Drinking Water Policy Workshop

April 4, 2014 – Grenfell Campus, MUN

PREPARED BY: MODEL FOREST OF NEWFOUNDLAND & LABRADOR

PREPARED FOR: ENVIRONMENTAL POLICY INSTITUTE

APRIL 2014

Municipalities Newfoundland and Labrador

PMA Professional Municipal Administrators

GRENFELL CAMPUS | MEMORIAL UNIVERSITY

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Drinking Water Policy Workshop
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INTRODUCTION

This document reflects the discussions of a workshop hosted by the Environmental Policy Institute (EPI), Grenfell Campus, Memorial University of Newfoundland on April 4, 2014. The workshop explored the opinions of a select group of drinking water experts representing government, academia, municipalities and NGOs. Participants were asked to review a document prior to the workshop. This document, "Exploring Solutions for Sustainable Drinking Water Systems in Rural Newfoundland and Labrador", was a component of a project commissioned by the Rural Resilience Research Project. Authors, Candice Ramalho, Alice Will, Jeana Macleod & Michael van Zyll de Jong report on the results of an integrated assessment of public drinking water systems in Newfoundland and Labrador. In order to conceptualize these complex socio-ecological systems, they employed a well-known integrated assessment technique known as DPSIR (Pinter, Swanson, Abdel-Jelil, Nagatani-Yoshida, Rahman & Kok et al, 2009; UNEP, 2009a; Binder, et. al. 2013)

The workshop, simply entitled, "Drinking Water Policy Workshop" was coordinated by Sarah Minnes, Project Coordinator, EPI, with direction from Drs. Kelly Vodden and Michael Van Zyll De Jong of the EPI. Facilitator, Sean Dolter and Sarah Minnes lead participant's through both an evaluation of the validity of elements of the assessment with a dialogue on the state and policy responses in accordance to their experience. Katie Temple of the Model Forest assisted in recording the discussion and views of participants. Notes from Sarah Minnes and Muktadir Boksh have also been used in this document.

Please note that slides are ordered in the sequence they were presented at the meeting, and are numbered continuously throughout this document for reference purposes only.

PARTICIPANTS

The following participants' views are represented in this document:

Participant	Organization	Position	Expertise
Tony Keats	MNL/Dover	Small town rep/ Mayor	Municipal operations
Michele Leblanc-Harvard	Environmental Health Labrador Grenfell Health	Regional Director	Health
Maura Hanrahan	EPI/Humanities	Assistant Professor	Social Scientist
Gerry Lahey	DOEC	Operator Training	Operators training
Christa Ramsay	DOEC	Environmental Scientist	Ecologist
Chris Blanchard	DOEC	Wastewater specialist	Wastewater
Brian Moores	Western Health	Director of Health Protection	Health
Tim Beattie	Health Canada	National Lead - CNPHI Drinking Water Advisories	Drinking water policy
Kim Olson	Rural Secretariat	Regional Partnership Planner	Regional actor
Robert Keenan	MNL	Community Cooperation & Development	Municipal operations
Sue Ziegler	MUN- Environmental Science	Professor	Earth sciences
April Muirhead	Stewardship Association of Municipalities (SAM)/DU	Stewardship Biologist	Biologist
Muktadir Boksh	EPI	Masters student	Environmental policy

MEETING AGENDA

April 4, 2014

NRCan – CFS Boardroom, Grenfell Campus, MUN, Corner Brook, NL

9:00	Welcome and Introductions	Dr. Kelly Vodden Sean Dolter, MFNL
	Characterization of Participants Introduction to our clicker technology (Polling Director)	Sarah Minnes, EPI
	Setting the Scene - Background on the Initiative • Drivers, Pressures, State, Impacts, Policy Responses	Sean Dolter
	Coffee Break	
	Session 1: Drivers, Pressures and Impacts	Sarah Minnes Sean Dolter
	Lunch	
13:00	Session 2: State of the Environment and Policy Response	
	Closing Plenary: New Direction Constraints that exist at multiple levels to implementing this new direction: • Infrastructure and capacity related issues • Value conflicts • Other issues	Sean Dolter
	Concluding Remarks – Participants' Forum	Participants Dr. Kelly Vodden
16:00	Adjourn	Sean Dolter

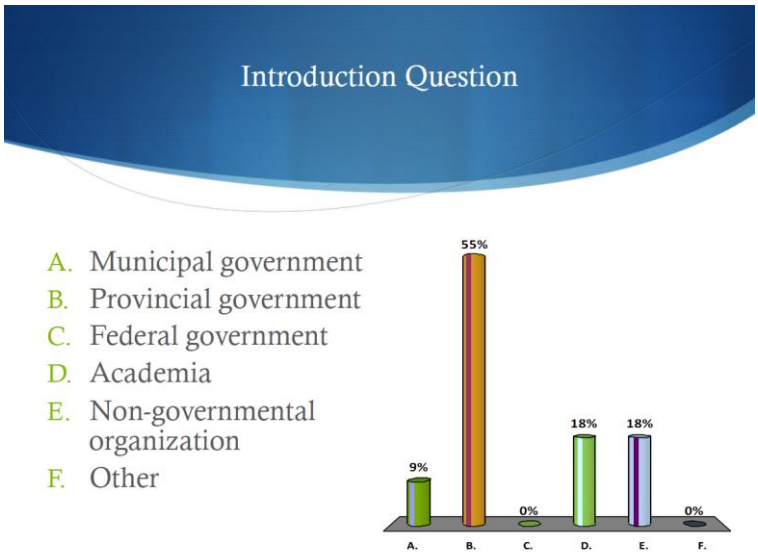
WELCOME AND INTRODUCTIONS

Dr. Kelly Vodden welcomed and thanked all participants for attending the Drinking Water Policy Workshop. Sean Dolter commenced the workshop by welcoming all participants and providing an overview of the agenda items and sessions 1 and 2 scheduled for the day. All participants introduced themselves and indicated what organization/group they were representing and their related experience with drinking water policy.

CHARACTERIZATION OF PARTICIPANTS: INTRODUCTION QUESTIONS

Sarah Minnes introduced the use of a voting system utilizing remote keypads for all participants. Participants were asked the following question:

HOW WOULD YOU CHARACTERIZE THE ORGANIZATION YOU REPRESENT?



The results of the remote voting technology will show up on the bottom right of the slide. For instance:

- Most significant representation was from the provincial government
- There was no federal government representation when the poll was taken, but Tim Beattie from Health Canada joined the call soon afterwards and participated in the rest of the workshop.

Slide 1

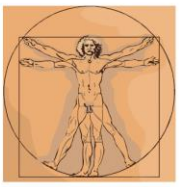
SETTING THE SCENE: WHAT ARE WE TRYING TO DO AND WHY?

Facilitator Sean Dolter, presented his interpretation of the DPSIR process. The following are his slides:

Slide 2

Slide 3: Explaination of the larger research project of which this workshop was a component; See the above introduction.

