



Glen Cairn Flood 1996



Glen Cairn Flood 2002



Lion's Club Parking Lot 24 July 2009

WHERE'S THE WATER?

Presentation for KBCA Watergate Forum

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Glen Cairn
16 Nov 2011

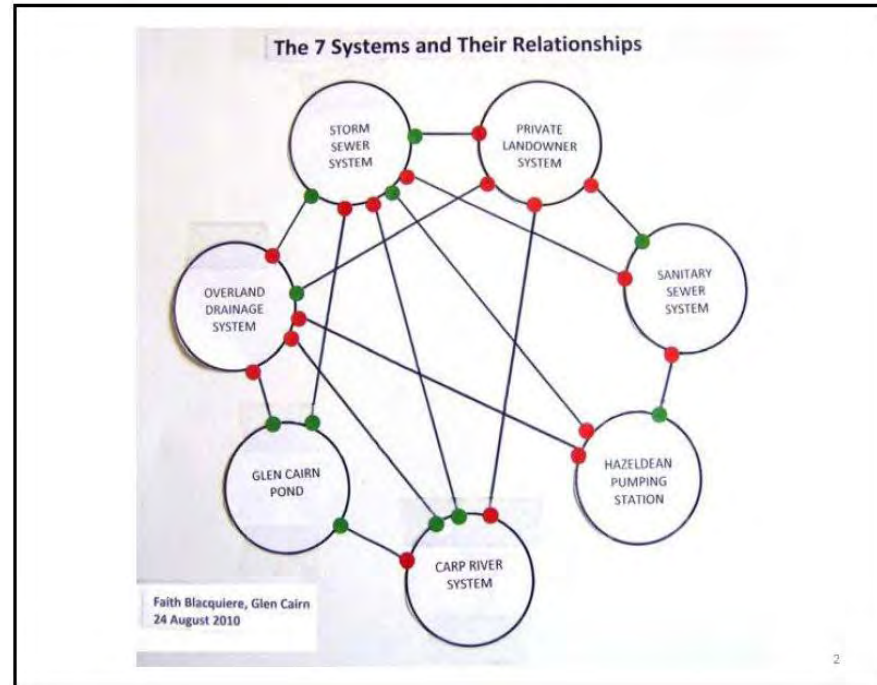
This Presentation



GCFI ESR Pg 54

- Asks Where's the Water? and Where's the Wastewater? In your basement? On your street? In a parking lot? In a Stormwater Management Pond? In a ditch? In the River or floodplain? In a pipe that has capacity?
- Identifies problems and issues which need to be resolved
- Identifies what's needed to resolve some of them

Problem: Flood Investigations Don't Focus on Watershed and Sewersheds and "What Changed?"



All of the infrastructure systems interact within their watersheds and sewersheds
Problem: Flood Investigation focus on 1 or 2 systems results in problems and solutions being overlooked
Problem: Not asking whether flood water is storm or sewage

Where's the Water?



GSC 1980 Old Carp River before Diversion



GCFI ESR 4 Mar 2011 Appendix B Stage 1 Archaeological Assessment pg 17



31 July 1996 Carp River flowing down Castlefrank



McGill County Atlas Project East Fork Carp River 1879

Problem: Diverted watercourses may still follow the old path
– GCFI Archaeological Assessment used wrong path to determine archaeological potential

Problem: Where are the Carp River Headwaters?

All the studies since 2000 have said the Carp River Headwaters are near the Glen Cairn Pond:

- * Carp River Watershed/Subwatershed Study
- * 2 Flow characterization studies
- * Kanata West and Fernbank CDPs
- * Third Party Review
- * Carp River Restoration Plan EA

The City and MVC inform consultants that the headwaters are in the Glen Cairn Pond/Fernbank lands when they are in Stoney Swamp

Where are the Poole Creek Headwaters now that the wetlands and tributaries have been changed to the Hazeldean Municipal Drain?

