



## TOWN OF LAKE COWICHAN WATER TREATMENT PLANT



### January 2021 Operations Performance Report



## Permit to Operate

Operated water treatment plant under Operate Permit dated September 21, 2020.

## January Highlights

- Plant continued to achieve filtered water turbidity below 0.30 NTU. Four multi-day rain events occurred during the month. Heavy rains at the beginning of the month resulted in average raw water turbidity in excess of 3 NTU.
- Two raw water samples collected to determine natural background aluminum. In both instances, the natural background was above the 0.1 mg/L operating guideline.
- Coagulation system piping worked on January 7 to resolve issue with air-locking.
- Some minor modifications made to HMI on Jan 22.
- Stantec onsite January 22 to discuss outstanding deficiency repairs.

NTU. Increased range of HiHi tank set points to remove three nuisance alarms (hypo, poly, and coagulant). Will investigate about adding GUI interface for manually setting LEAD/LAG soda ash pumps, adding hopper vibrator control, setting intermittent mixer timings. Shaun Swarbrick (Stantec) on-site to look at outstanding minor deficiencies (heat pump, floc tank #1 pH probe, HVAC computer, electrical labelling, equipment labelling, and wall panel dent in rear of reservoir)

## Performance Standards

The Operating Permit for the Town of Lake Cowichan Water System dated October 21, 2020 stipulates the following performance requirements:

PARAMETER	GUIDELINE
Turbidity	≤ 0.3 NTU in ≥ 95% of samples
	Never to exceed 1 NTU
<i>Giardia and Cryptosporidium</i>	2.5-Log (99.7%) removal coagulation, flocculation and filtration
	1-Log (90%) inactivation via UV
Viruses	1-Log (90%) removal coagulation, flocculation and filtration
	3-Log (99.9%) inactivation via UV
Free Available Chlorine	Sufficient for CT <sub>CALC</sub> and not to exceed 4.0 mg/L
Trihalomethane (THM)	≤ 0.100 mg/L
Haloacetic Acid (HAA)	≤ 0.080 mg/L
Total Aluminum	≤ 0.1 mg/L
pH	Be between 7.0 and 10.5
Microcystin-LR	≤ 1.5 µg/L



## TOWN OF LAKE COWICHAN WATER TREATMENT REPORT

JANUARY 2021

### Monthly Testing Results

	Al- (mg/L)	Al- (mg/L)	TN (mg/L)	TP (µg/L)	Microcystin (µg/L)	THM (µg/L)	HAA (µg/L)
OG/MAC		0.10				100	80.0
Oct 27, 2020	-	0.049	0.047	4.70	0.06	20.4	10.71
Nov 24, 2020	-	0.157	-	-	-	-	-
Dec 08, 2020	-	0.264	0.380	2.47	-	-	-
Jan 05, 2021	0.190	0.196	0.175	3.70	0.00	27.3	10.9
Jan 19, 2021	0.104	0.129	-	-	-	-	-