DPSIR: Drivers, Pressures, State, Impacts, Responses Framework Analogy



Topic: **Human Health**

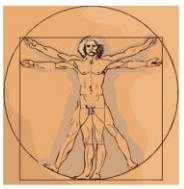
What are the Drivers of human health?

☑Physical Condition: Human Infrastructure

☑Mental Condition: Cognitive stability

Slide 4: Dolter used an anology to explain the DPSIR approach, equating it to the logic of assessing human health

DPSIR: Drivers, Pressures, State, Impacts, Responses



Topic: **Human Health**

What are the Pressures of human health?

☑Physical Condition:
- Disease
- Genetic disposition
- Lifestyle

☑Mental Condition:
- Stress & Anxiety – Social/Economic
- Depression & Loss
- Mental Illness

Slide 5

DPSIR: Drivers, Pressures, State, Impacts, Responses

Topic: **Human Health**

What is your State of human health?

☑Physical Condition:
- Disease
- Genetic disposition
- Lifestyle

☑ Mental Condition:
- Stress & Anxiety
- Depression & Loss
- Mental Illness

☑Physical Indicators:
- Examination parameters
- Minor or catastrophic failure

☑ Mental Indicators:
- Lack of performance
- Relationship challenges
- Feelings of hopelessness

Slide 6

DPSIR: Drivers, Pressures, State, Impacts, Responses

Topic: **Human Health**

What are the Impacts of human health?

☑Physical Condition:
- Disease
- Genetic disposition
- Lifestyle

☑ Mental Condition:
- Stress & Anxiety
- Depression & Loss
- Mental Illness

☑Physical Impacts:
- Illness/death
- Poor performance
- Quality of life

☑ Mental Impacts:
- Loss of job and livelihood
- Failed relationship
- Social exclusion

Slide 7

DPSIR: Drivers, Pressures, State, Impacts, Responses

Topic: **Human Health**

What are the Responses to human health pressures?

☑Physical Condition:
- Disease
- Genetic disposition
- Lifestyle

☑ Mental Condition:
- Stress & Anxiety
- Depression & Loss
- Mental Illness

☑Institutional Policies:
- School health programs: Nutrition & Physical activity
- Regular medical or therapy check-ups
- Medical policies for care

☑ Personal
- Healthy living lifestyle - Commitments

Slide 8

DPSIR: Parallel Analogy

Human Health

Drivers	Pressures	Impacts	Response
•Physical Condition •Mental Condition	•Disease •Genetics •Lifestyle •Stress •Mental Illness	•Illness/Death •Performance •Quality of life •Loss •Relationships •Exclusion	•Institutional •Policy Review •Personal •Gaps in efforts **•Are they/we effective at managing our health?**

Drinking Water

Drivers	Pressures (Eco)	Impacts	Response
• Ecological • Geology • Hydrology • Climate Change • Economic • Social	• Flooding • Drought • Pathogens • Natural Organic Matter • Groundwater levels • Etc.	• Reduced access to the necessities of life • Boil Water Advisories • Costs to remediate • Ecosystem services	• Policy Review & Scan • Policy Gaps • Conclusions **• Are they effective at managing drinking water?**

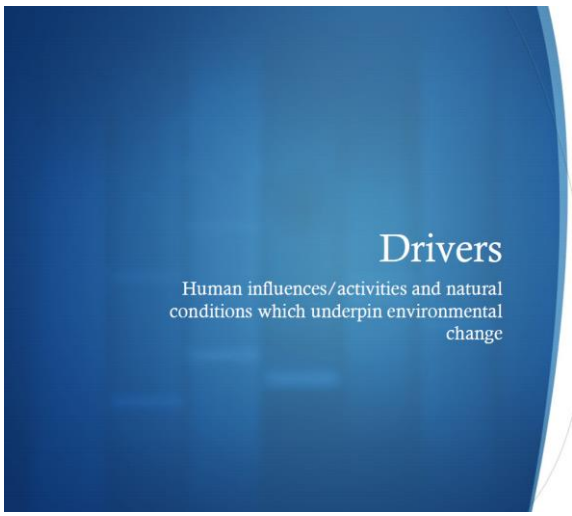
Slide 9

SESSION 1: DRIVERS, PRESSURES AND IMPACTS

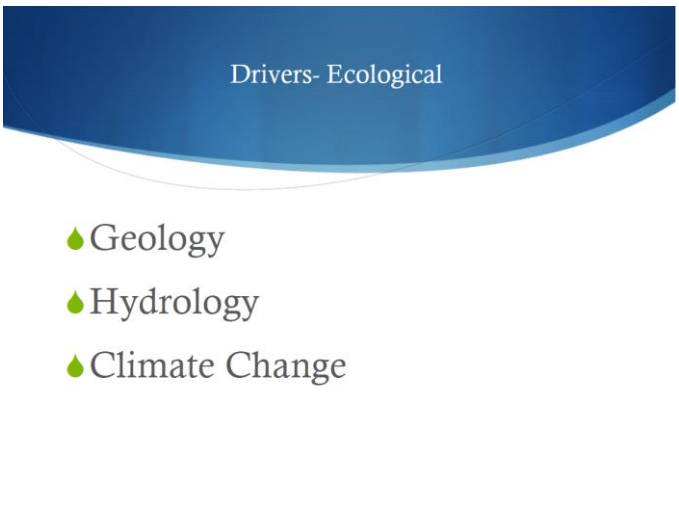
Sarah directed the polling based on three elements of the DPSIR process. The assessment material was taken from the document, "Exploring Solutions for Sustainable Drinking Water Systems in Rural Newfoundland and Labrador". The presentation of information, polling results, facilitation diagram and discussion topics will be included in that order.

DRIVERS

Definition: Human influences or activities and natural conditions which underpin environmental change.



Slide 10



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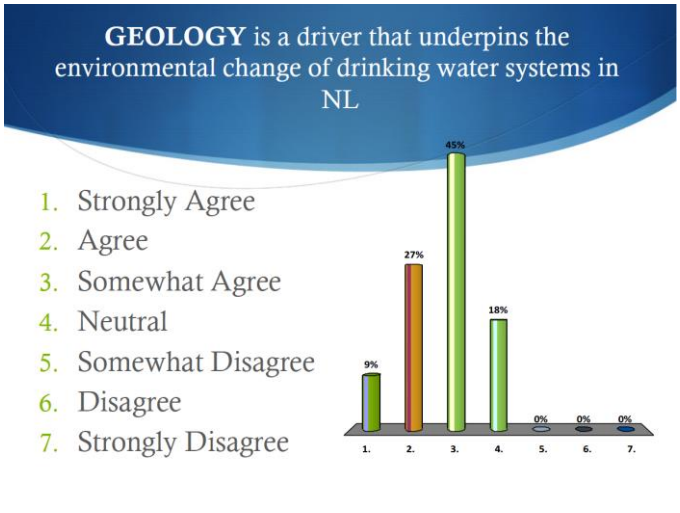

