

## Floods are expensive

**\$15  
Million**

paid in disaster relief to municipalities, homeowners, and organizations from Ontario's disaster recovery assistance programs between 2016 and 2019<sup>1</sup>



**\$43,000**

the average cost of house repairs after a basement flood<sup>2</sup>



**7-24%**

projected increase of annual mean precipitation by the late 21<sup>st</sup> century<sup>3</sup>

## CSA Standards can help



By incorporating CSA Standards into development plans and bylaws, municipalities can improve resilience of their communities and better protect them from floods.



### Community Flood Resilience

**CSA W204:19**, *Flood resilient design for new residential communities*

**CSA W210:21**, *Prioritization of flood risk in existing communities*



### Stormwater Management

**CSA W211:21**, *Management standard for stormwater systems*



### Bioretention

**CSA W200-18**, *Design of bioretention systems*

**CSA W201-18**, *Construction of bioretention systems*



### Erosion and Sediment Control

**CSA W202-18**, *Erosion and sediment control, inspection and monitoring*

**CSA W208:20**, *Erosion and sediment control, installation and maintenance*

## Incorporate CSA Standards into municipal plans in three steps



### Step 1: Assemble your toolbox

Collect your existing bylaws and strategic documents and get familiar with CSA community water standards



### Step 2: Identify the gaps

Assess where standards can help fill the gaps in your processes



### Step 3: Develop policies and guidelines

Update or develop new strategic planning and development policies and processes

<sup>1</sup> Ontario's Special Advisor on Flooding Report to Government ( <https://files.ontario.ca/mnrf-english-ontario-special-advisor-on-flooding-report-2019-11-25.pdf> )

<sup>2</sup> Under One Umbrella: Practical Approaches for Reducing Flood Risks in Canada, November 2020

<sup>3</sup> Canada's Changing Climate Report, Government of Canada, <https://changingclimate.ca/CCCR2019/>

# How-to Guide for municipalities

Detailed guidance for urban planners, managers, and municipal officials on how to apply standards in practice



## Descriptions of the CSA Standards

for flood resiliency, stormwater, bioretention systems, and erosion and sediment control



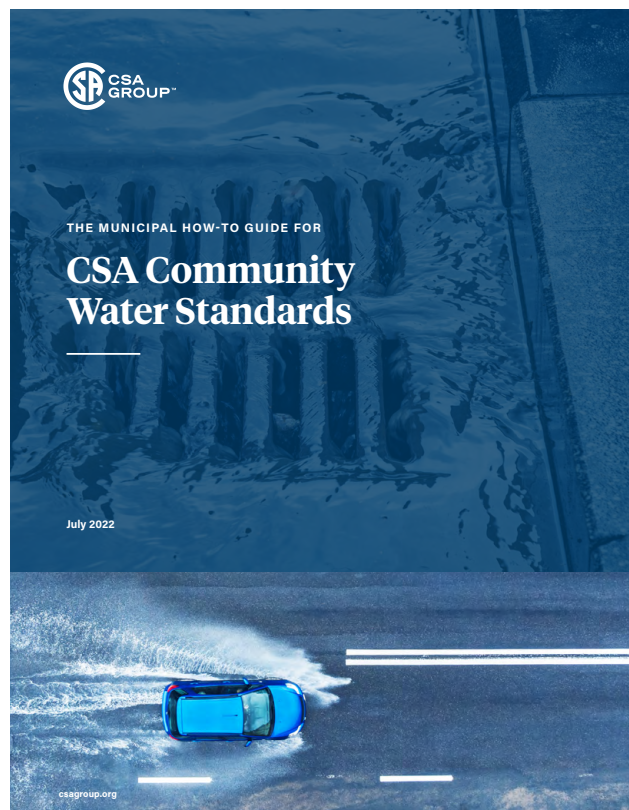
## Three steps

to integrating standards into planning and approval processes



## Examples of wording

you can adopt for your bylaws and policy documents



**Download the complimentary Guide**

## About CSA Group

CSA Group is a global organization dedicated to safety, social good and sustainability. We are a leader in Standards Development and in Testing, Inspection and Certification around the world including Canada, the U.S., Europe and Asia. Our mandate is to hold the future to a higher standard.

The mission of CSA Group's Standards Development organization is to enhance the lives of Canadians through the advancement of standards in the public and private sectors. We are a leader in standards research, development, education, and advocacy. The technical and management standards developed with our more than 10,000 members improve safety, health, the environment, and economic efficiency in Canada and beyond.

## Developed with Canadian Municipalities

To develop this Guide, CSA Group collaborated with four Canadian municipalities: Colwood, British Columbia; High River, Alberta; Lakeshore, Ontario; and Cambridge, Ontario. Together with engineering consultant, WSP, they shared documents and experiences that helped develop this Municipal How-to Guide.

Other municipalities from different parts of the country helped validate the three-step process for incorporating CSA Community Water Standards into municipal planning and approval processes.

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