#### Discussion on Aluminum

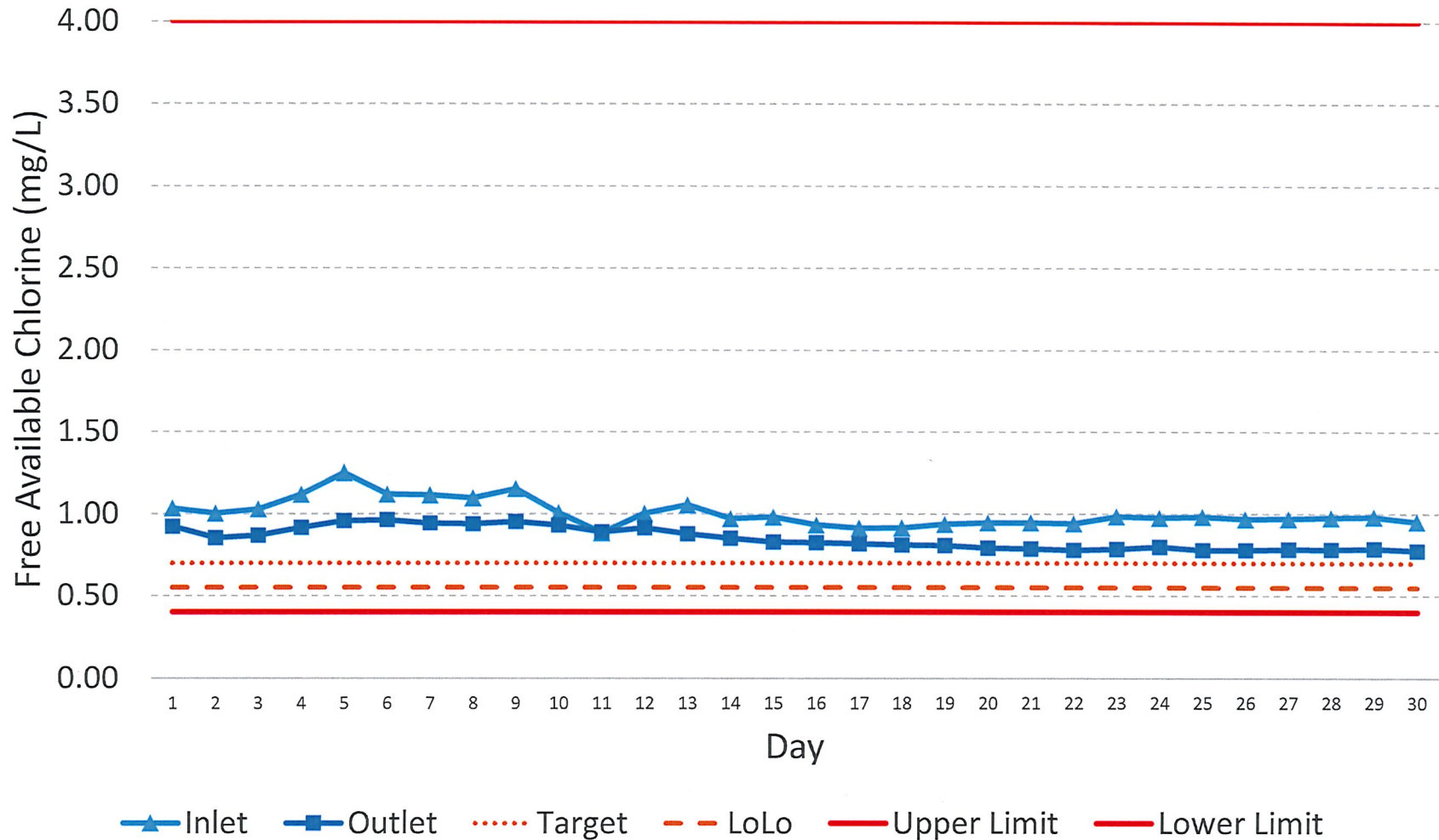
Aluminum results are increasing above the maximum operating guideline (OG) as stipulated in the Operating Permit. The coagulant used in the Town of Lake Cowichan water treatment plant is polyaluminum chloride (PAC) which uses aluminum as the positive charge in the coagulation process to achieve low turbidity.

Zeta potential tests are used to maintain coagulation dosages at the low end of the effective curve. For the month of January a zeta potential of -16 mV was targeted. Attempts for lower zeta potential result in higher turbidity.

Two raw water samples were taken January to determine the background concentration of aluminum from Cowichan Lake. As can be seen in the table above, the water plant is only adding between 0.006 to 0.025 mg/L of aluminum.