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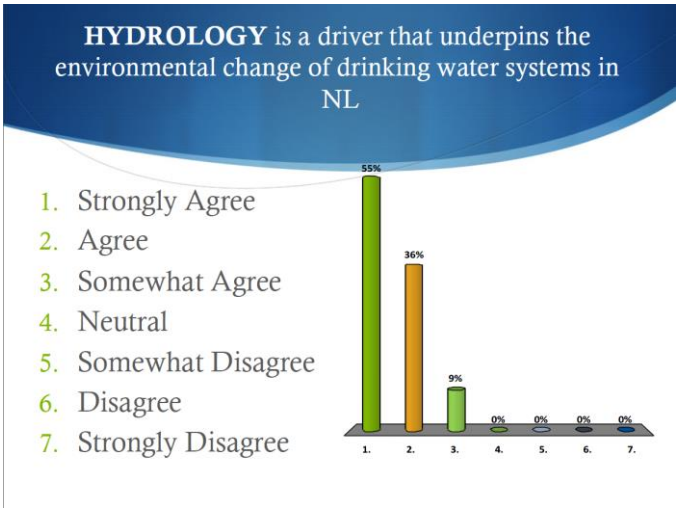
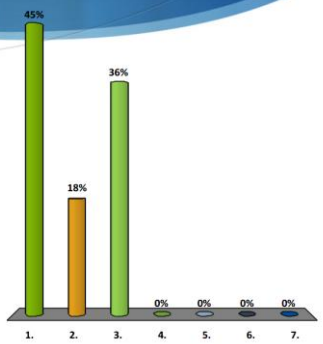


Slide 13

CLIMATE CHANGE is a driver that underpins the environmental change of drinking water systems in NL

1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 14

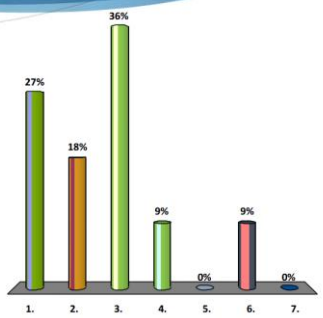
Drivers- Economic

- Economic Growth

Slide 15

ECONOMIC GROWTH is a driver that underpins the environmental change of drinking water systems in NL

1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 16:

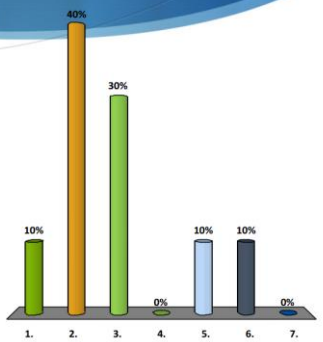
Drivers- Societal

- Demographic Changes
- Urbanization

Slide 17

DEMOGRAPHIC CHANGES is a driver that underpins the environmental change of drinking water systems in NL

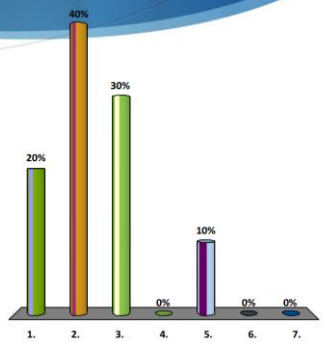
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 18

URBANIZATION is a driver that underpins the environmental change of drinking water systems in NL

1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree

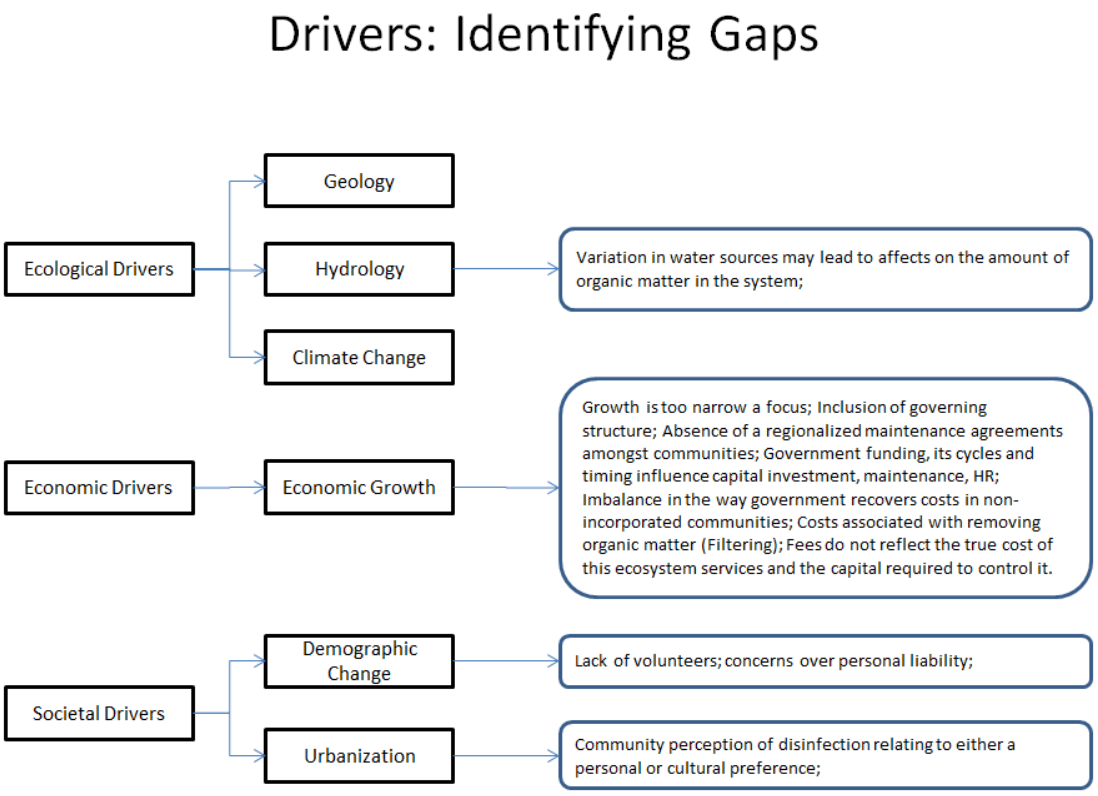


Slide 19

Overview and Gap discussion on Drivers:
After polling was completed for the session on Drivers, workshop participants were asked to provide commentary on what was presented in the document, how they felt about the polling exercise and if there was any element missing from what they consider drivers for drinking water. We asked participants to be mindful that their responses should be relevant to the communities under a population of 1000 residents (COTOLs)

Slide 20

Flipchart Notes



Discussion on Drivers:

Economic

- The cost of water systems can be a fundamental challenge for many small communities and cost-shared funding is not guaranteed each year
- Local Service Districts sometimes have extra challenges because their governing structure makes it more difficult to plan and manage water systems
- Municipalities have flat rates for water and sewer which sometimes are inflated in order to fund other needs in the town; in other cases, not enough is charged for water rates which adds to the perception that water is cheap
- An extra challenge for many small communities in NL is the high dissolved organic content in the water, which would require more costly technology to deal with properly; most systems do not have filtration to remove the organic matter prior to disinfection
- There is a lack of trained personnel to operate the water systems, and many operator positions are poorly paid or seasonal

