WATER FACILITY EVALUATION REPORT
Health Protection

Premises Name **Lund Waterworks District**	Tel: (604) 414-0230 Fax:	
Premises Address Lund Waterworks District Lund, BC	Inspection Date March 21, 2025	Time Spent 4 hours
Operator (Person in Charge) Courtney Robertson 414-0230 or 483-1410		
Inspection Type Evaluation		

Observed Violations
There are no observed violations.

Section Details

Comments

Drinking Water System Annual Evaluation Report
Prepared by: Jack Davidson, Drinking Water Officer (DWO)
For: Lund Waterworks District (LWD)
Operator: Courtney Robertson

System Overview
LWD receives water from a licensed surface water intake (License #C044819, 1935) that draws water from Thulin Lake. Water levels are controlled by a concrete dam, from which the intake extends approximately 200 meters into the deepest part of the lake. Water then flows into the main pump station, located about 175 meters from the dam. At the pump station, water is disinfected with hypochlorite before being pumped into the distribution system. The distribution system includes three reservoirs and two booster stations, serving approximately 150 connections.

- **Reservoir 1:** Thulin Lake (82,000 litres – two tanks)
- **Reservoir 2:** Boar's Nest Rd (23,335 litres – one tank)
- **Reservoir 3:** Alannah Road (23,335 litres – three tanks)

LWD currently has a competent and attentive operator. However, due to aging infrastructure and outdated construction techniques, the system consistently experiences leaks and water loss issues. Elevated organic carbon levels in the source water are problematic because chlorine disinfection creates disinfection by-products. Currently, the system does not meet Canadian drinking water quality objectives.
In February 2018, the LWD board voted unanimously to dissolve the improvement district and informed the qathet Regional District (qRD) of their intent to convert to a qRD service area. However, under the **qRD Utility Acquisition Policy**, the regional district requires the water system to be upgraded to meet current provincial standards before assuming responsibility, to avoid taking on additional liability.

Chemical Assessment
The most recent full-spectrum water test on file, conducted in 2023, confirmed that all health-related chemical parameters (excluding THMs) meet the safe limits established by the **Guidelines for Canadian Drinking Water Quality (GCDWQ)**.
Total organic carbon (TOC) in the source water poses an ongoing challenge. TOC leads to elevated levels of chlorination by-products, including Trihalomethanes (THMs). LWD conducts annual THM tests, which routinely exceed the CDWQG maximum allowable concentration (MAC) of 0.1 mg/L.
Note: Full-spectrum water testing (including THM) is required every five years at minimum.

Bacteriological Assessment

Sampling Compliance:

- Met the frequency requirements of **Schedule B of the Drinking Water Protection Regulation (DWPR)** – seven monthly bacteriological samples required.
- Met the potability standards specified in **Schedule A** of the DWPR – 90% of samples must be free of total coliform, and no sample may have more than 10 total coliform bacteria.

Summary of 2024 Sampling Data:

- **Distribution System Sampling:** 91 samples collected from seven sites (~7.6 samples per month).
- **Raw Water Sampling:** 23 samples collected (raw water intake).
- **Total Coliform:** Detected in two samples (2.2%), with no consecutive detections.
- **E. coli:** Not detected in any sample (0%).

Summary of Issues and Activities

System Operator Performance:

- Demonstrates a thorough understanding of operations and maintenance.
- Works diligently to maintain system function and improve where possible.
- Collaborates effectively with VCH DWO, LWD Board, consultants, contractors, and residents.

Studies and Improvements:

- Over the years, LWD has completed multiple feasibility studies and planning initiatives to determine solutions for improving drinking water quality, quantity, and infrastructure. VCH recognizes that financial constraints experienced by small water systems pose a significant challenge. As a result, despite best efforts, progress has been slow.
- On March 22, 2024, it was announced that LWD qualified for an $11 million grant through the Green Infrastructure Stream of the Investing in Canada Infrastructure Program (ICIP). This funding aims to improve water quality by upgrading the four main components of the system: (1) supply, (2) pump stations and treatment, (3) storage, and (4) distribution.
- To utilize this grant, the qRD would require elector approval for borrowing up to $4,007,002 to fund the local portion of eligible project costs.
- Decisions on conversion remain on hold while LWD and the qRD explore options and proposals.

Treatment:

- The system **does not meet BC's 4,3,2,<1,0 treatment objectives** and currently relies only on chlorination (no secondary treatment barrier).
- High organic content in raw water limits treatment technology options.
- Maintaining chlorine residual is difficult due to high TOC levels, especially during storms and lake turnover.
- Filtration is required to improve disinfection effectiveness and reduce disinfection by-products (DBPs).
- UV disinfection is needed as a secondary treatment barrier to mitigate Giardia/Cryptosporidium risk.

Monitoring & Maintenance:

- **Operator Performance:** Prompt and diligent.
- **Sampling:** Frequency is excellent.
- **Routine Practices: **Regular system flushing, emergency response protocols and regular monitoring and recording of chlorine residual, flow rates, and turbidity.

Infrastructure Concerns:

- **Storage:** Thulin Lake reservoir requires replacement.
- **Distribution System:** Significant challenges with aging infrastructure and deteriorating underwater pipes.

Advisories and Notifications

- In 2024, Vancouver Coastal Health (VCH) imposed a long-term **Water Quality Advisory (WQA).**
- The advisory will remain in place until LWD resumes efforts to meet Canadian drinking water treatment objectives.

Requirements

1. **Good Sampling Practices:**
    - Submit at least seven distribution system samples and one raw water sample per month.
2. **Full Chemical Analysis:**
    - Conduct a full chemical analysis every five years at minimum.
3. **Communication:**
    - Keep VCH DWO informed of system maintenance and water quality changes.
    - Provide updates on grant status and conversion process.
    - Ensure proper communication of advisories to water users.
4. **Emergency Response Planning:**
    - Review/update the Emergency Response Plan by June 2025.
    - Template provided with the inspection report.
5. **Annual Report:**
    - Submit the 2024 annual report for water system users by June 2025.
    - Template and water sample range report provided with this inspection report.

Conclusion

LWD faces several challenges that require both immediate and long-term planning. The highest priority is achieving adequate treatment to ensure compliance with drinking water quality objectives. Additionally, addressing storage and distribution system deficiencies will improve resilience and reliability over the long term.

Your prompt attention to these matters is appreciated. For assistance or further clarification, please contact the Vancouver Coastal Health Drinking Water Officer.

Action Taken
☒ Information Exchanged

Hazard Rating For Your Facility:	☐ High	☒ Moderate	☐ Low

DWO
DWO Printed Name **Jack Davidson**