

Rural Drinking Water in Newfoundland and Labrador

Exploring Solutions for Sustainable Rural Drinking Water Systems

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Outline

- ◆ Introduction to project
- ◆ Survey highlights
- ◆ Discussion
- ◆ Next steps for the project

About the Project

What are we trying to do and why?



Our Research Project



- 💧 Risks and challenges influencing drinking water quality and availability
- 💧 Emphasis on communities of 1,000 residents or less in NL
- 💧 What is working, factors for success, possible solutions and future research

Major Components of Research



- ◆ Source water quality and quantity
- ◆ Infrastructure and operations
- ◆ Policies and governance
- ◆ Public perception, awareness, and demand

(DOEC Annual Report, 2012)

How?

- ◆ Literature Review
- ◆ Legislation and Policy Review (DPSIR)
- ◆ Media Scan
- ◆ Municipal Surveys and Consultations
- ◆ Case Studies



Survey Results and Discussion

Labrador Highlights



Respondents- Administrators Survey

- 209 Respondents- **46%**
Response Rate

- 119** – Municipalities

- 48** – LSDs

- 42** - anonymous / did not
answer question

- Regional coverage of
municipalities:

- Avalon **17%**

- Eastern **21%**

- Central **28%**

- Western **21%**

- Northern **8%**

- Labrador 6%**

- Labrador

- 12/25** Municipalities/LSDs

Respondents- Water Operators Survey

- 💧 74 Respondents as of February 13, 2014
 - 💧 57 - Municipalities
 - 💧 15 - LSDs
 - 💧 2 - anonymous / did not specify
- 💧 3 Labrador Municipalities
- 💧 1 Labrador LSD

Need to get these numbers up!

Water Services



Water Service- All Municipalities (Administrators)

Question	1000 or less	1000 +	Labrador Municipalities
Operate a water system for residents?	83%- Yes 18%- No	95%- Yes 5%- No	100%- Yes 0%- No
If no, why not?	60%- Not a priority	64%- Not a priority	N/A
% of households on water system?	45% -76-99% 37% -100%	45% -76-99% 37% -100%	20% -76-99% 60% -100%



Boil Water Advisories



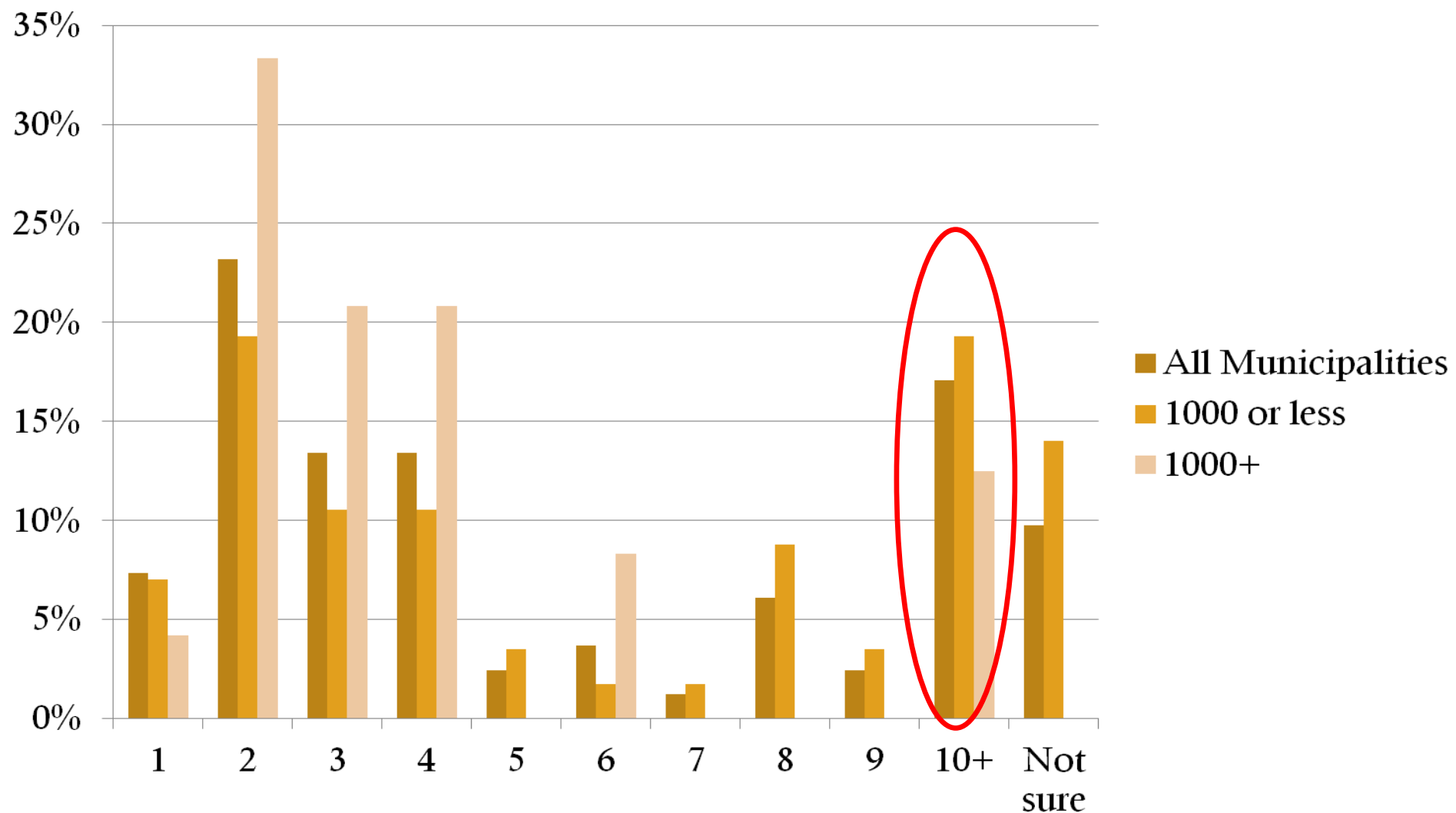
Boil Water Advisories – DOEC Data

💧 Boil Water Advisories (BWAs)