Ecological

- Community location affects drinking water especially because of the varying rates of dissolved organic content
- One example is from Port Hope Simpson - they are located near a bog and it is cheaper for them to run their water through the bog in a gravity-fed system; however this creates sand build up which frequently clogs the filter

Societal

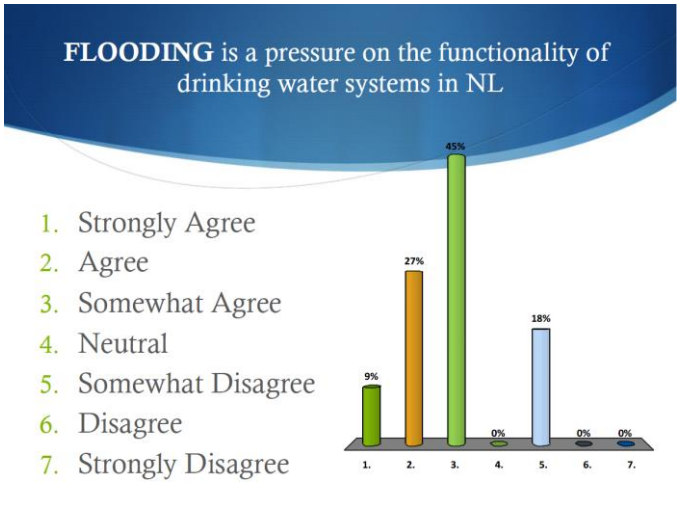
- Due to decreasing populations and a lack of growth in many communities it becomes difficult to plan sustainably for water systems
- There is a lack of regionalization in the province which could allow for more efficient use of resources
- A cultural perception exists here that water is abundant and should therefore be free to use
- Sometimes boil water advisories are kept on longer than necessary because of concerns about liability
- Although metering can contribute to water conservation, there is no metering in rural NL

PRESSURES

Definition: Direct or indirect pressures on the functionality and quality of the environment resulting from driving forces.

Slide 21

Slide 22



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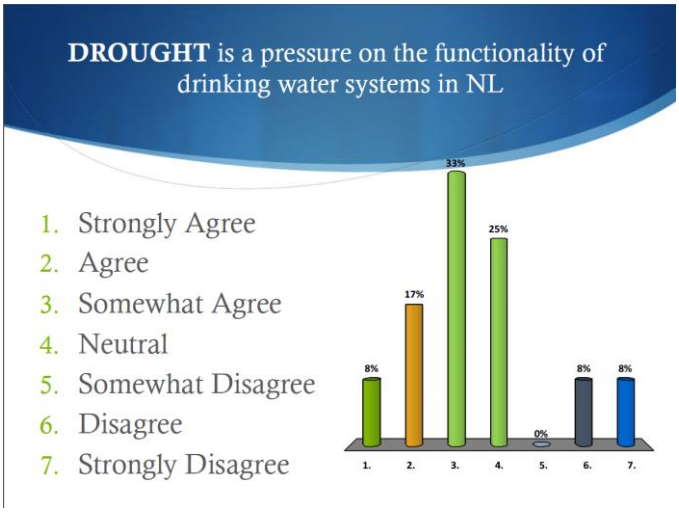

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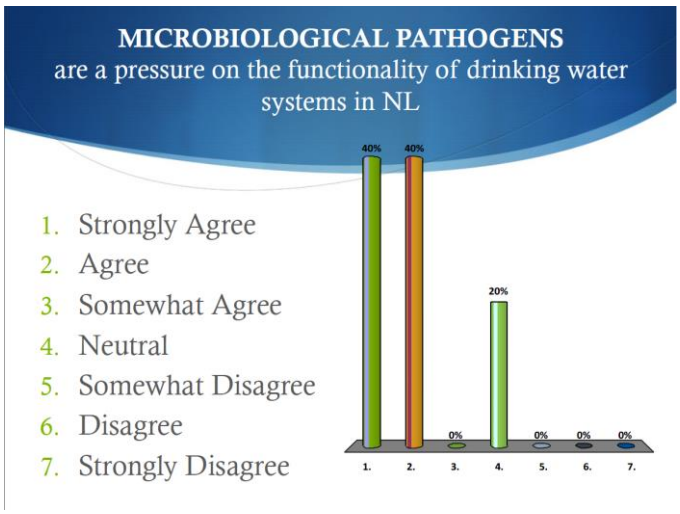

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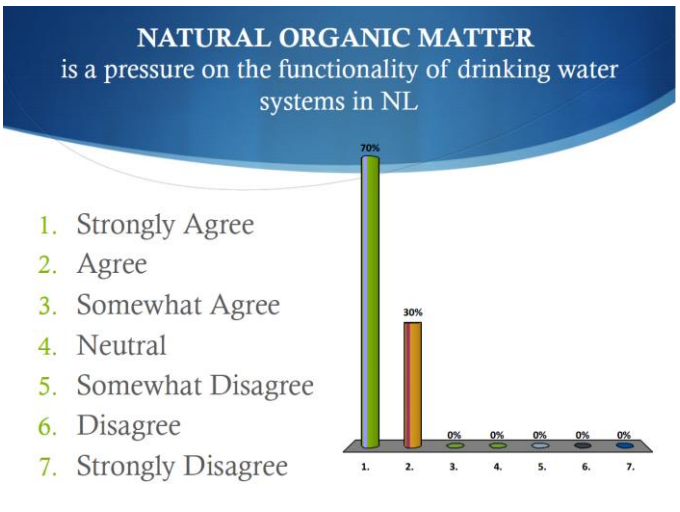

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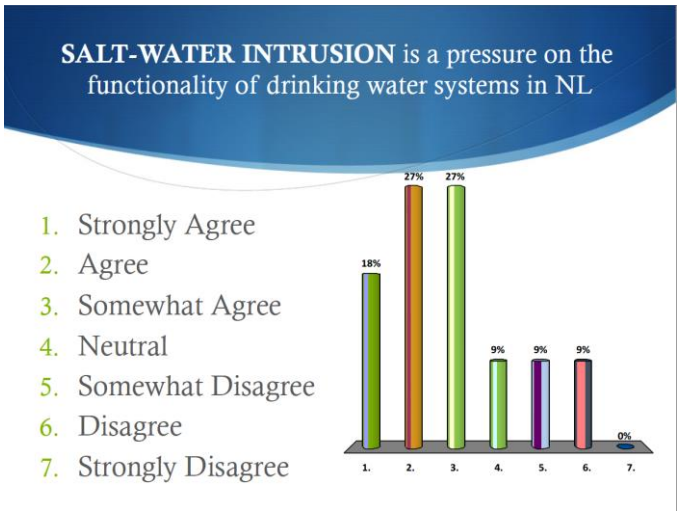

