd service line repair
- 221 Roland Rd service line repair
- Approximately 8 m³ was used for annual water system flushing
- Approximately 11 m³ was trucked in for emergency drought response due to water supply issues in October

Note: all repairs were completed between January and July 2024

CAPITAL IMPROVEMENTS

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

Safe Work Procedures (CE.699.4502): The work scope includes reviewing and developing safe work procedures for operational and maintenance tasks. Ongoing as capital improvements necessitate.

Project	Spending
Budget	\$3,000
Project Management	(\$108)
Contract	(\$558)
Supplies/Materials	(\$101)
Balance Remaining	\$2,233

Water Systems Upgrade (CE.792.1601): The scope includes replacing a chlorinator, level transducer and flow meter.

Project	Spending
Budget	\$36,000
Project Management	(\$809)
Installation	(\$5,193)
Supplies - Instrumentation	(\$10,988)
Balance Remaining	\$19,010

Public Engagement for Future Projects (CE.802.8301): Inform and engage the public within the service area on upcoming projects that will require borrowing for funding.

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 includes 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 includes 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 includes all other costs to administer and operate the water system, including insurance, supplies, 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 Cedars of Tuam 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, Cedars of Tuam 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										
Hardness as CaCO ₃	mg/L	66	4	59.7 - 70.9	No Guideline Required	62.65	28	54.5 - 89.8		
Turbidity	NTU	0.3	12	0.15 - 6.4	1.0 NTU	0.475	76	< 0.14 - 28		
pH	pH Units	4.4	2	2.2 - 6.6	7.0-10.5 AO	6.8	24	6.3 - 7.4		
Carbon, Total Organic	mg/L	0.965	2	0.63 - 1.3	Guideline Archived	0.745	16	0.4 - 1.09		
Water Temperature	Degrees C	11	37	9 - 13	≤ 15 AO	11	110	1.47 - 16		
Physical Parameters/Biological										
Coliform, Total	CFU/100 mL	< 1	12	< 1 - < 1	0 MAC	< 1	133	0 - 56		
<i>E. coli</i>	CFU/100 mL	< 1	12	< 1 - < 1	0 MAC	< 1	133	0 - 1		
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2024				200	41	< 10 - 3630		
Microbial Parameters										
Indicator Bacteria										
Coliform, Total	CFU/100 mL	< 1	12	< 1 - < 1	0 MAC	< 1	133	0 - 56		
<i>E. coli</i>	CFU/100 mL	< 1	12	< 1 - < 1	0 MAC	< 1	133	0 - 1		
Hetero. Plate Count, 7 day	CFU/1 mL	Not tested in 2024				200	41	< 10 - 3630		