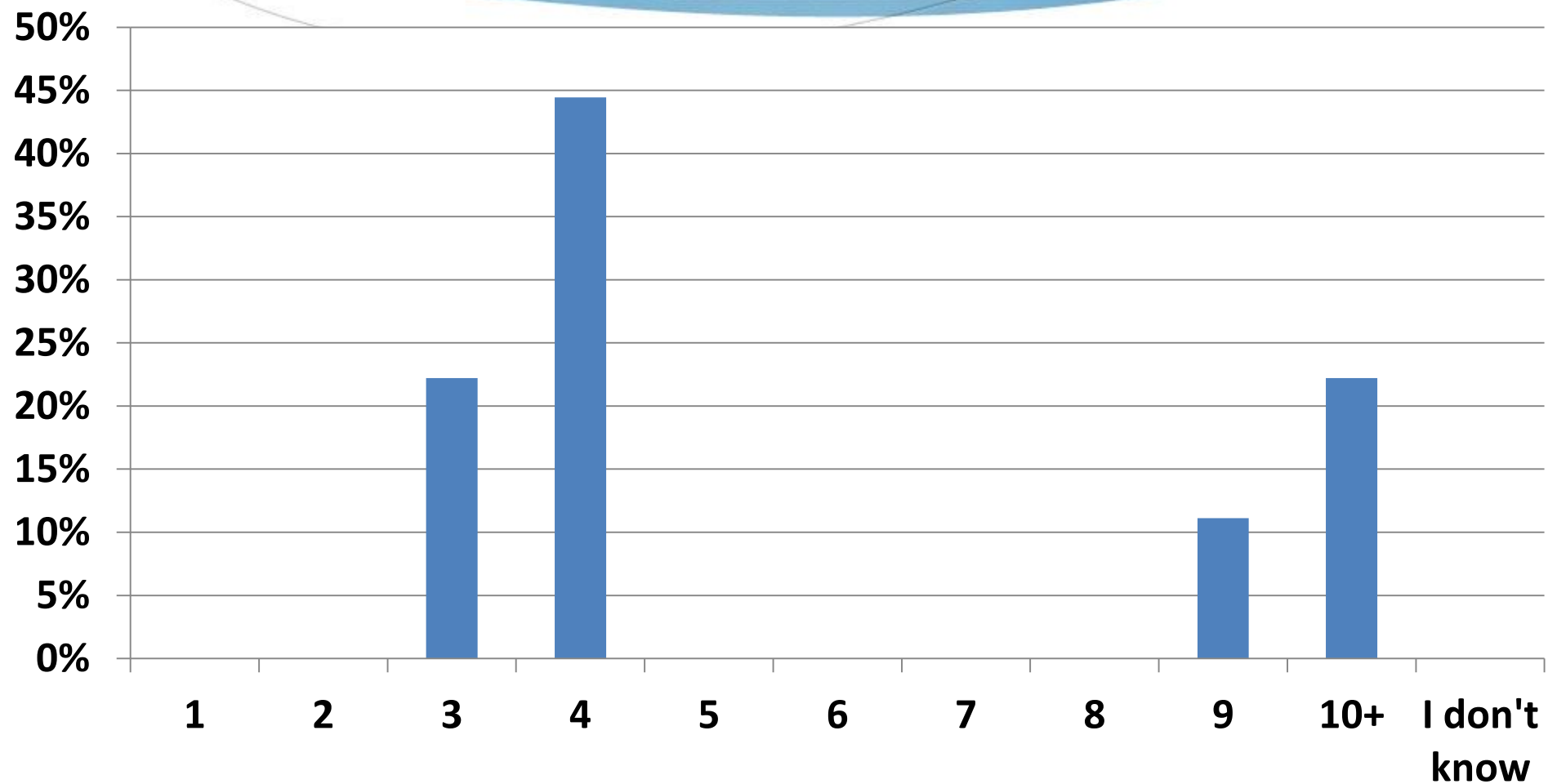
- 💧 July 29, 2013 - **256** BWAs affecting 184 communities in NL (Gov't of NL, 2013c)
- 💧 **96%** communities 1,000 or less
- 💧 **55%** of BWAs for communities 1,000 or less have been in place for 5+ years



How many times has your municipality been on a BWA in the last 4 years?- All Municipalities (Administrators)



How many times has your municipality been on BWA in the last 4 years?- Labrador Municipalities (Administrators)



