Welland, Ontario
Assessing Climate Change Risk to Stormwater and Wastewater Infrastructure

Ben Harding, AMEC (Boulder, CO)
Peter Nimmrichter, AMEC (Mississauga, ON)

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Outline

- Project Overview
- Updating and Projecting IDF Data
Project Overview

Who?

Project Partners

Niagara Water Strategy

Great Lakes & St. Lawrence Cities Initiative
Alliance des villes des Grands Lacs et du Saint-Laurent
Project Overview
Where?

ONTARIO

City of Welland
Urban Boundary
(approximate)
Project Overview
How? – The PIEVC Protocol

- Scoping study completed in March 2007 (Protocol v1)
- Four infrastructure categories
  - buildings
  - roads and associated structures
  - stormwater and wastewater systems
  - water resources
- Sampling strategy completed
- 1st national assessment
- Current Protocol v9 (April 2009)
Project Overview
How? – The PIEVC Protocol

- Infrastructure of interest?
- Do we have data?
- Loads and impacts?
- More analyses required?
- Recommendations
Project Overview
How? – The PIEVC Protocol

- Step 1 – Project Definition

- Infrastructure Details
- Site Setting
- Climate Data
Project Overview
How? – The PIEVC Protocol

- Step 2 – Data Gathering
  - Judgment on Significance
  - Judgment on Likelihood
  - Judgment on Response
  - Judgment on Uncertainty
    - IDF analyses
Project Overview
How? – The PIEVC Protocol

- Step 3 – Risk Assessment

- Judgement on Significance
- Judgement on Likelihood
- Judgement on Response
- Judgement on Uncertainty

* Vulnerability assessment workshop
Project Overview
How? – The PIEVC Protocol

- Step 4 – Engineering Analysis

- Existing Load
- Projected Climate Change Load
- Projected Loads from other changes
- Existing Capacity
- Projected Additional Capacity
Step 5 – Recommendations

- Remedial Action
- Mgmt Action
- No Action
- Additional Study Required
Project Overview
What? – The Infrastructure

Stormwater Collection System

Wastewater / Combined Collection and Treatment System
Project Overview
What? – A Changing Climate

The Long List of Variables:

- High/Low Temperature
- Heat & Cold Waves
- Extreme Diurnal Temperature Variability
- Snow Accumulation
- Blowing Snow/Blizzard
- Lightning