Parasites										
Cryptosporidium, Total oocysts	oocysts/100 L	Last tested in 2014				Zero detection desirable	<1	1 - <1	3630	
Giardia, Total cysts	cysts/100 L	Last tested in 2014				Zero detection desirable	<1	1 - <1	3631	
Metals										
Aluminum	ug/L as Al	10.6	4	3.4 - 24.9	2900 MAC / 100 OG	< 10	29	< 3 - 142		
Antimony	ug/L as Sb	< 0.5	4	< 0.5 - < 0.5	6 MAC	< 0.5	29	< 0.5 - 0.72		
Arsenic	ug/L as As	< 0.1	4	< 0.1 - < 0.1	10 MAC	< 0.1	29	< 0.1 - < 0.5		
Barium	ug/L as Ba	4.75	4	4.1 - 5.8	1000 MAC	5.1	29	3.8 - 11.8		
Beryllium	ug/L as Be	< 0.1	4	< 0.1 - < 0.1		< 0.1	29	< 0.1 - < 3		
Bismuth	ug/L as Bi	< 1	4	< 1 - < 1		< 1	27	< 1 - < 1		
Boron	ug/L as B	81.5	4	59 - 180	5000 MAC	65	29	< 50 - 260		
Cadmium	ug/L as Cd	< 0.01	4	< 0.01 - < 0.01	7 MAC	< 0.01	29	< 0.01 - < 0.1		
Calcium	mg/L as Ca	20.3	4	18 - 21.5	No Guideline Required	19.3	29	15.8 - 29.9		
Chromium	ug/L as Cr	< 1	4	< 1 - 1	50 MAC	< 1	29	< 1 - < 10		
Cobalt	ug/L as Co	< 0.2	4	< 0.2 - < 0.2		< 0.2	29	< 0.2 - < 20		
Copper	ug/L as Cu	4.31	4	1.94 - 8.8	2000 MAC / ≤ 1000 AO	4.34	29	2.31 - 24		
Iron	ug/L as Fe	31.05	4	9.9 - 921	≤ 100 AO	40.15	30	10.9 - 679		
Lead	ug/L as Pb	0.235	4	< 0.2 - 0.44	5 MAC	< 0.2	29	< 0.2 - 1.9		
Lithium	ug/L as Li	< 2	4	< 2 - < 2		< 2	17	< 2 - < 5		
Magnesium	mg/L as Mg	3.845	4	3.33 - 4.18	No Guideline Required	3.65	29	2.96 - 5.07		
Manganese	ug/L as Mn	1.35	4	< 1 - 5.7	120 MAC / ≤ 20 AO	1.8	29	< 1 - 14		
Molybdenum	ug/L as Mo	< 1	4	< 1 - < 1		< 1	29	< 1 - < 20		
Nickel	ug/L as Ni	< 1	4	< 1 - < 1		< 1	29	< 1 - < 50		
Potassium	mg/L as K	0.8355	4	0.707 - 0.869		0.826	29	0.043 - 0.965		
Selenium	ug/L as Se	< 0.1	4	< 0.1 - < 0.1	50 MAC	< 0.1	29	< 0.1 - < 0.5		
Silicon	ug/L as Si	7400	4	6800 - 7970		7040	29	2240 - 8960		
Silver	ug/L as Ag	< 0.02	4	< 0.02 - < 0.02	No Guideline Required	< 0.02	29	< 0.02 - < 10		
Sodium	mg/L as Na	17.6	4	15.6 - 20.5	≤ 200 AO	17.4	29	12.9 - 22.8		
Strontium	ug/L as Sr	81.55	4	64.9 - 84.9	7000 MAC	77.1	29	63 - 98.4		
Sulfur	mg/L as S	< 3	4	< 3 - < 3		< 3	27	< 3 - < 3		
Tin	ug/L as Sn	< 5	4	< 5 - < 5		< 5	29	< 5 - < 20		
Titanium	ug/L as Ti	< 5	4	< 5 - < 5		< 5	29	< 5 - < 10		
Thallium	ug/L as Tl	< 0.01	4	< 0.01 - < 0.01		< 0.01	27	< 0.01 - < 0.05		
Uranium	ug/L as U	< 0.1	4	< 0.1 - < 0.1	20 MAC	< 0.1	27	< 0.1 - < 0.1		
Vanadium	ug/L as V	< 5	4	< 5 - < 5		< 5	29	< 5 - < 10		
Zinc	ug/L as Zn	7.9	4	< 5 - 11.1	≤ 5000 AO	6.9	29	< 5 - 177		
Zirconium	ug/L as Zr	< 0.1	4	< 0.1 - < 0.1		< 0.1	27	< 0.1 - < 0.5		