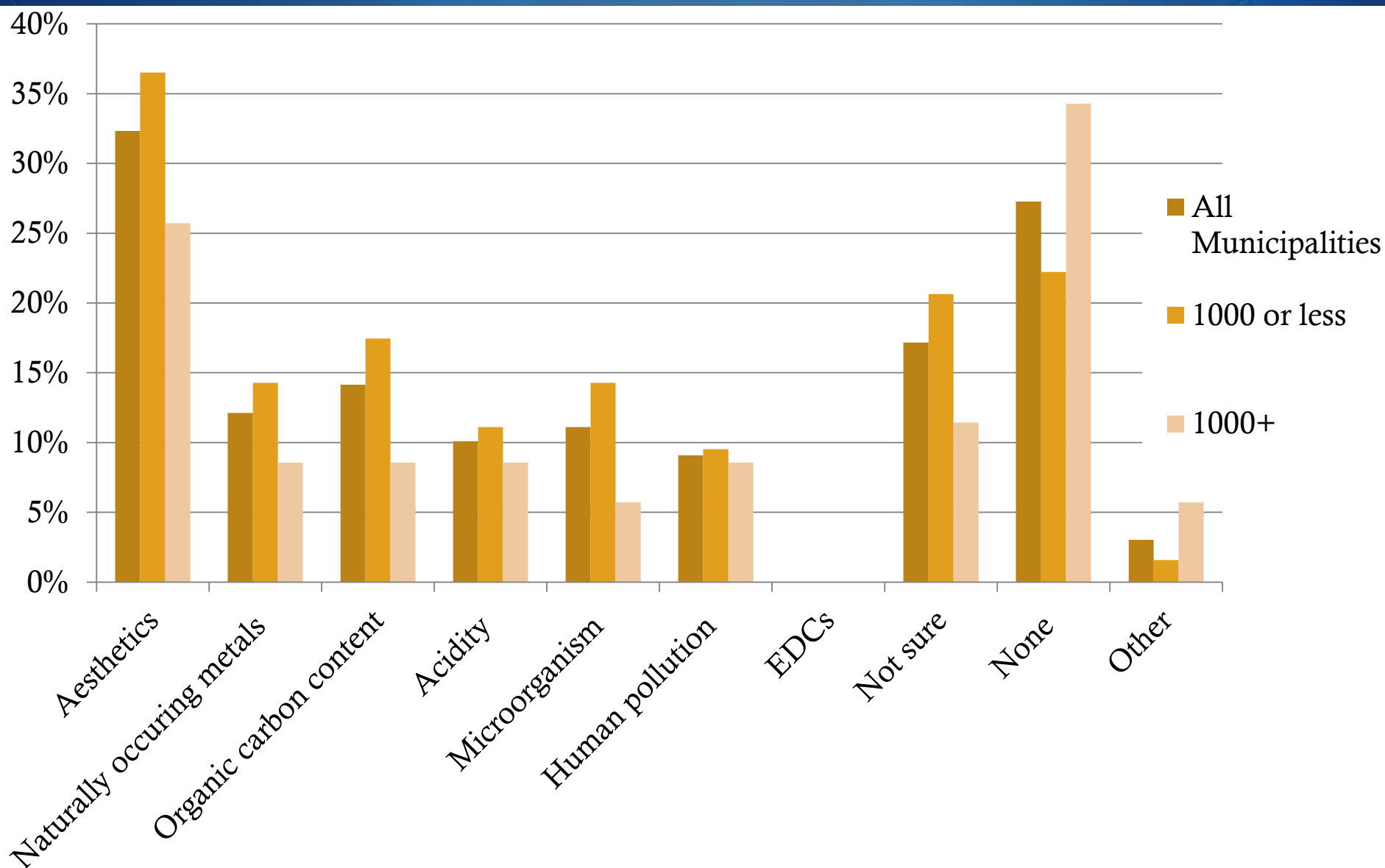
BWA Reasons Labrador Municipalities/LSDs

- ◆ 100% respondents indicated they have had a BWA in last 4 years
- ◆ 50%- Water distribution system is undergoing maintenance or repairs.
- ◆ Other reasons indicated in the same communities that had been on BWA
 - ◆ Chlorination system is turned off by operator, due to lack of funds to operate
 - ◆ Chlorine residual levels not meeting standards
 - ◆ Total coliforms detected