Questions that Need to Be Answered

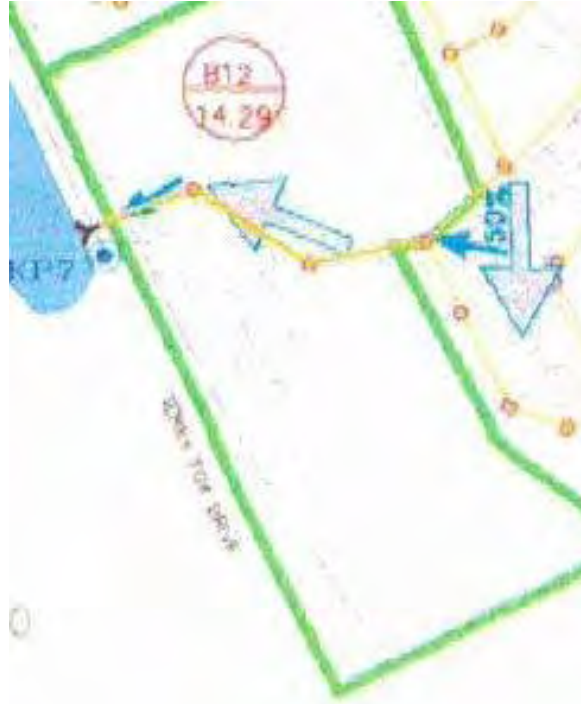
What impact does this misunderstanding have on modelling and analysis?

What impact does out-of date mapping have on analysis?

Problem: Out-of-Date Maps – Where's the Development?



Bishop Report 1997



CCL Report July2003 vol 1 pg 20



CCL Mar 2003 vol 1 pg 64

Problem: consultants not aware of 1991 infill development or development in process

Where's the Water?



GCFI Facebook Group 24 July 2009



11 Mar 2011 Dry end of Glen Cairn Pond

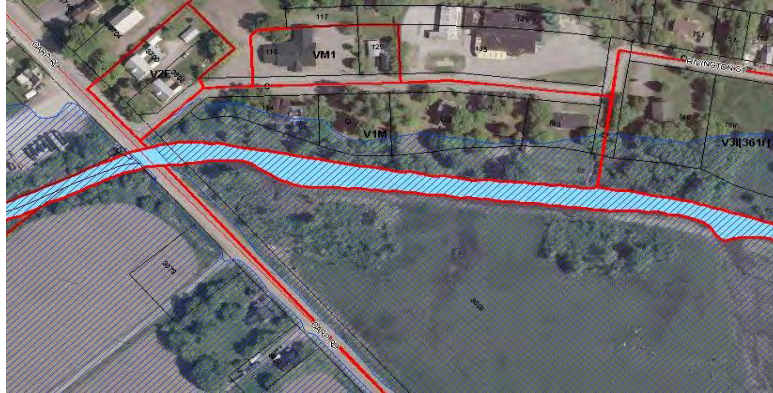
Problem: Floodplain Mapping and Models were updated without review of impact on infrastructure

Why did Glen Cairn flood in 2009?

1. Glen Cairn Pond built for 94.72m in 1972; Regulatory Flood level changed to 95.5m in 1983 without review or upgrade
2. 2003 Mitigation didn't consider impact on storm outfalls
3. Antecedent water levels not included in models

Problem: Village of Carp and downstream reaches not included in plans

On 13 Oct 2009, Don Moss of Greenland told PEC:
Measured water levels were 0.9m below 100 year flood levels at the Village of Carp



eMAP



Ottawa Citizen 27 July 2009

Problem: Where's the Water? Not in the channel that is modelled

Problem: Floodplain is increasing in size due to upstream development and/or downstream constraints

Problem: 11/12 April 2011 minor storm caused flooding at Village of Carp

Problem: Landowner permission not obtained and landowners not compensated when floodplain expands on their property

Problem: The *Carp River Watershed/Subwatershed Study 2004* is saying “stormwater quantity control” is not required

But the Study also says:

- Future flows will still be contained within in the valley lands and the Carp River shows no significant increase in peak flows
- Total runoff volumes will increase and this could affect the frequency of higher than normal flows in downstream reaches
- The change in total runoff volume should be investigated as part of the functional design of the Carp River Corridor Plan

So, are they are saying

- It's ok to flood the valley lands?
- The Carp River may show no increase because the banks were overtopped?