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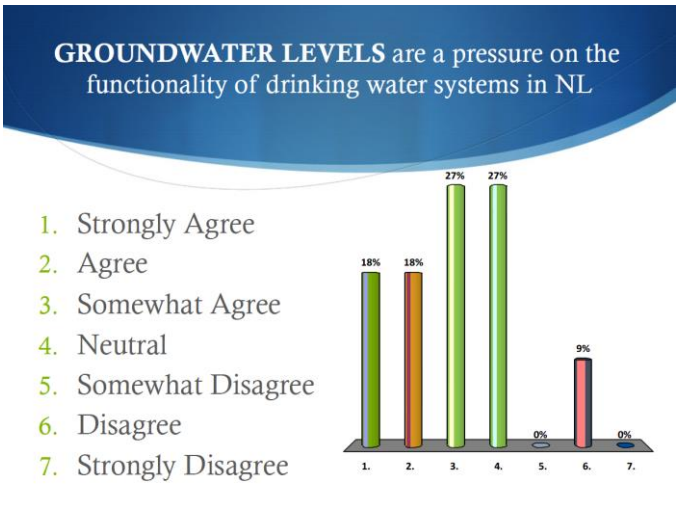

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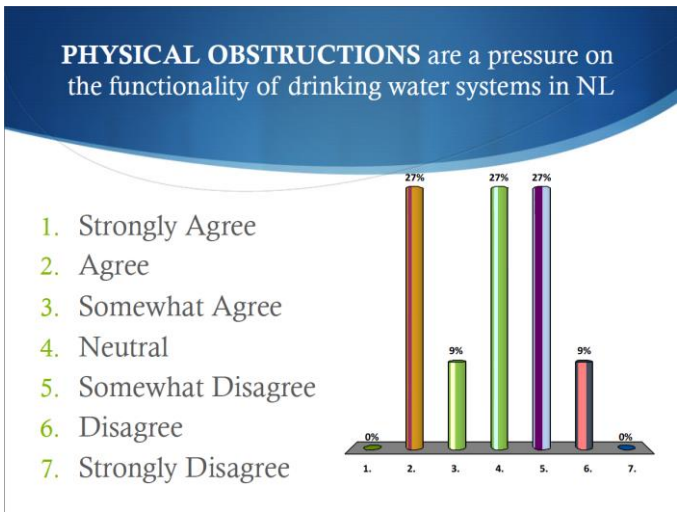

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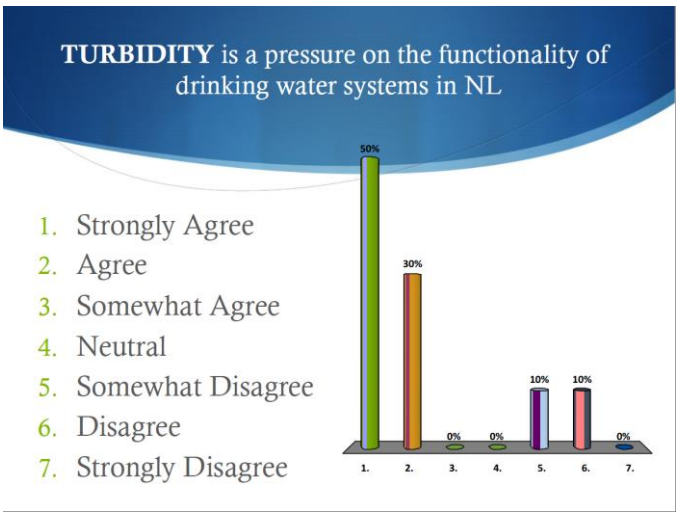

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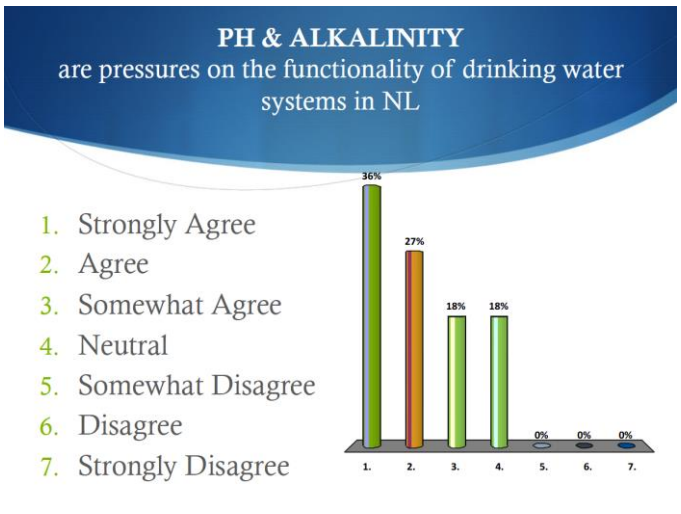

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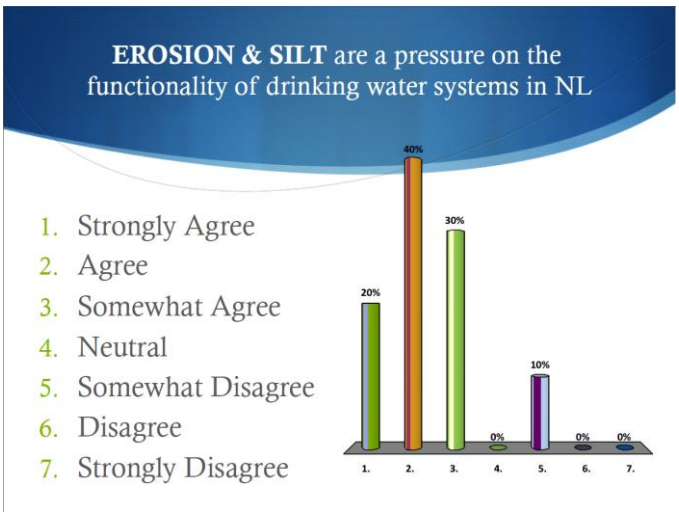

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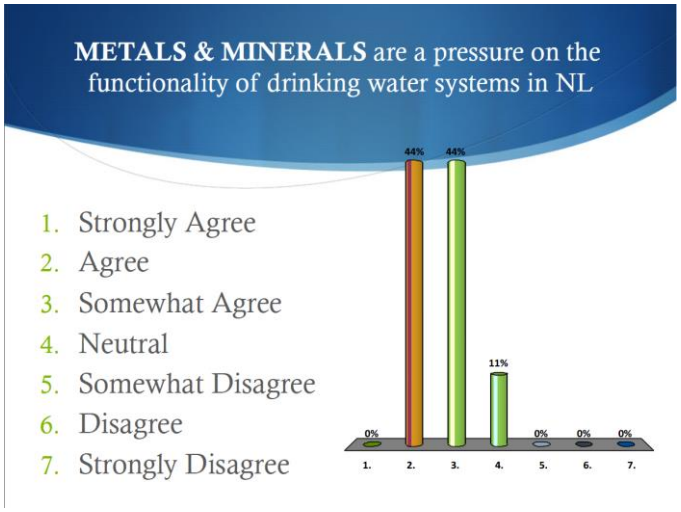