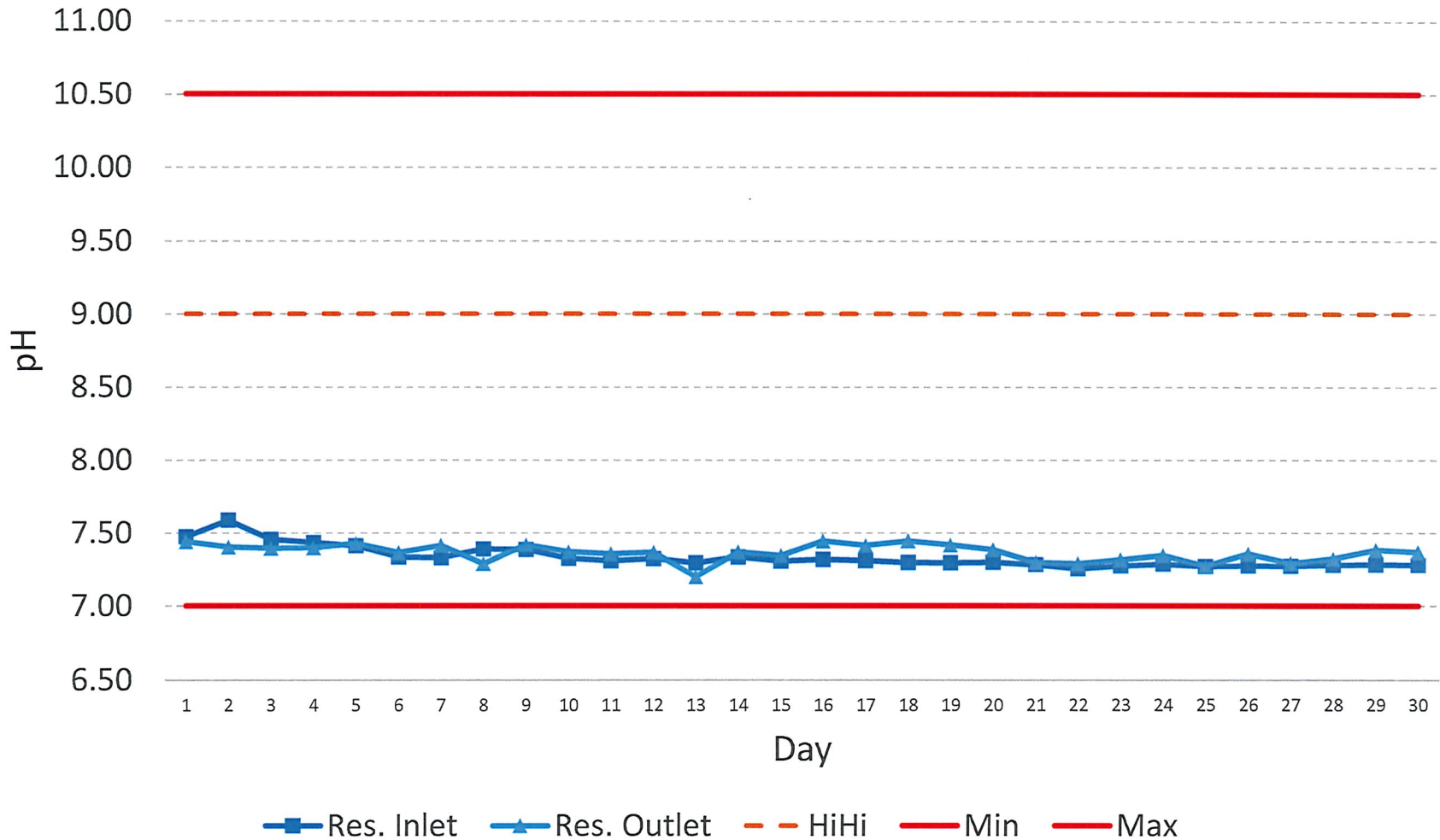
# Free Available Chlorine (Jan 2021)