The Carp River Restoration Plan ended at Richardson Side Road and didn't include restoration or downstream impacts

Problem: Different rules for ICI, condos, and other private property



Facebook Group – Castle Glen rearyards 24 July 2009

Problem: City SWM policy uses rearyard swales to drain the area - Homeowners or developers build tight fences stopping the flow

Problem: the City generally won't address flooding problems on private property

Problem: catchbasins on private property also are landowner responsibility but may impact others

Problem: Sediment and vegetation reduce stormwater infrastructure capacity



20101119 Castlefrank Culvert completed Sep 2004



20101119 Sediment build-up since 20 June 2007



20100430 Glen Cairn Pond looking east



20091031 Stonedust pathway washing downstream at Old Colony Culvert



20090828 McElroy Outfall constructed in 2002/3



20090828 Terry Fox Culvert sediment & vegetation build-up since 1972

Can stormwater infrastructure and “natural channels” co-exist?
What happens to the natural channel when sediment and vegetation reduce the design capacity?
How much water is displaced? Where will excess rainfall go?

Problem: Dry Weather Flow in SWM infrastructure



31 Aug 2011 Upper Poole Creek wetland at Trans Canada Trail



11 Mar 2011 Carp River Culverts at Hazeldean Road



25 June 2010 Carp River culverts at Hazeldean



20110311 Terry Fox Culverts



20090814 Castlefrank Twin Sewer outlets in Glen Cairn Pond



24 July 2009 Terry Fox Drive at Trans Canada Trail - Pond backup and blocked culvert caused flooding

How much water should be in culverts in dry weather?

What happens in winter with ice build-up?

Where does rainfall go if the culvert capacity has already been used?

Problem: Beaver control of SWM infrastructure



20110311 Glen Cairn Dry Pond has over 20 beaver dams



Heron Pond before



13 Aug 2011 Heron Pond after beaver dam breach



2009/06/14 03:45 pm
14 June 2009 Upper Poole Creek Wetlands Before



2 Sep 2011 Upper Poole Creek Wetlands after beaver dam removal and culvert replacement



HTO: Toronto's Water pg 23

- Why does the City let beavers take control of essential infrastructure?
- Why doesn't the City use beaver-friendly technologies?
- Why aren't Impact Studies mandatory before beaver dams are removed?
- Why are works under the *Drainage Act* treated differently?

Problem: Different approval authorities for SWM projects and EA changes after public consultations



TFDE 20110411



Carp River Bridge 20110930

TFDE SWM infrastructure and wetlands differed from the EA and were approved only by MVC unlike the Monahan Drain Wetland infrastructure which is approved by MOE