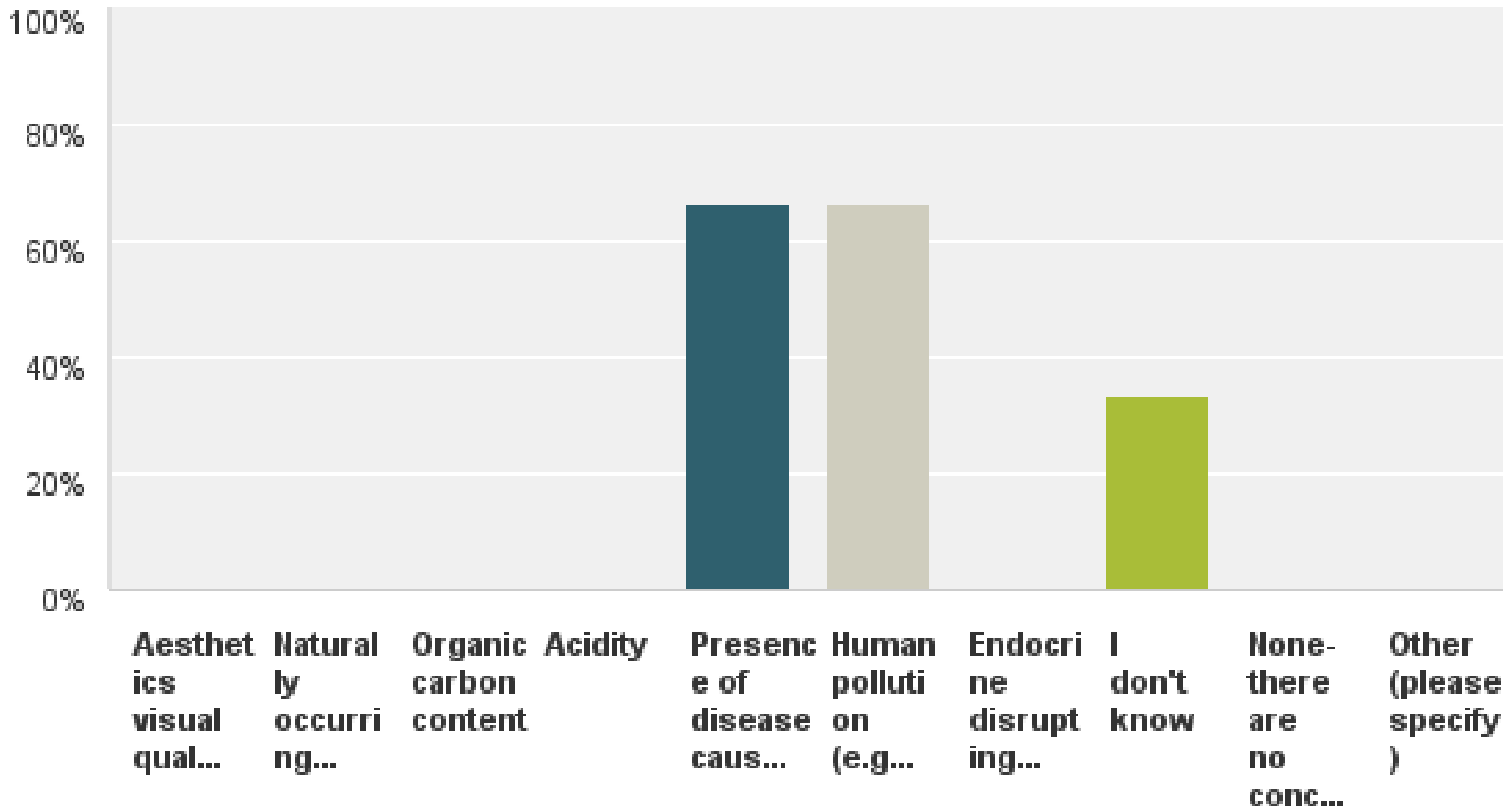
Concerns for Water System



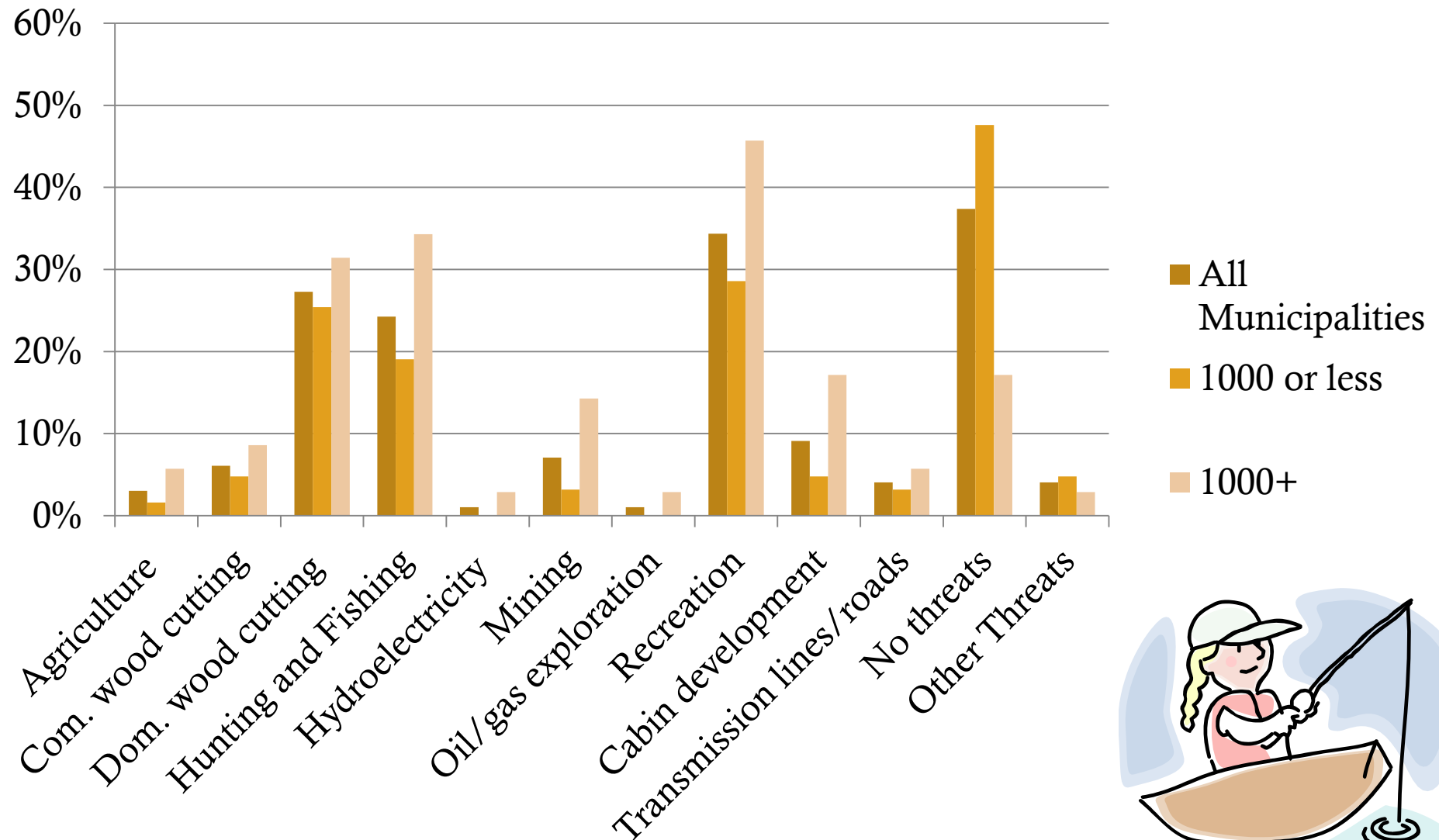
Which of the following are concerns for your municipality's water system?- All Municipalities (Administrators)



