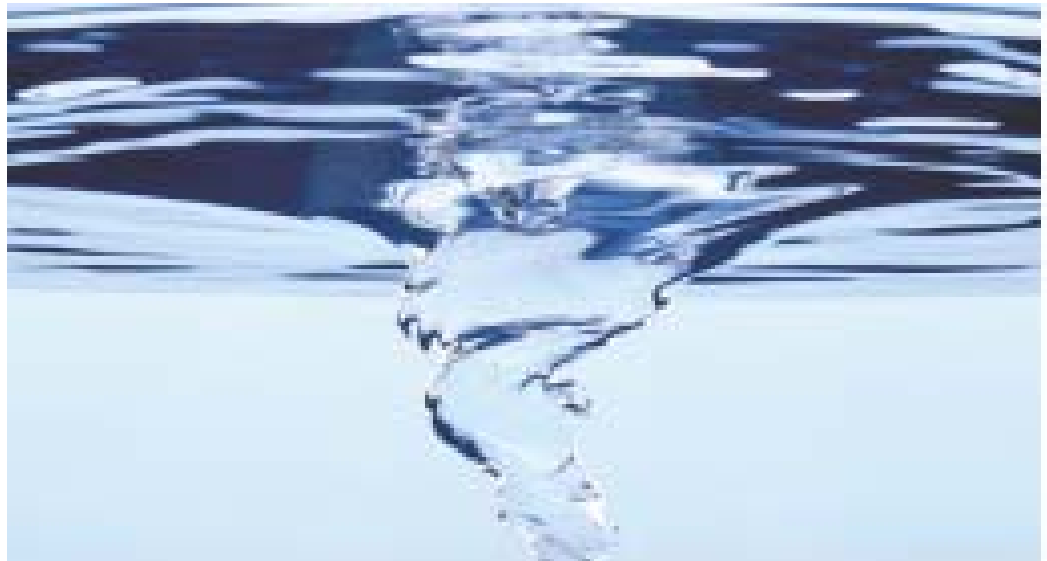


# Enabling Residential Water Reuse

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# CMHC Research Goals

**To assess the performance of alternate technical approaches to supply and treatment of residential water and will identify barriers to the adoption and use of alternate approaches.**



# **Water Reuse Research**

**1. Advancing the Light Grey Option**

**2. An Application Guide for Water Reuse Systems**

**3. Biological Toilets and Greywater Systems**

**4. CANWELL: the Canadian Water Energy Loop**

**5. Municipal Water and Wastewater Infrastructure: Estimated Investment Needs 1997-2012**

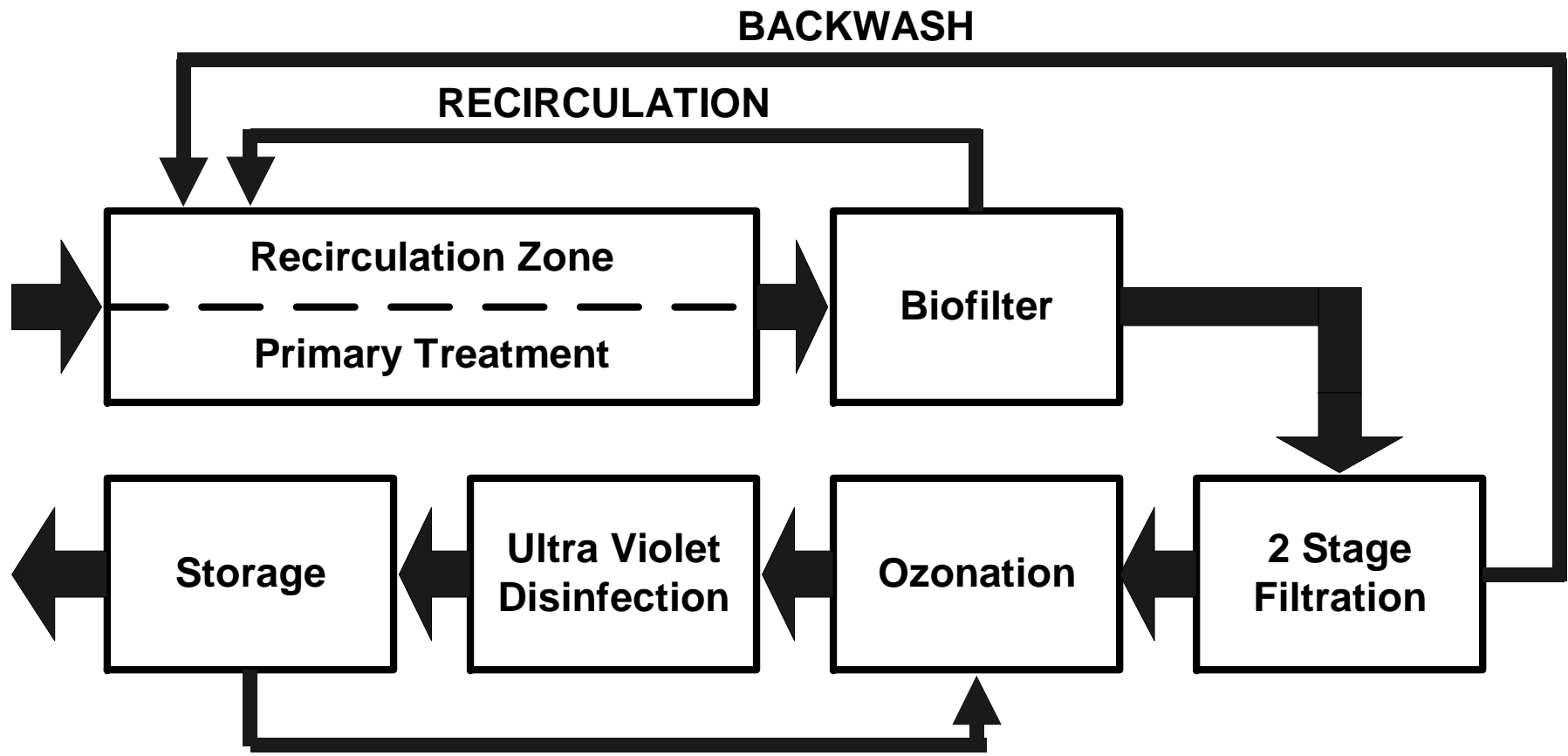
**6. Innovative Residential Water and Wastewater Management: Wastewater Recycling and Reuse.**