Carp River Bridge and stormwater outlet – no MOE Certificate of Approval located

Problem: Kanata West's Carp River Restoration Plan



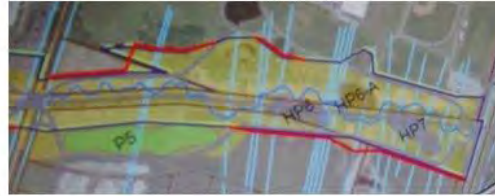
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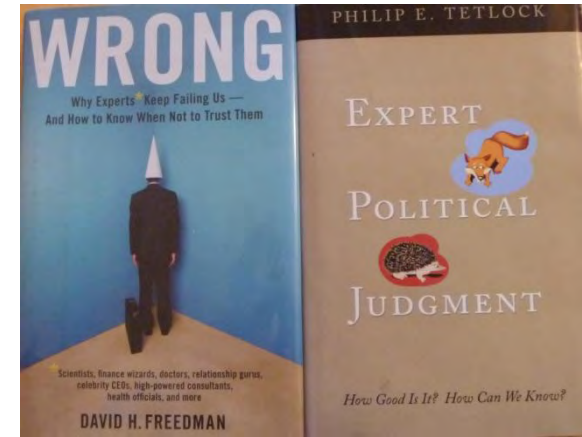
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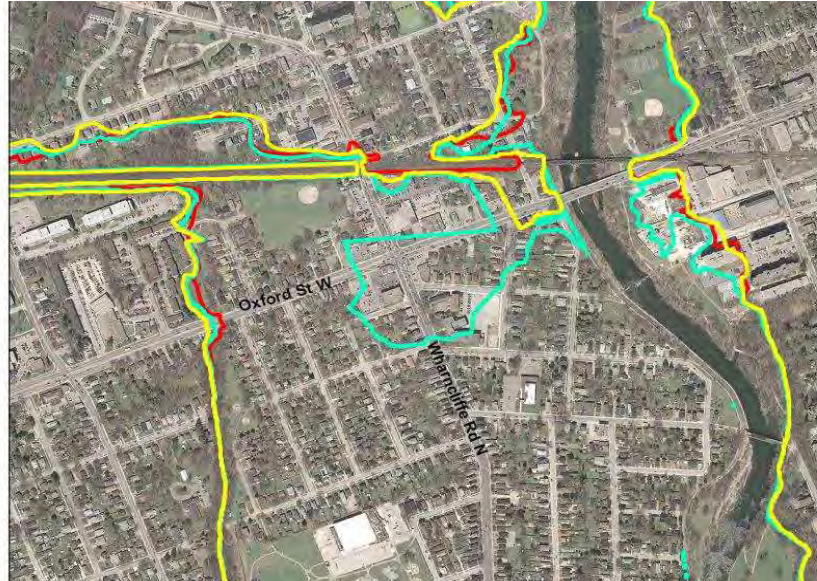


CRRP Widening 18 May 2010 Fig 5-1



- Not considering all conditions DWF, WWF & extremes
- Compromised Glen Cairn Flood Solutions
- 5 models vs 1 cause problems in calibration/validation
- Hazeldean Carp River Bridge construction impacted flow to monitors used for calibration/validation
- Inline SWMPs and wetlands impact flows
- Upstream and downstream impacts not considered
- Impact on existing storm outfalls not considered
- Boundary conditions for Glen Cairn Pond need confirmation

Problem: 250 Year Floodplain Mapping not being considered for Climate Change impact

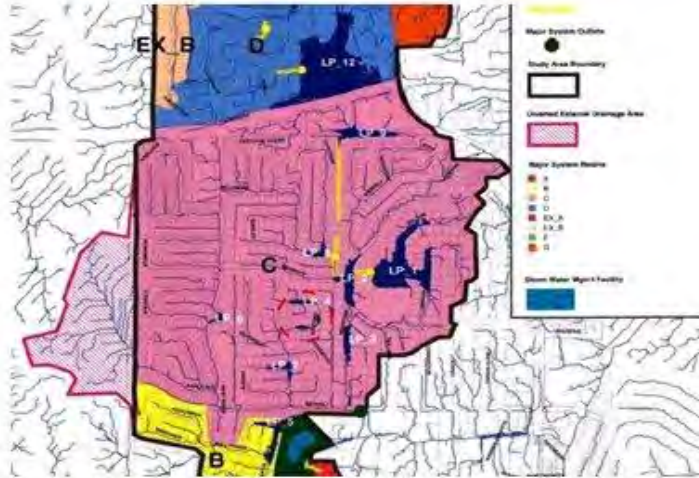


UWO. City of London Vulnerability of Infrastructure to Climate Change Sep 2009
Pg 127 Figure 3.6 Location of special concern at the North Thames River