Concerns for your municipality's water system? - Labrador Municipalities/LSDs (Water Operators)



Land Use Activities- All Municipalities (Administrators)



Land Activities/Natural Threats– Labrador Municipalities/LSDs (Administrators)

◆ Top concerns for Land Use Activities in Labrador

- ◆ Domestic wood cutting- 10%
- ◆ Hunting/fishing- 10%
- ◆ Mining- 20%
- ◆ Recreational use- 10%
- ◆ Transmission lines/roads- 10%
- ◆ None- 40%
- ◆ Other- 10%

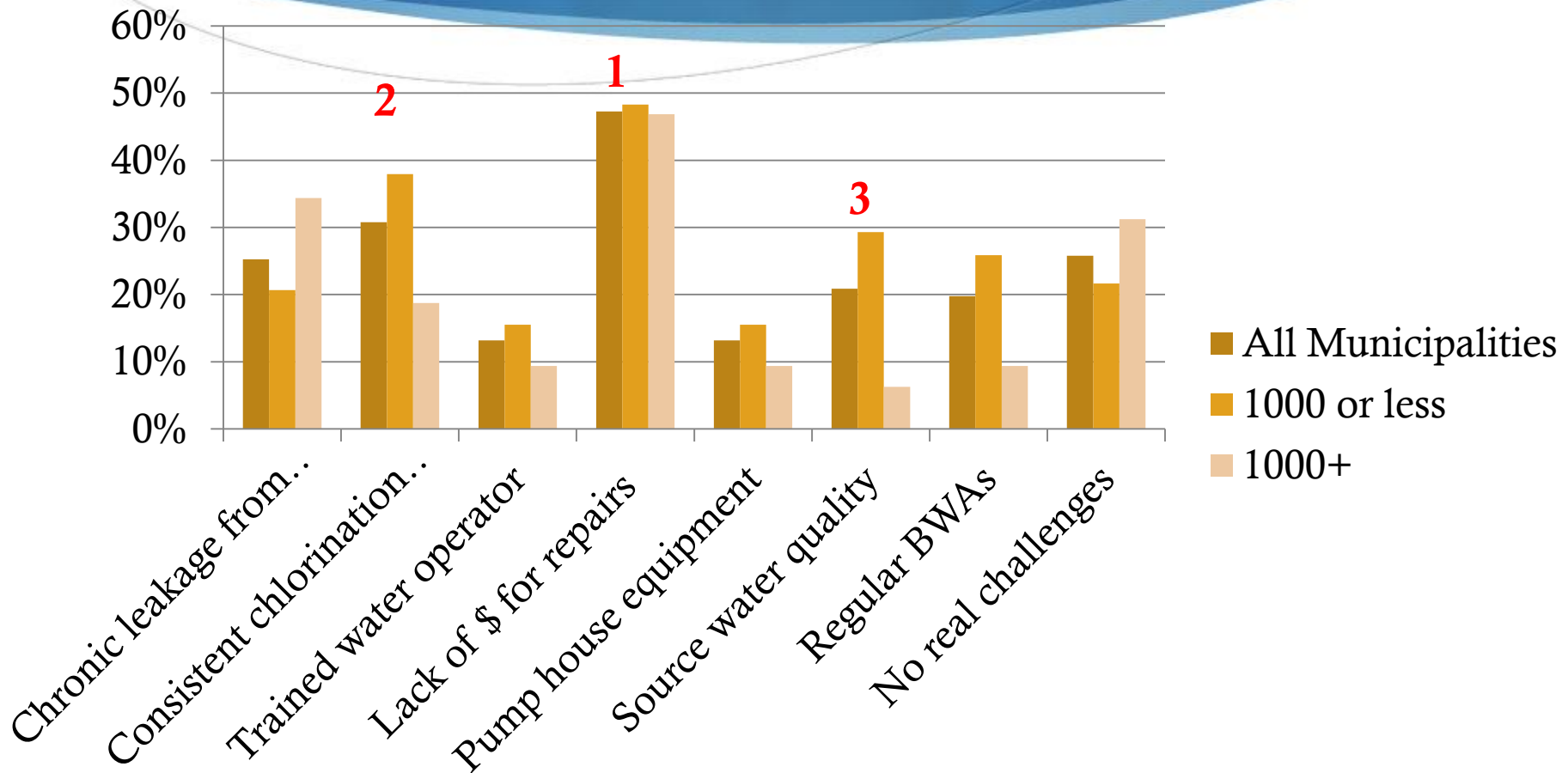
◆ Top concerns for Natural Threats in Labrador

- ◆ Beaver Dams- 40%
- ◆ Freeze/thaw- 30%
- ◆ Extreme weather events- 20%
- ◆ None- 10%
- ◆ Labrador - More likely than other regions to indicate that source water was **only monitored when there were complaints**

