

Incorporating Climate Resilience for Municipal Infrastructure into the Updates of Existing Atlantic Canada Water and Wastewater Design Guidelines

Drinking Water Guidelines Update



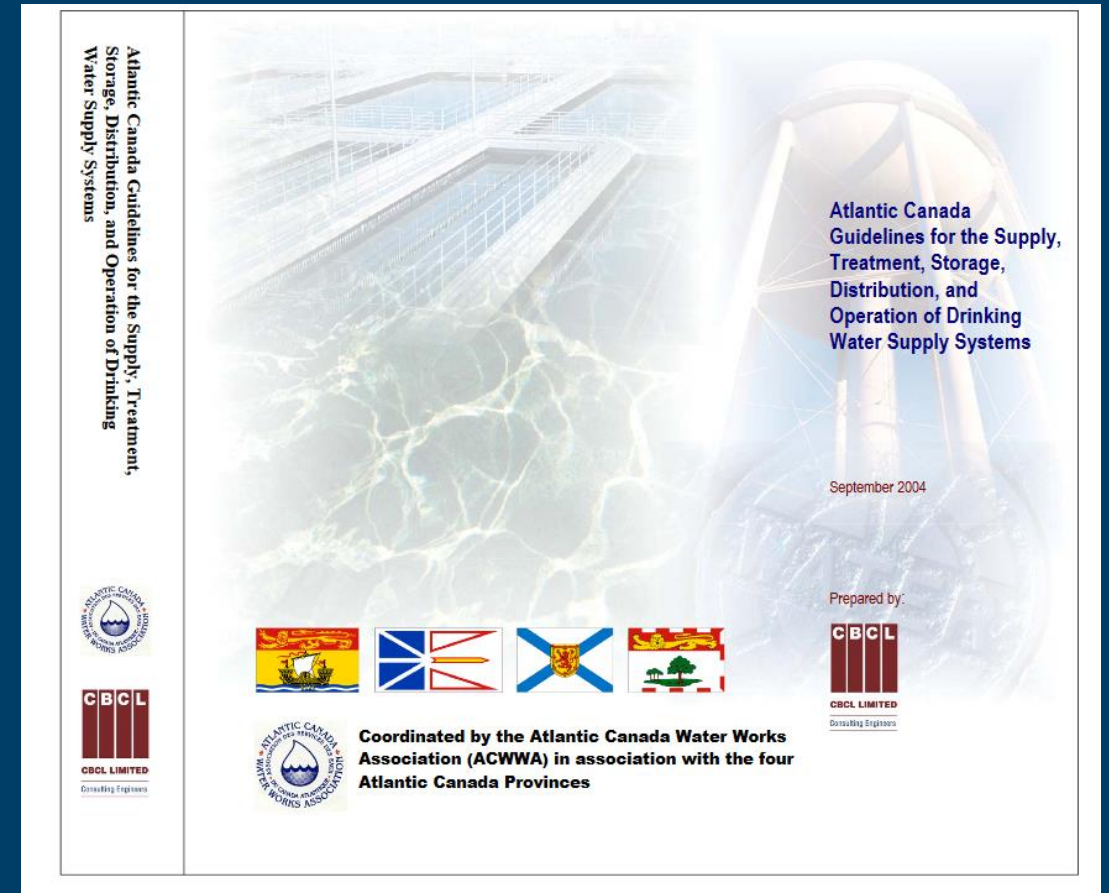
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Canada

Workshop No. 1

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- ▶ **Written in 2004 (Atlantic Canada)**
In use in all four Atlantic Canada provinces
- ▶ **In addition: NL has own Design Guidelines and Draft Treatment Standards**
- ▶ **NS has own Treatment Standards**



- ▶ Incorporate **Climate Resilience** into the **Guidelines (New Section)**.
- ▶ Update existing sections to include climate resilient requirements.
- ▶ Jurisdictional review for relevant materials
- ▶ Reference up-to-date provincial regulatory requirements
- ▶ Technical Update
 - ▶ Reflect advancements in water and wastewater treatment process and technology.

- ▶ **The guidelines are NOT a regulatory document, or a form of regulation;**
- ▶ **The guidelines do not summarize the regulatory processes specific to each province;**
- ▶ **The guidelines are intended to compliment regulations by creating engineered systems and documentation that meet industry best practices**

The existing manual contains the following chapters

1. Approval Requirements and Procedures
2. Source Water Development
3. Design of Water Treatment Facilities
4. Design of Water Treatment Processes
5. Pumping Facilities
6. Treated Water Storage Facilities
7. Transmission and Distribution
8. Operations and Maintenance
9. Small Water Supply Systems

- ▶ **A new educational section/chapter on climate mitigation and adaptation will be added to the manual.**
- ▶ **The requirement for an adaptation assessment will be added to the preliminary design requirements.**
- ▶ **The detailed design documentation requirements will be amended to require identification of the climate adaptation measures included.**

Chapter 1.0 Approval Requirements & Procedures

- ▶ **Include climate change projections and impacts to designs**
- ▶ **Climate change resiliency assessment for projects**
 - ▶ **PIEVC protocol assessment or equivalent**
- ▶ **Consider updates to contents to include in Pre-Design Reports**

Chapter 2.0 Source Water Development

- ▶ **Include IDF curve and incorporate climate change in quantity assessments**
- ▶ **Modeling for location of production wells or well fields should include climate and climate change projections and impacts**
- ▶ **Source water protection plans should include climate change impacts and resiliency**

Chapter 3.0 Design of Water Treatment Facilities

- ▶ Major processes sized to handle 20-25 year max day flows plus potential impacts from climate change
- ▶ Superstructure designed to have minimum service life of 50 years
- ▶ Update discussion for separation distances and site locations to include watershed protection, industrial sites etc.

Chapter 4.0 Design of Water Treatment Processes

- ▶ Update general process descriptions
- ▶ Update references with those similar to Atlantic Canada source waters (previously used Alberta references)
- ▶ Edit and update individual treatment processes

- ▶ Relevant processes to improve/add
 - ▶ Corrosion Control
 - ▶ Manganese
 - ▶ Biofiltration
 - ▶ Algae and Algal Toxin Removal

Chapter 5.0 Pumping Facilities

- ▶ Pumping stations should not be subject to flooding and requires consideration for climate change resiliency
- ▶ Control requirements for low lift, booster stations and fire pumping systems
- ▶ Energy efficiency discussion for pump selection

Chapter 6.0 Treated Water Storage Facilities

- ▶ **Update standards referenced throughout chapter**
- ▶ **Add discussion of DBPs due to re-chlorination in storage**
- ▶ **Improve discussion of fire protection with regards to sizing water storage facilities**
- ▶ **Add discussion on locations of storage within distribution systems**

Chapter 7.0 Transmission and Distribution

- ▶ **Update peaking factors table**
- ▶ **Addition of discussion on use of water models**
- ▶ **Improve discussion on flow monitoring within distribution systems**
 - ▶ **Water loss reduction**

Chapter 8.0 Operations and Maintenance

- ▶ **O&M manuals should incorporate climate change considerations or assessments throughout asset life**

Chapter 9.0 Small Water Systems

- ▶ **Update per capita water use tables and peaking factors for small systems**
- ▶ **Include discussion on novel disinfectants for small water systems**

General Updating of Other Sections



Discussion