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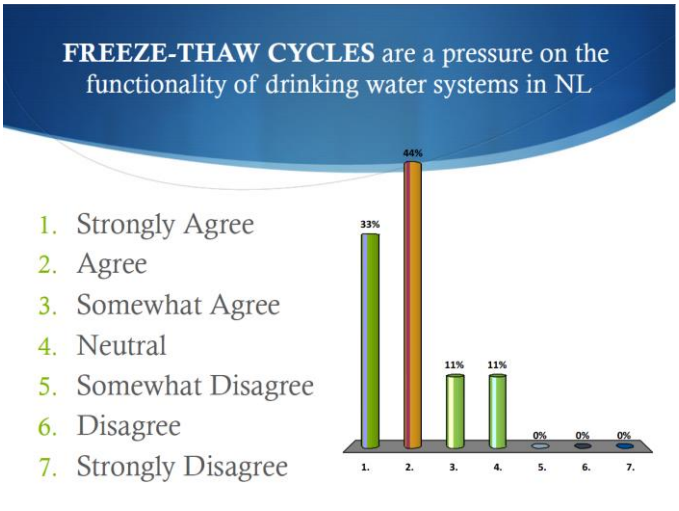

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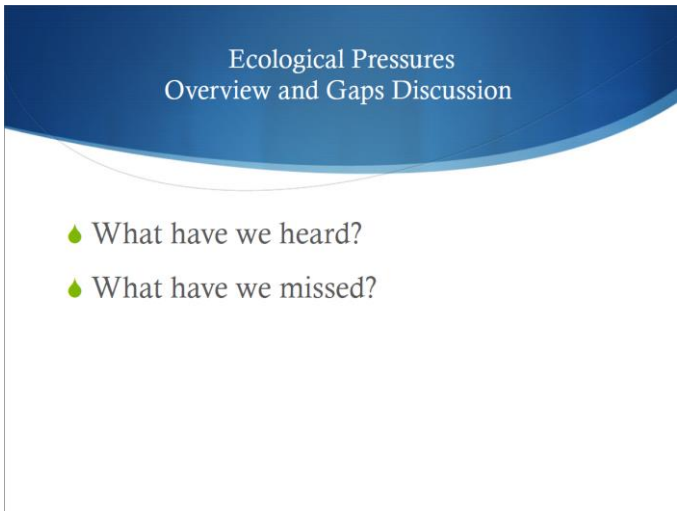


Slide 35

Overview and Gap discussion on Ecological Pressures:
After polling was completed for the session on Pressures, workshop participants were again asked to provide commentary on what was presented, how they felt about the polling exercise and if there was any element missing from what they consider as pressures on drinking water.

The results of the flipchart exercise and discussion will be presented at the end of the session on pressures.

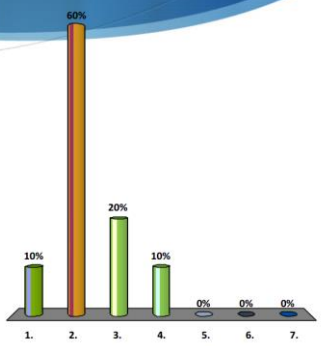
Industrial Pressures

- Industrial water abstraction
- Point source pollution
- Nonpoint source pollution
- Infrastructure (excluding water systems, discussed below)
- Physical obstructions

Slide 36

INDUSTRIAL WATER ABSTRACTION is a pressure on the functionality of drinking water systems in NL

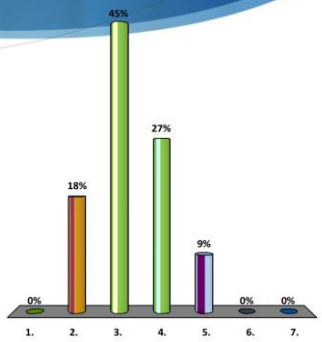
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 37

POINT SOURCE POLLUTION is a pressure on the functionality of drinking water systems in NL

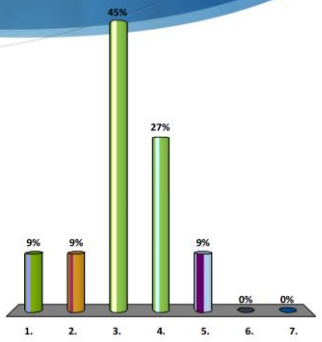
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 38

NON-POINT SOURCE POLLUTION is a pressure on the functionality of drinking water systems in NL

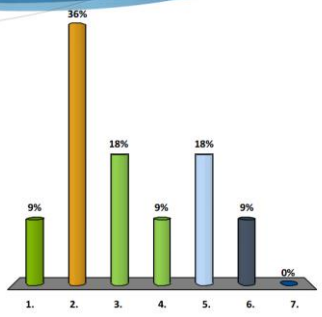
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 39

INFRASTRUCTURE is a pressure on the functionality of drinking water systems in NL

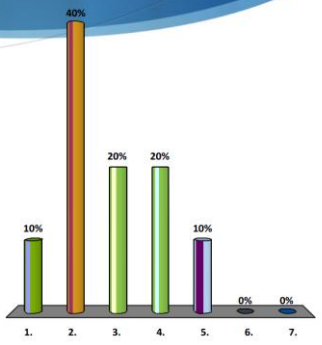
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 40

PHYSICAL OBSTRUCTIONS are a pressure on the functionality of drinking water systems in NL

1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 41

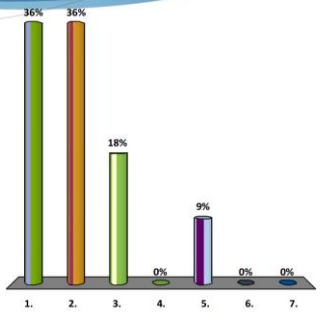
Household Pressures

- Household and cabin water abstraction
- Point source pollution
- Diffuse source pollution
- Water-based activities

Slide 42

HOUSEHOLD AND CABIN WATER ABSTRACTION are a pressure on the functionality of drinking water systems in NL

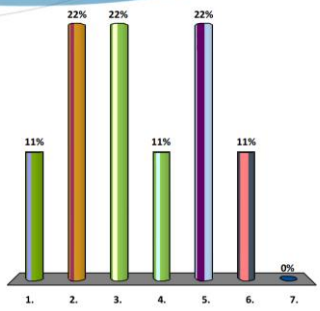
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 43

POINT SOURCE POLLUTION is a pressure on the functionality of drinking water systems in NL

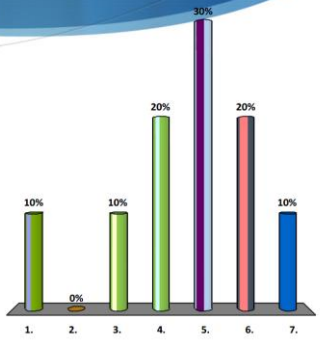
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 44

DIFFUSE SOURCE POLLUTION is a pressure on the functionality of drinking water systems in NL