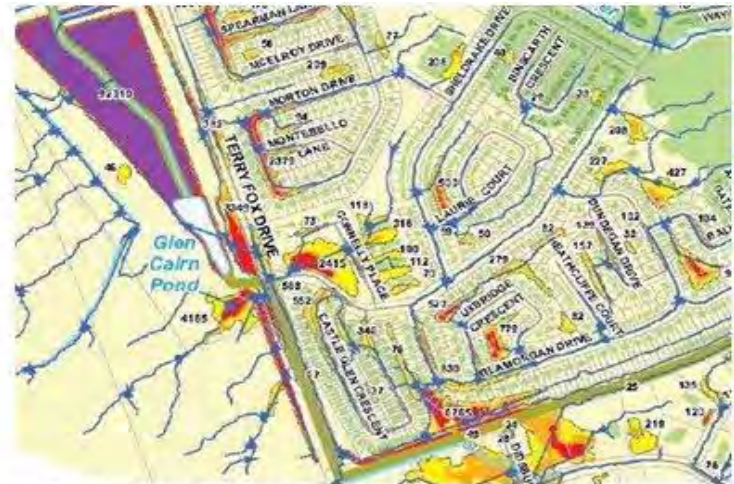
Why are the City and Province not requiring 250 year modelling - at least for sensitivity analysis – to determine the impact of climate change on flood-prone areas?

What will be the impact of climate change on the existing and planned infrastructure?

Problem: New mapping technology is not being used for SWM retrofitting and for development planning



Stittsville Flood Investigation Appendix E pg 12



GCFI ESR 4 Mar 2011 pg 54 DEM map

The Technology is here, which shows overland flow routes, ponding areas, and tributaries

Why isn't the City using this technology to identify areas at risk and for planning new developments?

Why aren't developers required to look outside the local site?

Problem: Entombing Watercourses in Culverts

There is a movement in urban areas to rediscover connections to nature and the past that have been lost for decades.

Daylighting refers to the deliberate effort "to expose some or all of the flow of a previously covered river, creek or storm water drainage.

(Pinkham, 2000).

Castlefrank/Rickey Place entombed culvert daylighted due to flooding



Granite Ridge outlet and drains to be entombed, cutting off Iber Road ditch drainage system

Problem: Diverting watercourses and filling wetlands

Watercourse, wetlands or ponds in the way of development?
Fill them in (don't tell the buyers or give them basements) or
divert the watercourse to someone else's land



eMAP 2002 vs 2008 Hazeldean Creek 2002 vs 2008



eMAP 2008 Richardson Lands



20091106 Cope Drive at Terry Fox

Problem: No Wet Weather Policy

- RMOC identified the need in the late 1990s for a Wet Weather Strategy and Plan, and Extraneous Flow Programs
- City of Toronto *Wet Weather Flow Management Plan* was developed between 1998 and 2003 and includes Policy, Guidelines, and 25 year Project Plans. In 2011 Council was asked to authorize funding for 32 identified Chronic Basement Flooding Study Areas
- City of Ottawa focus is currently on developing the Wet Weather Strategy as part of ORAP solutions Inside the Greenbelt
- Essential water management and flood protection policies are being delayed due to staff being kept too busy reacting to floods

How can the suburbs compete with the multi-million dollar CSO solutions and the old City of Ottawa needs?

Why can't the City use the Toronto plans and modify them?