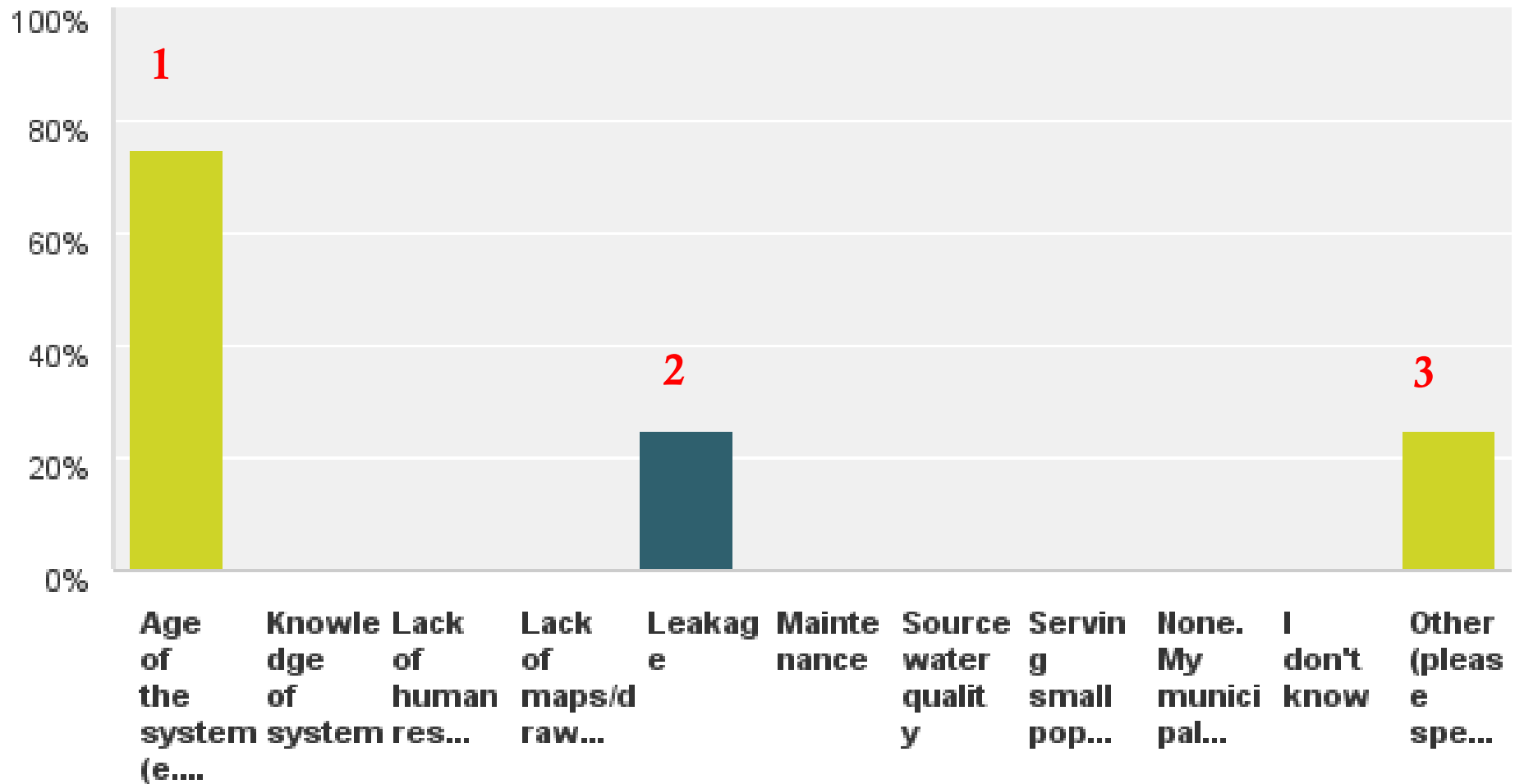
Infrastructure Issues



What challenges does your water system currently face? – All Municipalities (Administrators)



Biggest issues other than financial constraints? Labrador Municipalities/ LSDs (Water Operators)



Infrastructure- All Municipalities (Administrators)

- ◆ Aging infrastructure
 - ◆ 51% with 1,000 or less- system completed 1970's or earlier
 - ◆ 20% in all Labrador municipalities completed 1970's
 - ◆ However 57% of Labrador communities did not get a water system until the 1980's
- ◆ Need for repairs and upgrades
 - ◆ 68% with 1,000 or less
 - ◆ 79% with 1,000+
- ◆ Financial barriers to upgrades



Source: Paula Dawe, P. Eng

http://www.env.gov.nl.ca/env/waterres/training/adwww/ruralreactions/11_paula_dawe_bmps_for_dbps.pdf