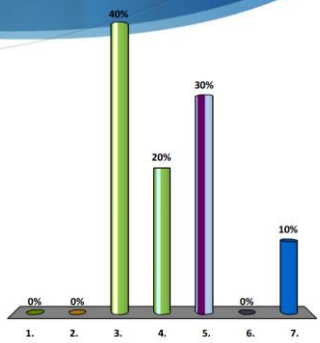
1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree



Slide 45

WATER BASED ACTIVITIES are a pressure on the functionality of drinking water systems in NL

1. Strongly Agree
2. Agree
3. Somewhat Agree
4. Neutral
5. Somewhat Disagree
6. Disagree
7. Strongly Disagree

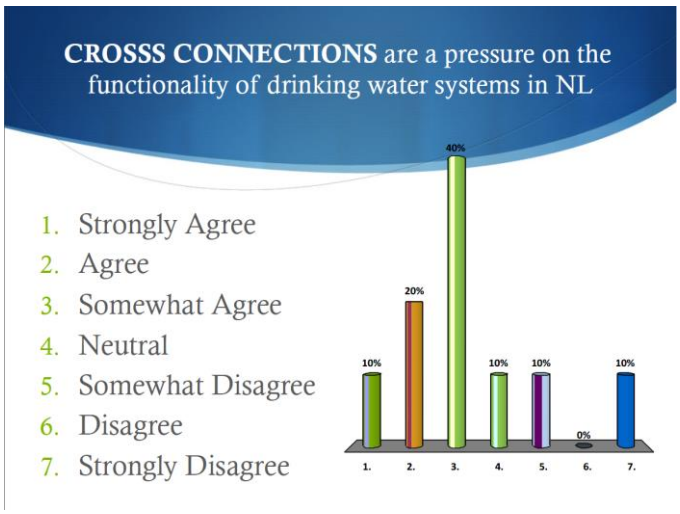


Slide 46

Water System Pressures

- Cross connections
- Aging infrastructure
- Chlorination levels/ disinfectant by-products
- Leakages
- Corrosion

Slide 47



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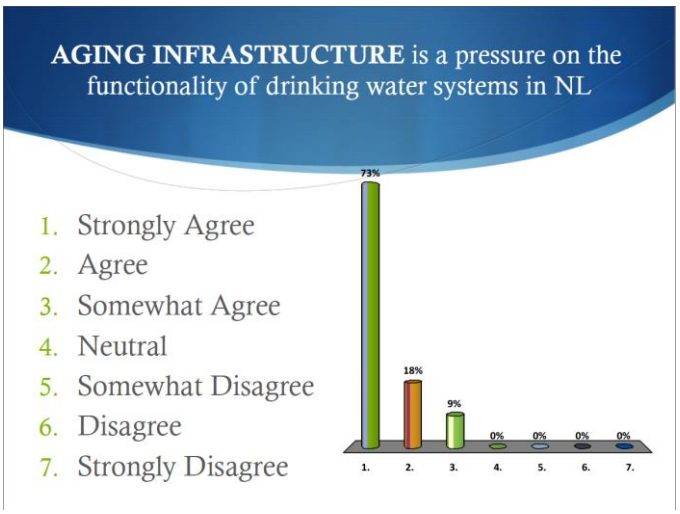

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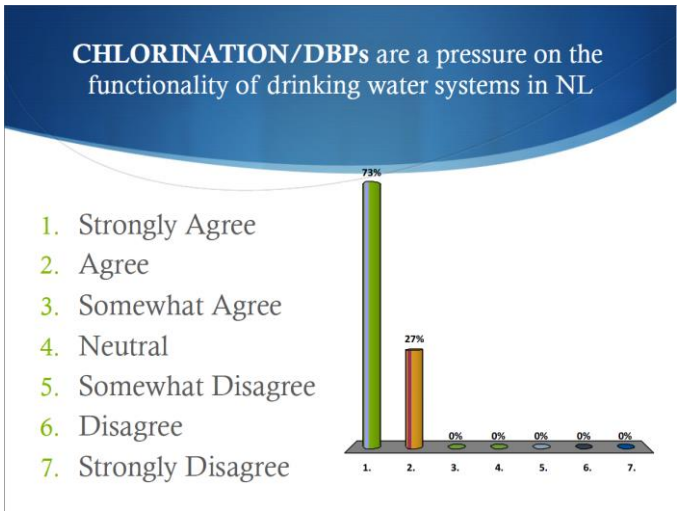

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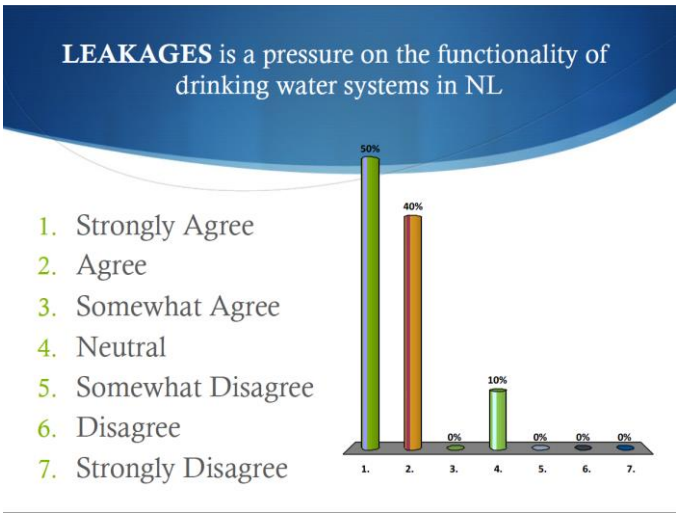

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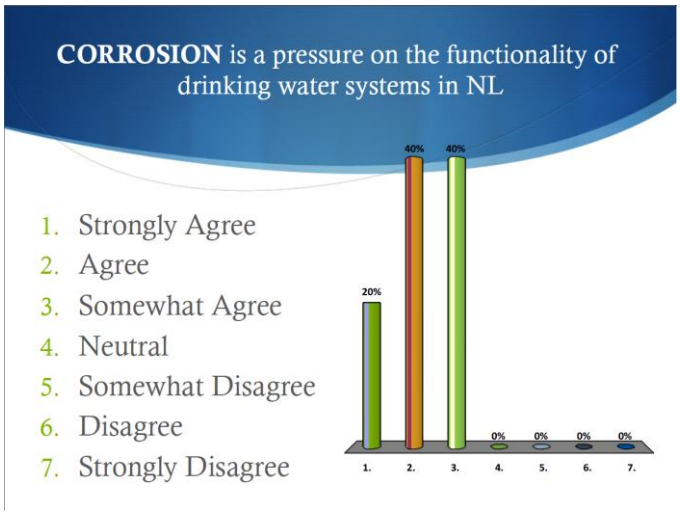