Source: SCADA Daily Averages



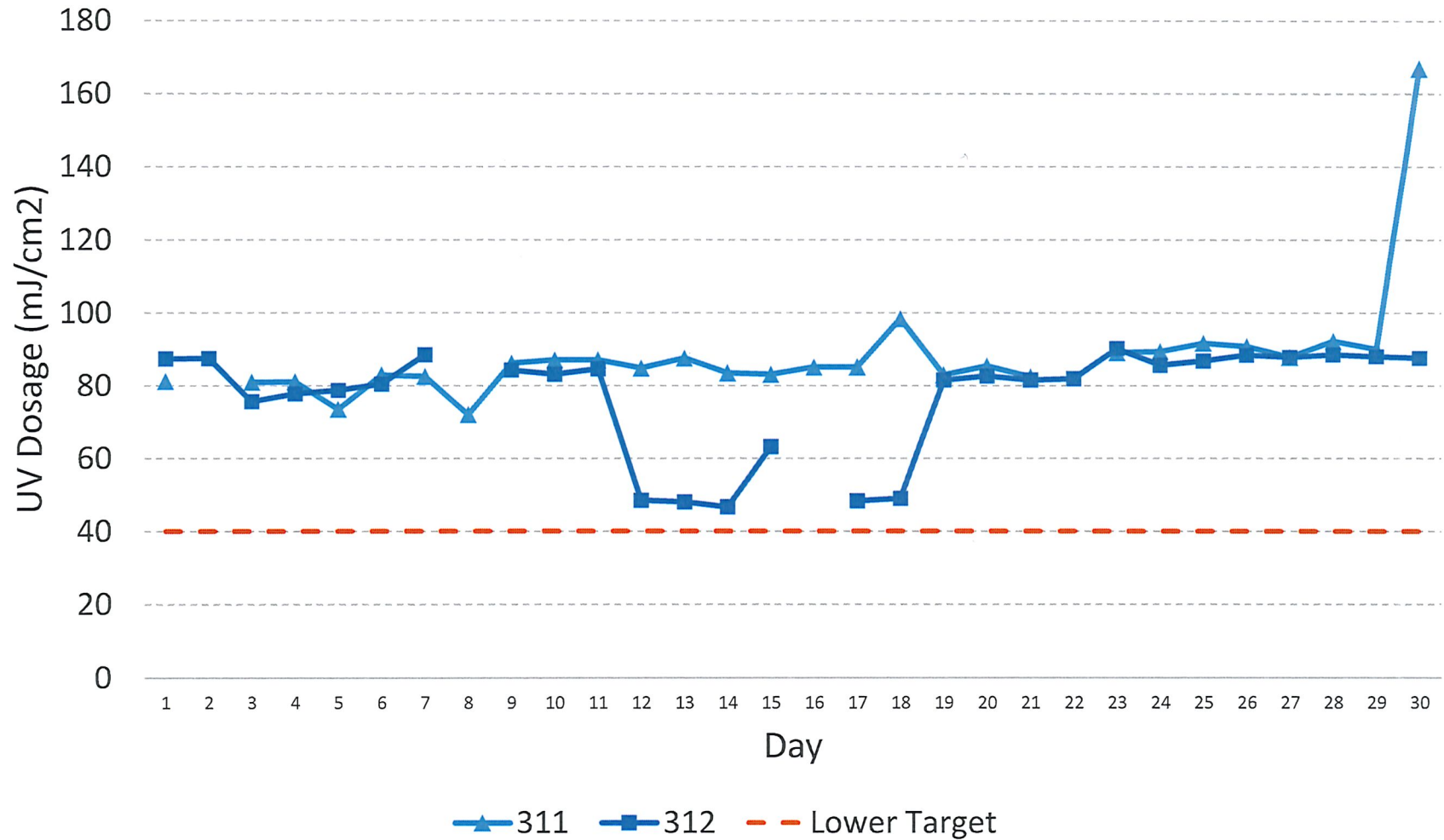
# Reservoir pH (Jan 2021)

Source: SCADA Daily Averages



# UV Dosage (Jan 2021)

Source: SCADA Daily Averages



# Turbidity (Jan 2021)

Source: SCADA Daily Averages