**7. Regulatory Barriers to Onsite Wastewater Reuse**



# N'Dilo - Yellowknife

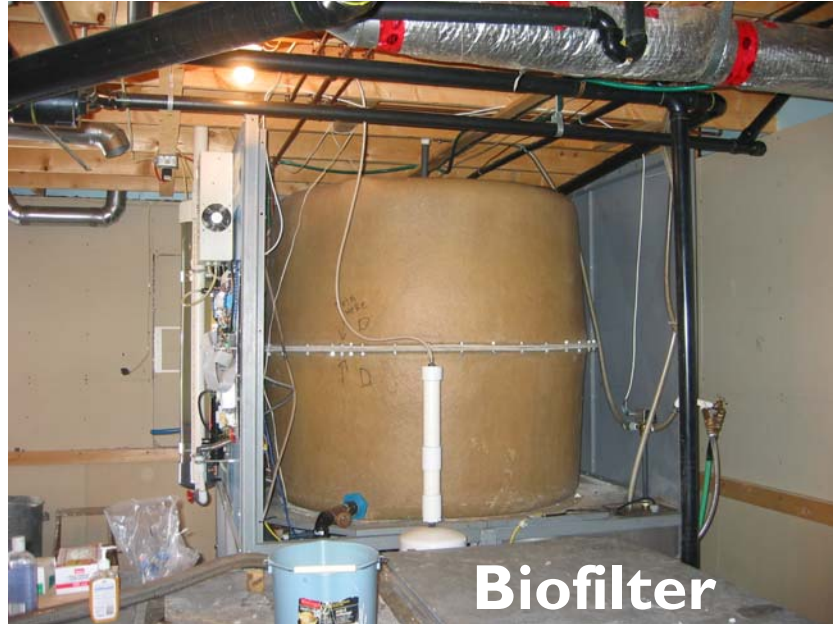




**Yellowknife Microsystem**



**Septic Tank**



**Biofilter**



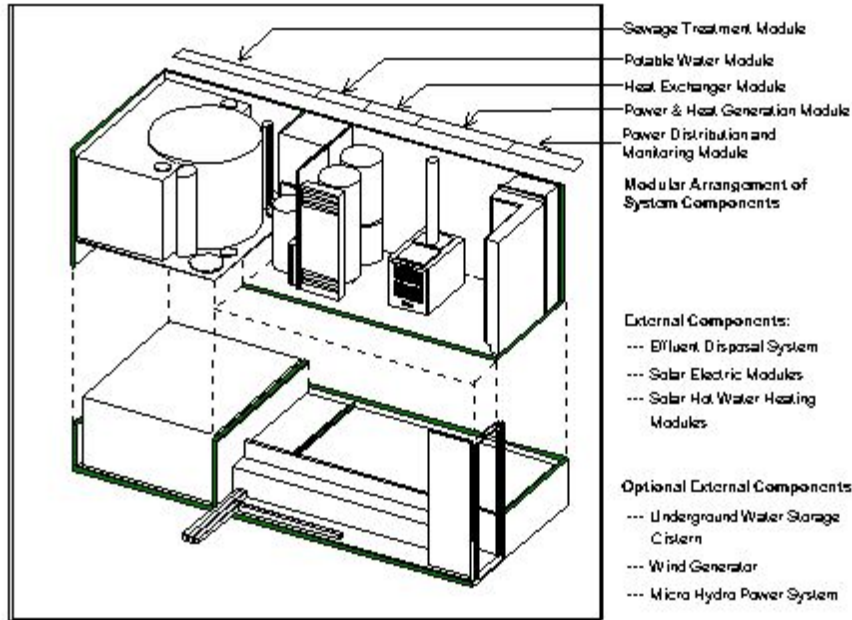
**Filter system**



**Ozonation System**

# Eagle Lake EcoNomad





# “EcoNomad” utilities in a box

sewage

potable

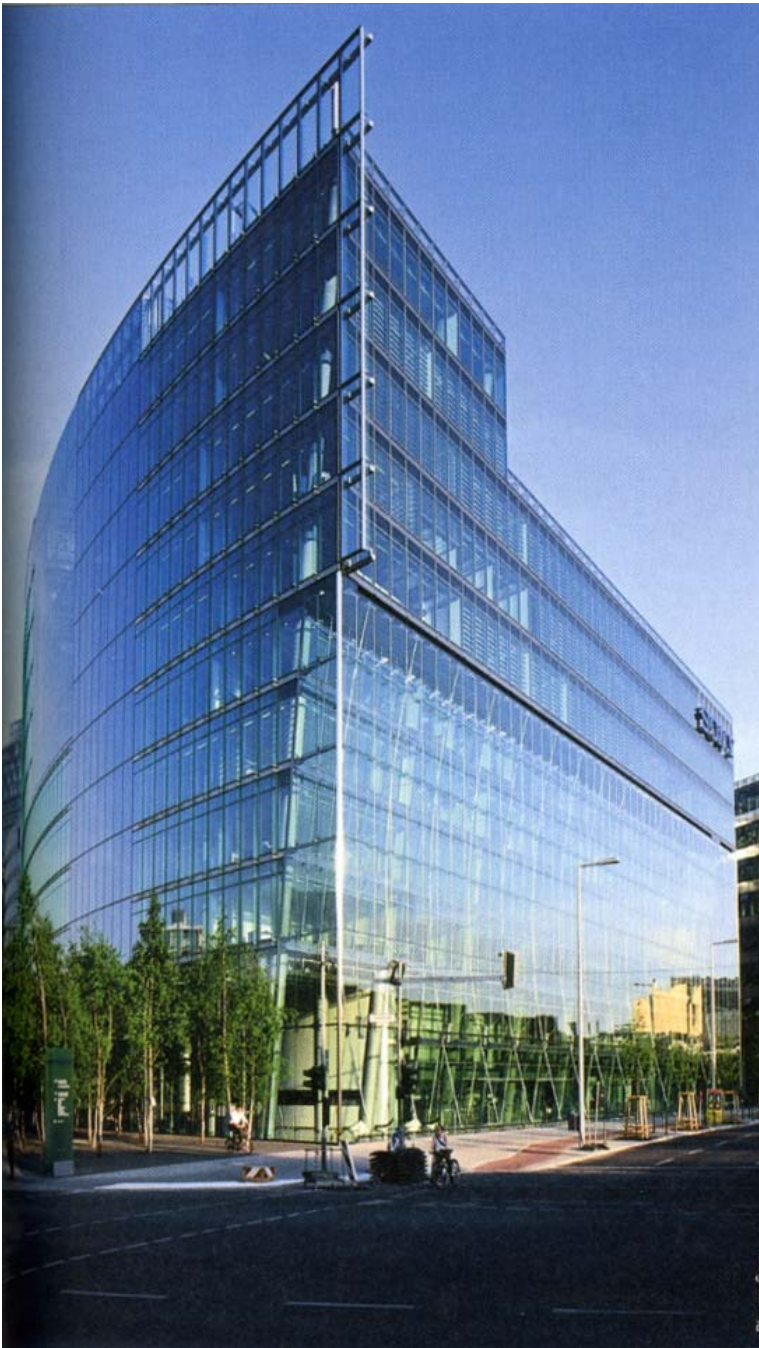
hot water

heat & power

remote panel







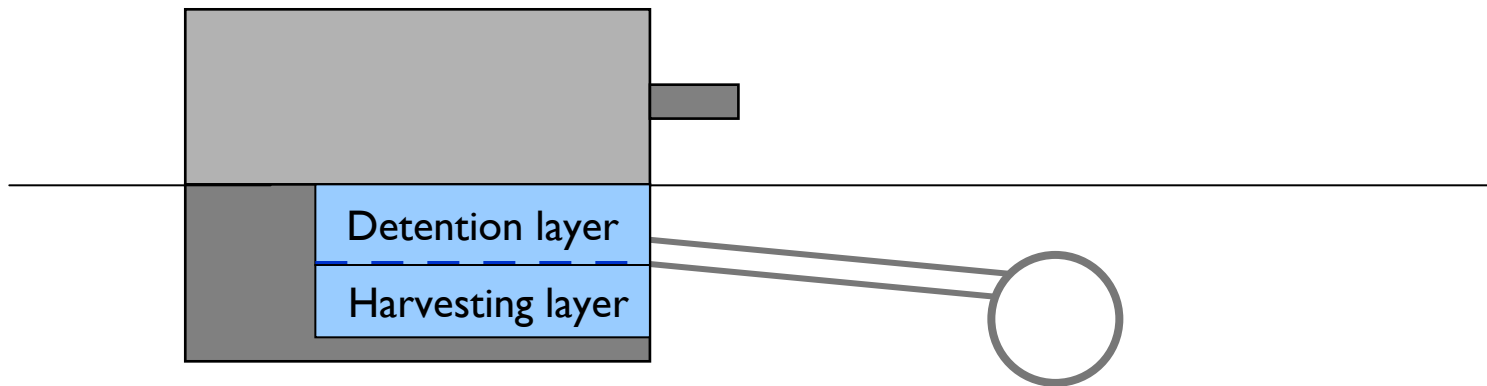
## Rainwater Harvesting Workshop & Design Charrettes

# Minto Roehampton Building



# Solution

Single storage with two layers



- Effect:
  - Volume of Detention layer is smaller than a single Detention pond would be, because Harvesting layer is used if it not full
- Design:
  - Not possible with design storm concept
  - Longterm computer simulation is necessary



# **Reuse Guidelines in Canada**

**“Ironically the results of the report indicate that the most significant barrier to the implementation of onsite water reuse may be the