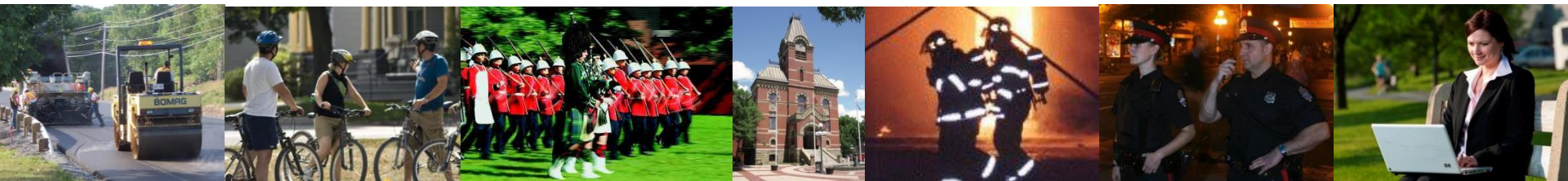




City of Fredericton Climate Adaptation & Resiliency Efforts



Presented by: Kathy Edwards
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Climate Change

- Flooding
- Extreme Rain Events
- Extreme Heat Events
- Longer periods of hot weather
- Tropical storms/hurricanes
- Ice storms
- Freeze-Thaw Cycling



Climate Change Impacts

- St. John River flooding
- Overland flooding/Sewer backup
- Power outages
- Damage to infrastructure
- Increased demand on public safety staff
- Impacts on vulnerable populations
- Damage to “living” assets



City of Fredericton

- Historical context
- Building resiliency



What We Inherited

- Knowledgeable staff
- Separated sewer systems
- 1 in 10 year storm system
- Good topography
- “No Connect” storm policy in Downtown
- Strong EMO



What We Have Done

- FCM Partners for Climate Protection
 - Mitigation
 - Green Matters
 - Green Shops
 - Completed all 5 Milestones
 - Increased Public Awareness of our Efforts



What We Have Done

- Build Resiliency into Infrastructure Replacement
- Second Wellfield and Water Treatment Plant
- Backup Power for Water System
- Relocated EOC
- Identified Emergency Centres
- Maintenance Practices



What We Have Done

Flooding and Rain Events

- Guidelines for Stormwater Infrastructure 2008
- New Developments (Net Zero Guidelines)
- Minimum elevations
- Raised intersections
- Disconnect combined sewers
- Increase culvert sizing
 - 1.2 x 1:100 year system major culverts



CLIMATE CHANGE ADAPTATION INFRASTRUCTURE ENHANCEMENTS

ROAD UPGRADES

Arterial Roads raised to minimize closures

1. Union Street Under Walking Bridge 2000
Raised 1m and trail bridge also raised.
2. Lincoln and Wilsey 2005
Intersection raised 1.3m

DRAINAGE MANAGEMENT

17. Bliss Carman Area Attenuation Pond 2005
Attenuation Pond
18. McLeod Hill Road 2006
Drainage Diversion
19. Rainsford Lane Area 2009
Attenuation Pond

MAJOR CULVERT UPGRADES:

Culvert capacity increased to 1.2x1:100 year event and fish passage introduced

- | | | |
|--|--|---|
| 3. Lincoln Road 2004
Twin culvert upgrade | 7. Royal Road 2006
Twin culvert upgrade | 11. Crockett Street 2009
Twin culvert upgrade |
| 4. Forest Acres Court 2005
Single culvert upgrade | 8. Wilsey near Hilton 2007
Twin culvert upgrade | 12. Hanwell Road 2009
Single culvert upgrade |
| 5. Wilsey Road 2006
Twin culvert upgrade | 9. Forest Hill Road 2008
Twin culvert upgrade | 13. St Marys 2010
Single culvert upgrade |
| 6. McLeod Hill Road 2006
Twin culvert upgrade | 10. Colonial Heights 2009
Twin culvert upgrade | 14. MacLaren Avenue 2011
Twin culvert upgrade |
| | | 15. River Street 2011
Culvert upgrade and road raised. |
| | | 16. River Street 2013
Single culvert upgrade |

TRAIL CULVERT UPGRADES

20. Killarney Brook Trail Bridge 2003
21. Northside Trail 2009
22. Lincoln Trail 2010
23. Valley Trail 2013



What We Have Done

ICLEI/BARC

- Completed Milestones 1 & 2
- Liveable Cities Forum



What We Have Done

IBC/MRAT

- Partnered with technical experts from the Insurance Industry
- Developed a tool to identify problematic areas now and moving forward
- Good partnership
 - we know our system
 - controlled environment



Moving Forward

- Identify weaknesses
- Aggressive Infrastructure Replacement
- Identify other partnerships





Questions?