Water Operator Education, Training and Certification

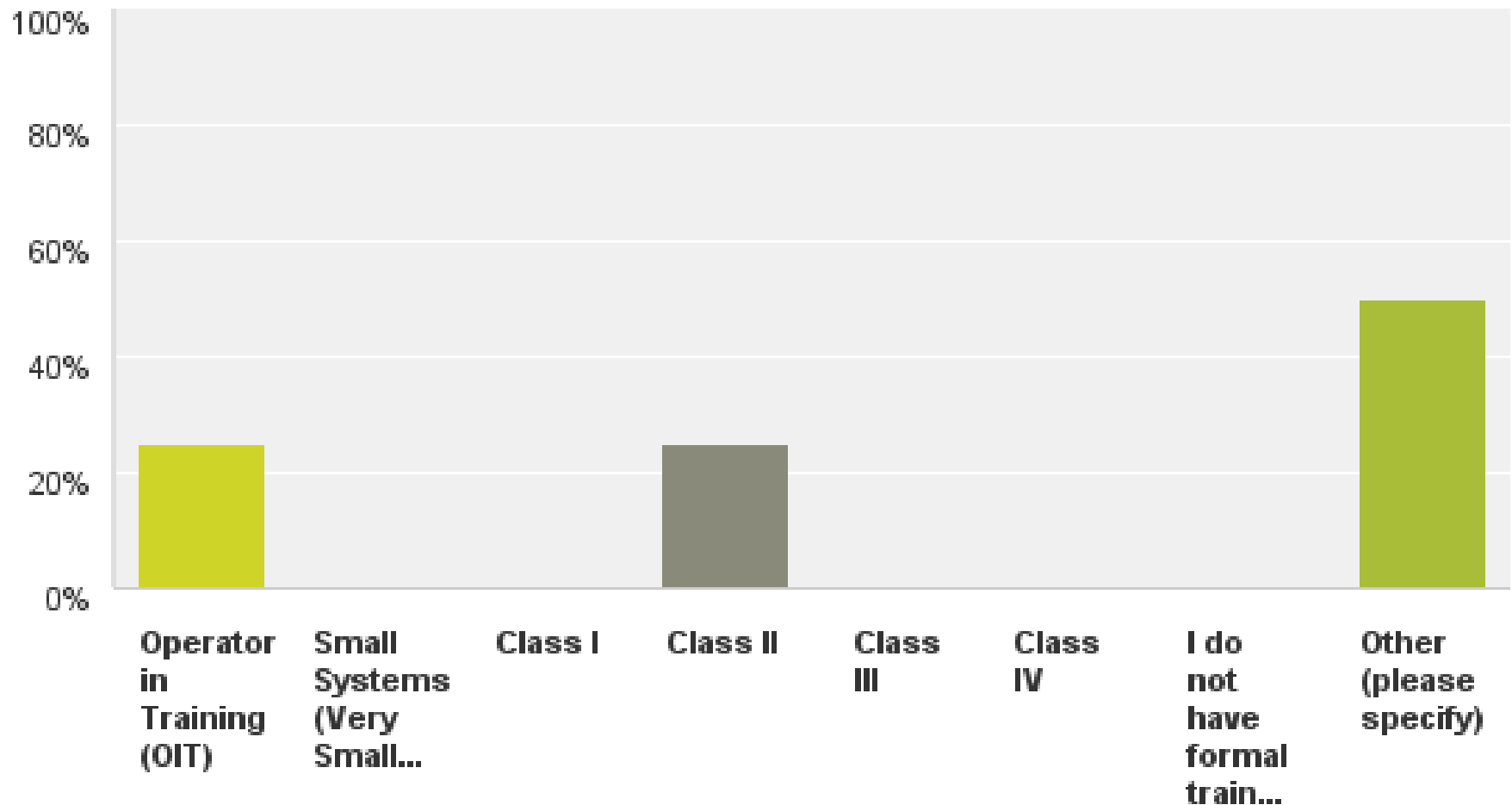


Water Operator Training – All Municipalities (Administrators)

Question	1000 or less	1000 +
Position of Water Operator	50%- Paid Full Time	89%- Paid Full Time
Operators highest level of training	22%- None 13%- OIT 18%- Class 1 8%- Class 2	0%- None 11%- OIT 25%- Class 1 22%- Class 2
Is the level of training an issue?	33%- Yes	17%- Yes
Maps?	56%- Yes of all	48%- Yes of all