Problem: Ditch Systems Ignored in Planning



GCFI ESR pg 54



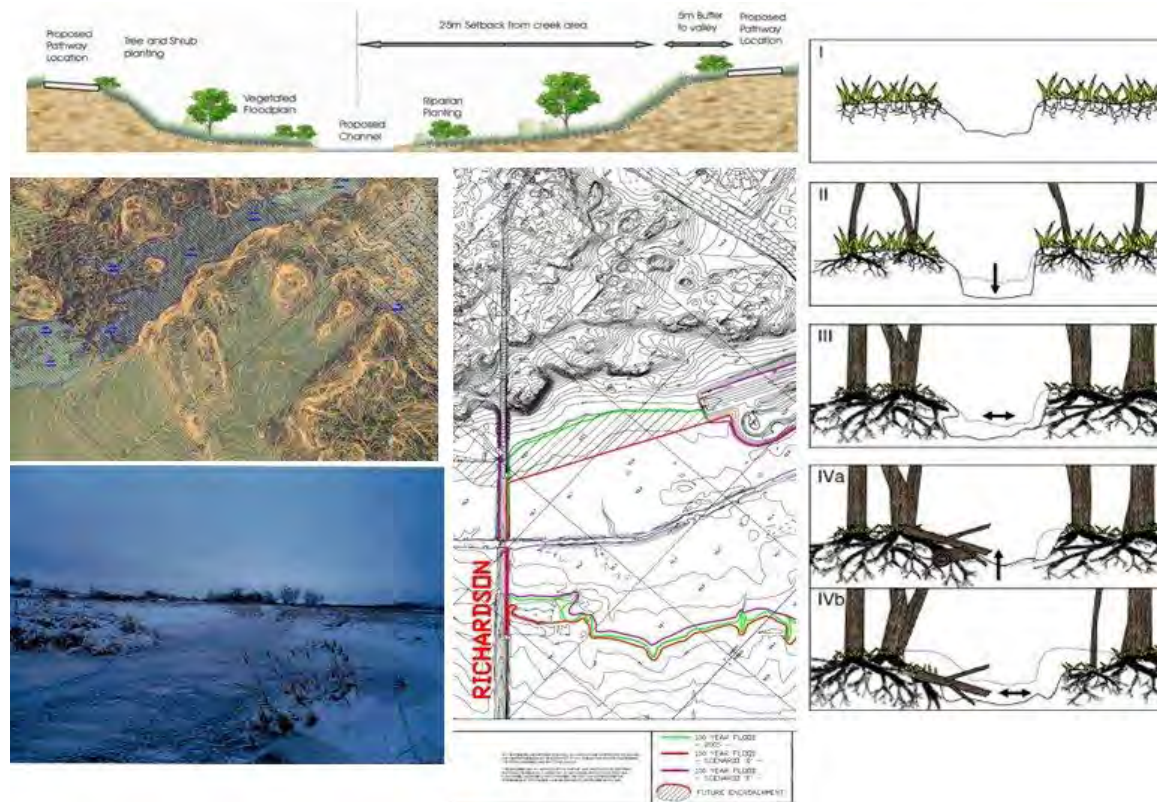
Terry Fox Drive at Trans Canada Trail 24 July 2009

- West End Flood Investigation is fixing some, not all, ditch systems which caused flooding
- Servicing studies send water to ditches with no ultimate outlet identified and with no impact analysis
- City staff not aware of engineered ditches and their role in stormwater management
- Ditches and low points not being managed with other SWM infrastructure

WHAT IS NEEDED?

- * Floodplain and Drainage System Mapping to know what needs to be managed and to know what will be impacted by climate change
- * Comprehensive SWM inventory including channelized rivers, ditches, ponds, overland flow routes, culverts, bridges, private property infrastructure
- * Wet Weather Flow Management Strategy, Policy, and Guidelines to integrate all aspects of watershed, watercourse and SWM management
- * Public Participation in the policy development and implementation processes
- * Comprehensive Flood Investigations based on the 7 systems and including all types of properties
- * Cooperative lobbying and submissions to Council