Table 2: 2024 Summary of Treated Water Test Results, Cedars of Tuam Water System								2014-2023 ANALYTICAL RESULTS			
PARAMETER	2024 ANALYTICAL RESULTS				CANADIAN GUIDELINES		2014-2023 ANALYTICAL RESULTS				
	Parameter Name	Units of Measure	Annual Median	Samples Analyzed	Range Minimum	Range Maximum	≤ = Less than or equal to	Median	Samples Analyzed	Range Minimum	Range Maximum
ND means Not Detected by analytical method used											
Physical Parameters											
Hardness	mg/L as CaCO ₃	80.7	4	69.8	91.9			74.45	22	61.5	91.8
pH	pH units	7.25	4	6.8	7.6	AO pH 7.0 -10.5		7	67	6.5	8.1
Turbidity	NTU	0.3	48	0.15	0.65			0.405	266	0.05	17
Total Organic Carbon	mg/L	0.605	2	0.56	0.65			0.66	18	< 0.3	1.12
Water Temperature	deg C	10.5	152	5	17	≤ 15 AO		11	406	5	20
Microbial Parameters											
Indicator Bacteria											
Coliform, Total	CFU/100 mL	< 1	48	< 1	< 1	0 MAC		< 1	348	0	1
<i>E. coli</i>	CFU/100 mL	< 1	48	< 1	< 1	0 MAC		< 1	349	0	< 1
Hetero. Plate Count, 7 day	CFU/1 mL			Not tested in 2024		No Guideline Required		40	3	10	130
Disinfectants											
Disinfectants											
Chlorine, Free Residual	mg/L as Cl ₂	0.63	161	0.22	1.09			0.42	1045	0	2.4
Chlorine, Total Residual	mg/L as Cl ₂	0.82	5	0.8	1.08			0.52	684	0	2.5
Disinfection By-Products											
Disinfection Byproducts											
Bromodichloromethane	ug/L	8.4	2	6.8	9.9			9.1	3	7.4	13
Bromoform	ug/L	1.4	2	1.3	1.4			1.05	18	< 0.1	2
Chloroform	ug/L	9.2	2	6.4	12.0			9.8	3	7	16
Chlorodibromomethane	ug/L	6.5	2	6.2	6.8			6.4	3	6.1	7.5
Total Trihalomethanes	ug/L	25.5	2	21.0	30.0	100 MAC		19.5	18	8.73	49.9
Haloacetic Acids (HAA)											
HAA5	ug/L			Not tested in 2024		80 MAC		< 5	3	3.61	5.9
Metals											
Aluminum	ug/L as Al	5.2	4	5.1	5.9	2900 MAC / 100 OG		5.8	22	3.5	276
Antimony	ug/L as Sb	< 0.5	4	< 0.5	< 0.5	6 MAC		< 0.5	22	< 0.5	< 0.5
Arsenic	ug/L as As	0.105	4	< 0.1	0.18	10 MAC		< 0.1	22	< 0.1	0.62
Barium	ug/L as Ba	11.05	4	9	11.5	1000 MAC		10.55	22	4.5	15.8
Beryllium	ug/L as Be	< 0.1	4	< 0.1	< 0.1			< 0.1	22	< 0.1	< 0.1
Bismuth	ug/L as Bi	< 1	4	< 1	< 1			< 1	22	< 1	< 1
Boron	ug/L as B	115.5	4	69	165	5000 MAC		74.5	22	< 50	162
Cadmium	ug/L as Cd	< 0.01	4	< 0.01	< 0.01	7 MAC		< 0.01	22	< 0.01	0.011
Calcium	mg/L as Ca	28.55	4	22.7	34	No Guideline Required		26.05	22	18.5	35
Chromium	ug/L as Cr	1.35	4	< 1	3.2	50 MAC		1.1	22	< 1	2.7
Cobalt	ug/L as Co	< 0.2	4	< 0.2	< 0.2			< 0.2	22	< 0.2	0.67
Copper	ug/L as Cu	16.21	4	2.82	25.5	2000 MAC / ≤ 1000 AO		7.07	22	1.53	83.1
Iron	ug/L as Fe	38.3	4	14.2	72.2	≤ 100 AO		43.5	22	20.4	2440
Lead	ug/L as Pb	0.36	4	< 0.2	0.98	5 MAC		0.325	22	< 0.2	5.76
Lithium	ug/L as Li	< 2	4	< 2	< 2			< 2	13	< 2	< 2
Magnesium	mg/L as Mg	2.455	4	1.3	3.26	No Guideline Required		2.375	22	1.04	4.69
Manganese	ug/L as Mn	< 1	4	< 1	1.1	120 MAC / ≤ 20 AO		1.05	22	< 1	73
Molybdenum	ug/L as Mo	< 1	4	< 1	< 1			< 1	22	< 1	1
Nickel	ug/L as Ni	< 1	4	< 1	< 1			< 1	22	< 1	1.8
Potassium	mg/L as K	0.827	4	0.818	0.913			0.828	22	0.705	0.952
Selenium	ug/L as Se	< 0.1	4	< 0.1	< 0.1	50 MAC		< 0.1	22	< 0.1	< 0.1
Silicon	ug/L as Si	7585	4	6660	8160			7495	22	6170	8210
Silver	ug/L as Ag	< 0.02	4	< 0.02	< 0.02	No Guideline Required		< 0.02	22	< 0.02	< 0.02
Sodium	mg/L as Na	17.65	4	16.6	18.8	≤ 200 AO		18.15	22	15.1	20.7
Strontium	ug/L as Sr	82.3	4	68.5	98	7000 MAC		79.5	22	72.6	94.5
Sulphur	mg/L as S	< 3	4	< 3	< 3			< 3	22	< 3	< 3
Thallium	ug/L as Tl	< 0.01	4	< 0.01	< 0.01			< 0.01	22	< 0.01	< 0.01
Tin	ug/L as Sn	< 5	4	< 5	< 5			< 5	22	< 5	< 5
Titanium	ug/L as Ti	< 5	4	< 5	< 5			< 5	22	< 5	16
Uranium	ug/L as U	< 0.1	4	< 0.1	0.11	20 MAC		< 0.1	22	< 0.1	0.27
Vanadium	ug/L as V	< 5	4	< 5	< 5			< 5	22	< 5	6.4
Zinc	ug/L as Zn	10.5	4	7	24.4	≤ 5000 AO		11.15	22	< 5	268
Zirconium	ug/L	< 0.1	4	< 0.1	< 0.1			< 0.1	22	< 0.1	0.26