50% of LSDs have a volunteer water operator vs. **4%** for municipalities

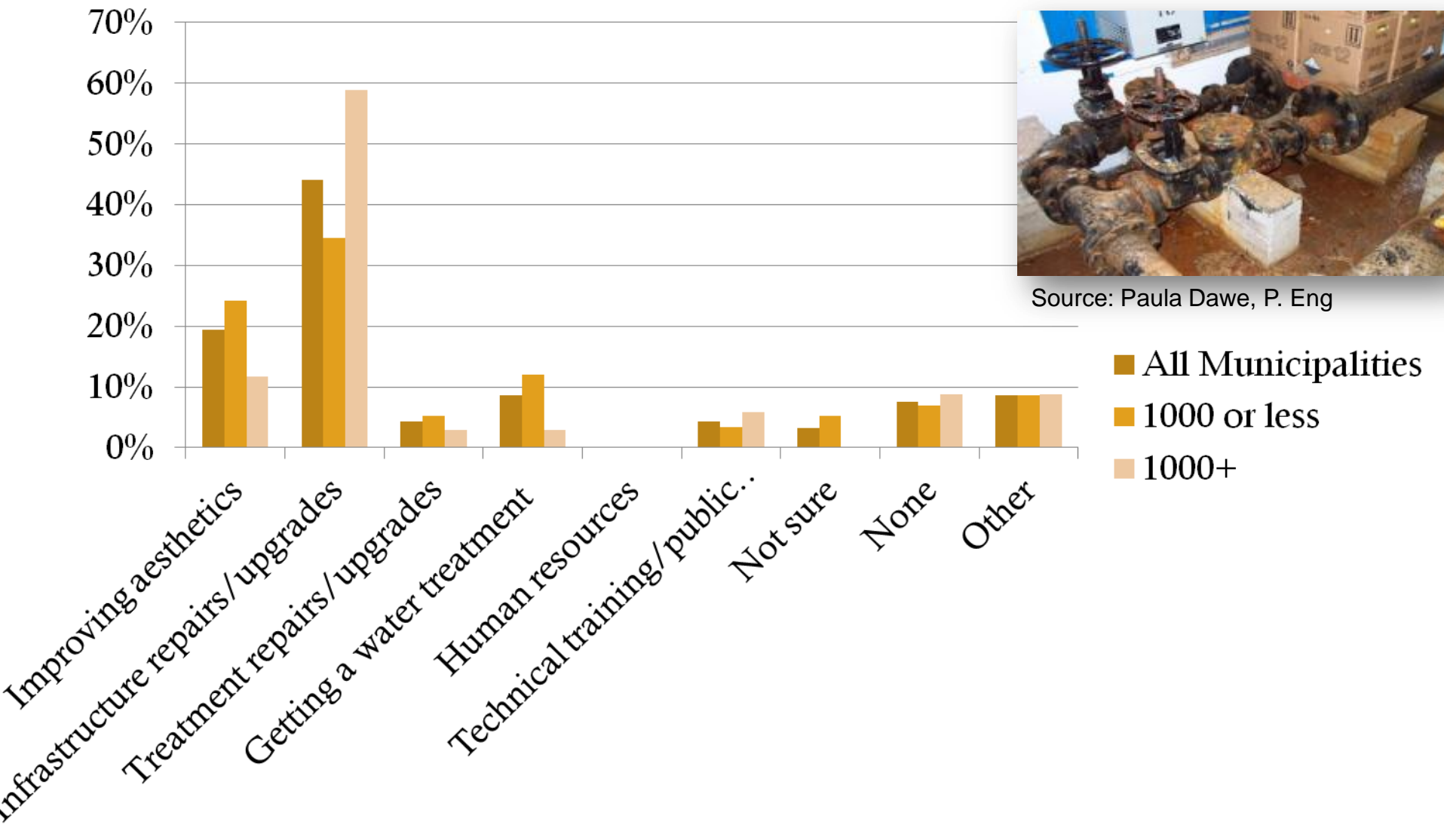
Water Operator Training- Labrador Municipalities/LSDs (Water Operators)



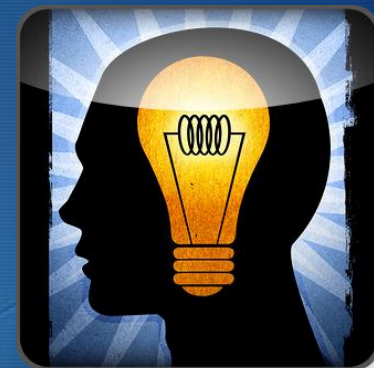
Moving Forward



What should be the highest priority for improving drinking water quality in your community?- All Municipalities (Administrators)



Solutions Undertaken



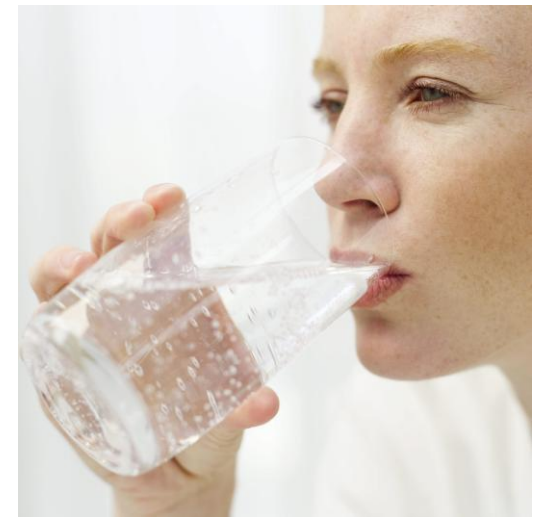
- ◆ **Source:** New wells; Dams; Moving intake; Regional approach
- ◆ **Filtration:** Sand screen at inlet in pond; Water filtration gallery
- ◆ **Treatment:** PWDU; MIOX; New/upgraded chlorination/booster systems
- ◆ **Pump upgrades**
- ◆ **Management and Operations:** Proactive leak detection; Automated monitoring systems (e.g. SCADA); Studies; Having all council members/staff trained operators

New things that haven't worked...

- ◆ System treatment options too complex for operators to maintain/poor maintenance
- ◆ Poor production from drilled wells
- ◆ New chlorine system didn't work because of mud deposits in the regulator
- ◆ New equipment not working
- ◆ Lack of monitoring to ensure proper installation and testing

Impacts

- ◆ Reduced access to a basic necessity of life
 - ◆ Unhealthy communities: Health Canada promotes water as needed daily
- ◆ Potential short and long-term health effects
- ◆ Lack of trust in municipal system
- ◆ Potential liability
- ◆ Stress for municipal leaders
- ◆ Economic development and resident retention



Discussion

- ◆ Any questions?
Comments? Concerns?
- ◆ What concerns are there in your community in regards to drinking water?
- ◆ What kinds of solutions has your community explored?
 - ◆ What's worked?
 - ◆ What hasn't worked?
 - ◆ Advice?
- ◆ What kind of information would you like to see from us?

Next Steps

- 💧 Water Operators Survey closing (**March 7th**) and analysis
- 💧 Further investigation of key issues and solutions
- 💧 Case studies
- 💧 NL/BC comparative project looking at regional solutions
- 💧 Reporting back



Thank you!

And stay in touch!

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