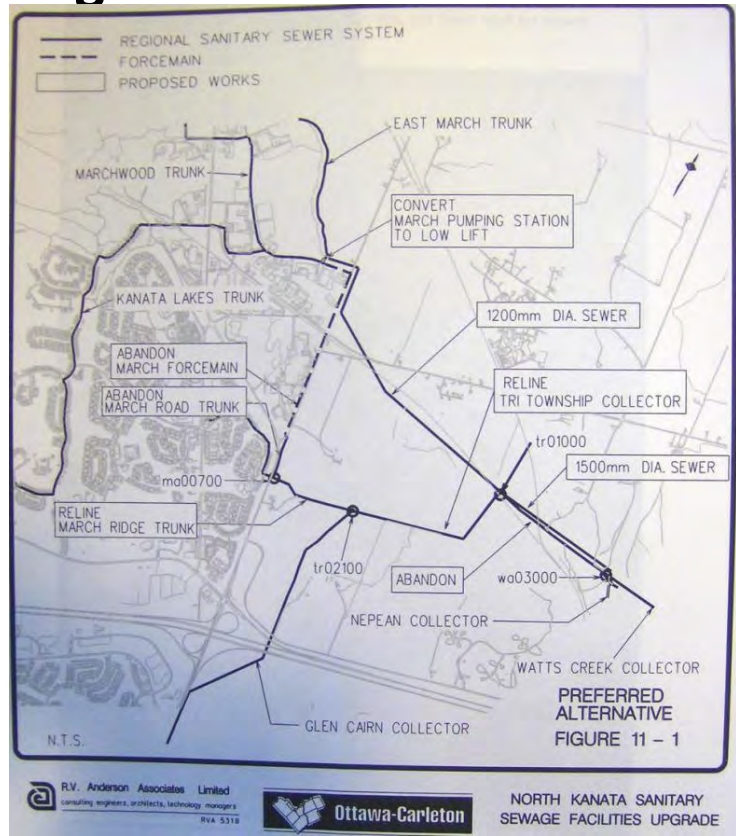
Where's the Water?



Basic Stormwater Management: First, Do No Harm
The best solution to a problem is to prevent the problem
from occurring in the first place
From Catching the Rain: a Great Lakes Resource Guide to
Natural Stormwater Management 2004 pg 15

Problem: 1 sewage outlet – overflow discontinued 1996

Where's the Wastewater?



North Kanata Sanitary Sewage Infrastructure Upgrade ESR /RVA Feb 2001

- Problem: Wastewater plan same as proposed by Region in 1997, but didn't include OMB-appealed OPAs and major developments since then
- Problem: Development no longer limited when development threshold reached
- Problem: Sewage flow impacted by many small pumping stations

Problem: Chilly Willy Syndrome

Those who live near sewage pumping stations and major sewage collector junctions are more likely to be at higher risk of flooding



Juneau Alaska Mendenhall WTP Evaluation 2001

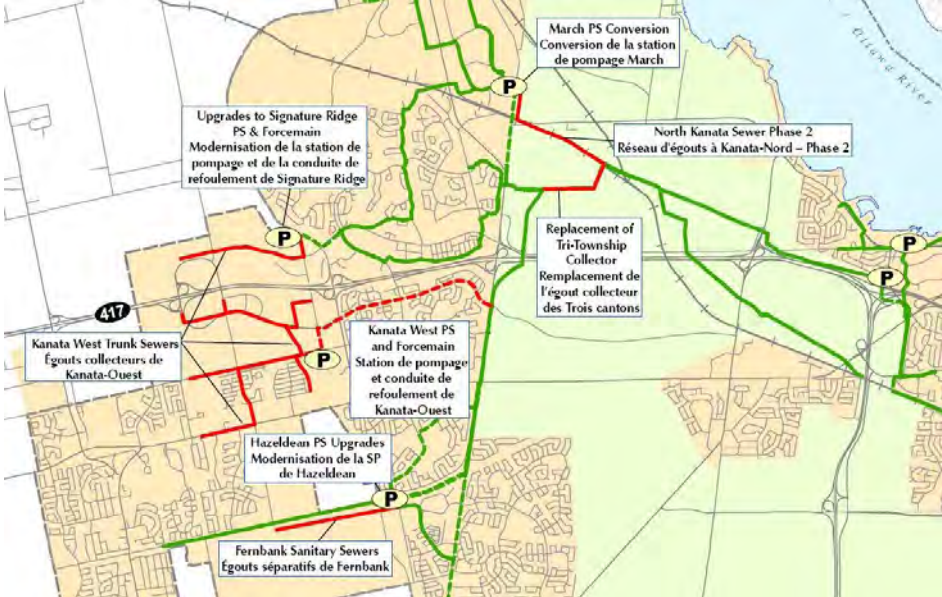
Other Wastewater System Problems

- * Upgrades dependent on large developments being ready to proceed
- * “First Come First Served” policy gives “supposedly-allocated” capacity to other developers
- * “Just-in-time” upgrade policy doesn’t deliver infrastructure in time
- * Use of Monitored Flow for upgrade is not triggering upgrades or allowing sufficient time for requisite studies and Upgrade design and construction
- * Not all pumping stations have emergency overflows