lack of regulations and guidance across the country”**

**– CWWA report to CMHC, November 1997**



# **Water Reuse Standards**

## **Reuse Application and Quality Requirements for:**

- Australia (5)**
- Canada (2), U.S.(13)**
- Cyprus, Spain, Italy**
- Israel, Kuwait, Saudi Arabia**
- Japan, Korea, China**
- WHO**



# **Water Reuse Standards**

**Municipal and residential water reuse application:**

- toilet flushing,**
- bathing, showering,**
- laundry, washing,**
- landscape & garden irrigation**

**Biological, biochemical, and physical water quality parameters**



# **Technology Verification Protocols**

**“Not a lot of technology testing protocols in use internationally”**

**1. NSF/ANSI Standard 40**

**2. EPA/NSF Environmental Technology Verification Program**

**3. Stand-Alone Wastewater Treatment Systems for Isolated Dwellings – BNQ Québec**

**4. Drinking Water Treatment Technologies Assessment Procedure – Québec Ministère de l’Environnement**



# Next Steps

- **Water Quality/Risk Assessment**
- **Plumbing/Infrastructure**
- **Technology Verification/Certification**
- **Operation & Maintenance – Training/Certification**
- **Costing**
- **Partnerships – in Canada and abroad**





# **Next Steps**

## **Water Quality/Risk Assessment**

- **CHE Secretariat – residential water reuse for toilet application**

**Draft guideline to CHE – Fall 2006**

**Public Review – Fall/Winter 2006**

**Final recommendation to CHE – Spring 2007**



# Next Steps

## Plumbing/Infrastructure

- **CSA B128 Technical Committee on Non-potable Water Systems**
- **Final is published & available**
- **Intent – specify minimum plumbing requirements for non-potable systems regardless of water origin.**



# Next Steps

## Technology Verification/Certification

- **Current discussion with BNQ re: expansion of NQ 3680-910/2000 to include Class VI for reuse.**



# **Next Steps**

## **National Strategy**

**Reuse Framework**

**Collaboration – national/international**

**Research, Policy/Standards, O&M,  
Training, Education**