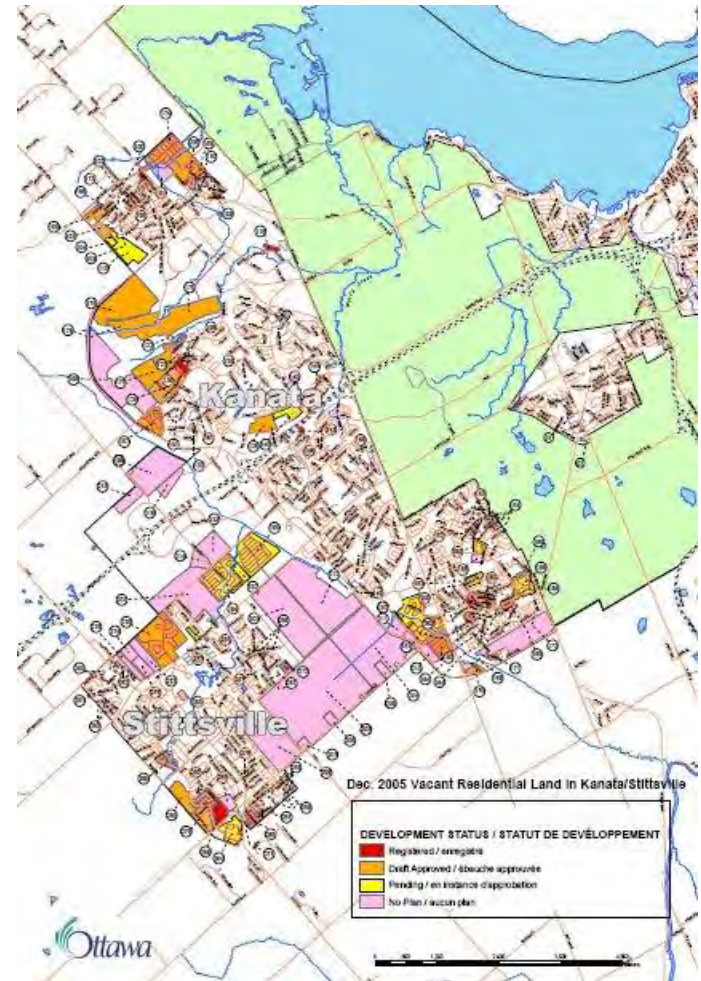
What is Needed

- Wastewater System Policy Review
- Extraneous Flow Removal Program needs to be in place and EF removal tied to development
- Capacity allocation and reservation system City-wide, not just to support intensification Inside the Greenbelt

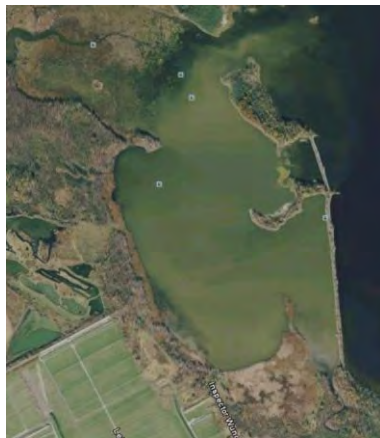
Where's the Wastewater?



IMP 2009 Fig 5 extract



Fernbank MSS vol 2 June 2009 pg 80



Shirley's Bay Google Earth 2011



Hazeldean PS eMAP 2008

What You Can Do

- Report flooding and potential problems to the Community Association as well as to the City
- Photograph problem areas, report them, ensure problems are fixed
- Photograph and video results of flooding events
- Reduce water use when it rains

People give up because they tend to look at how far they still have to go, instead of how far they have gotten already.

Facebook

PRAY