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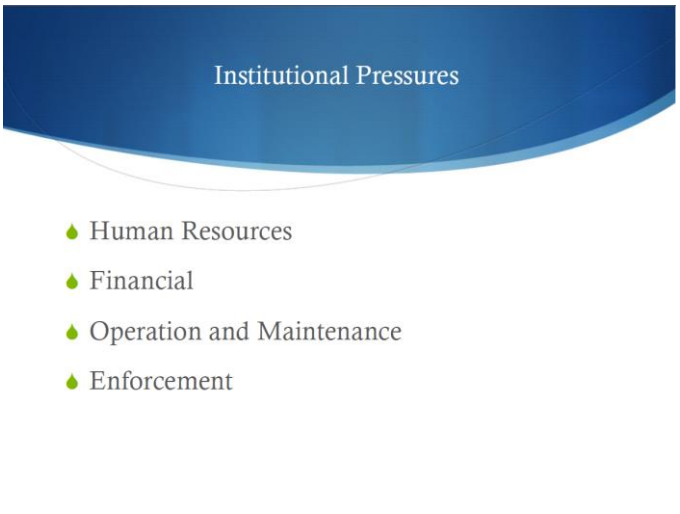

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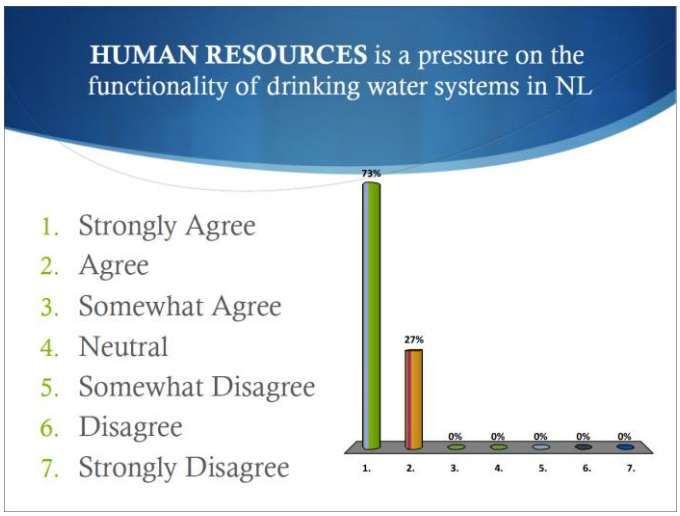

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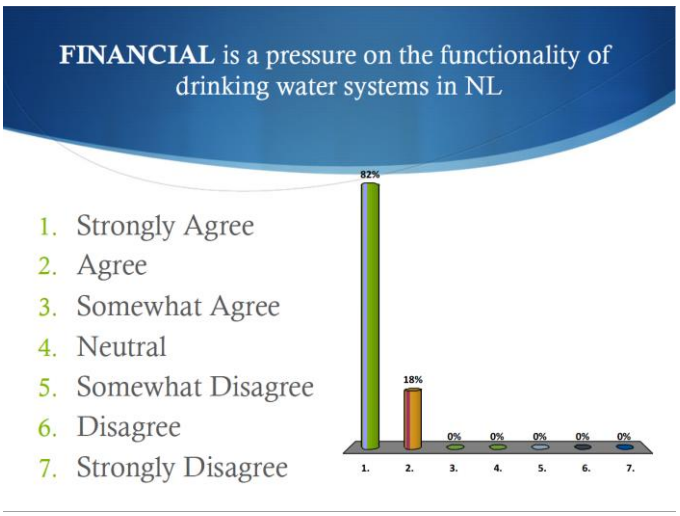

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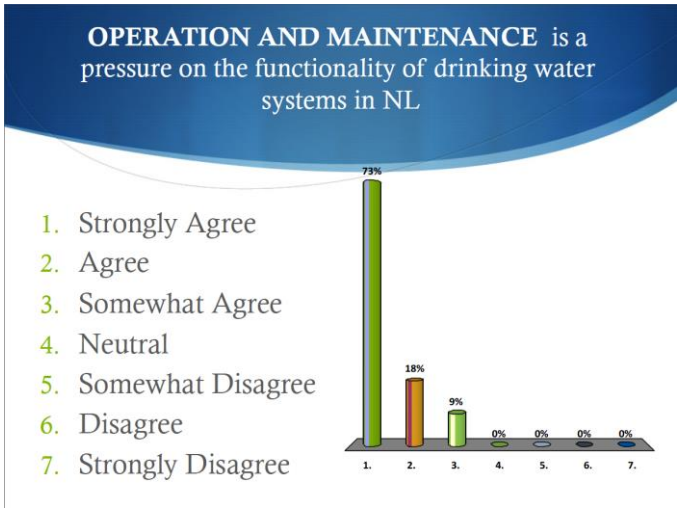

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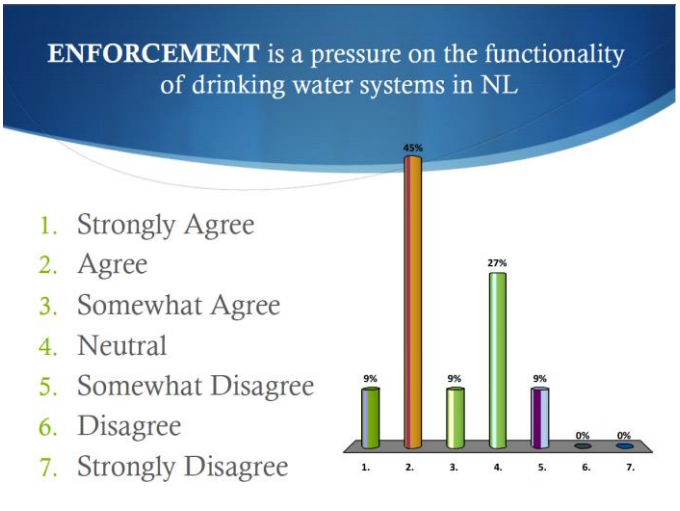
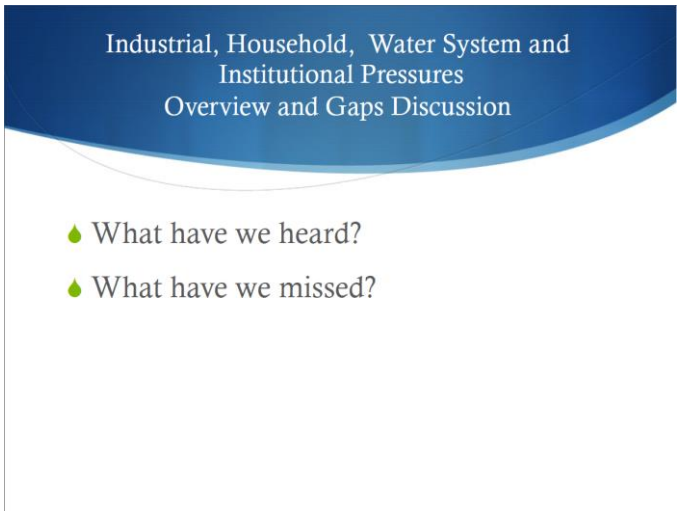


Slide 57

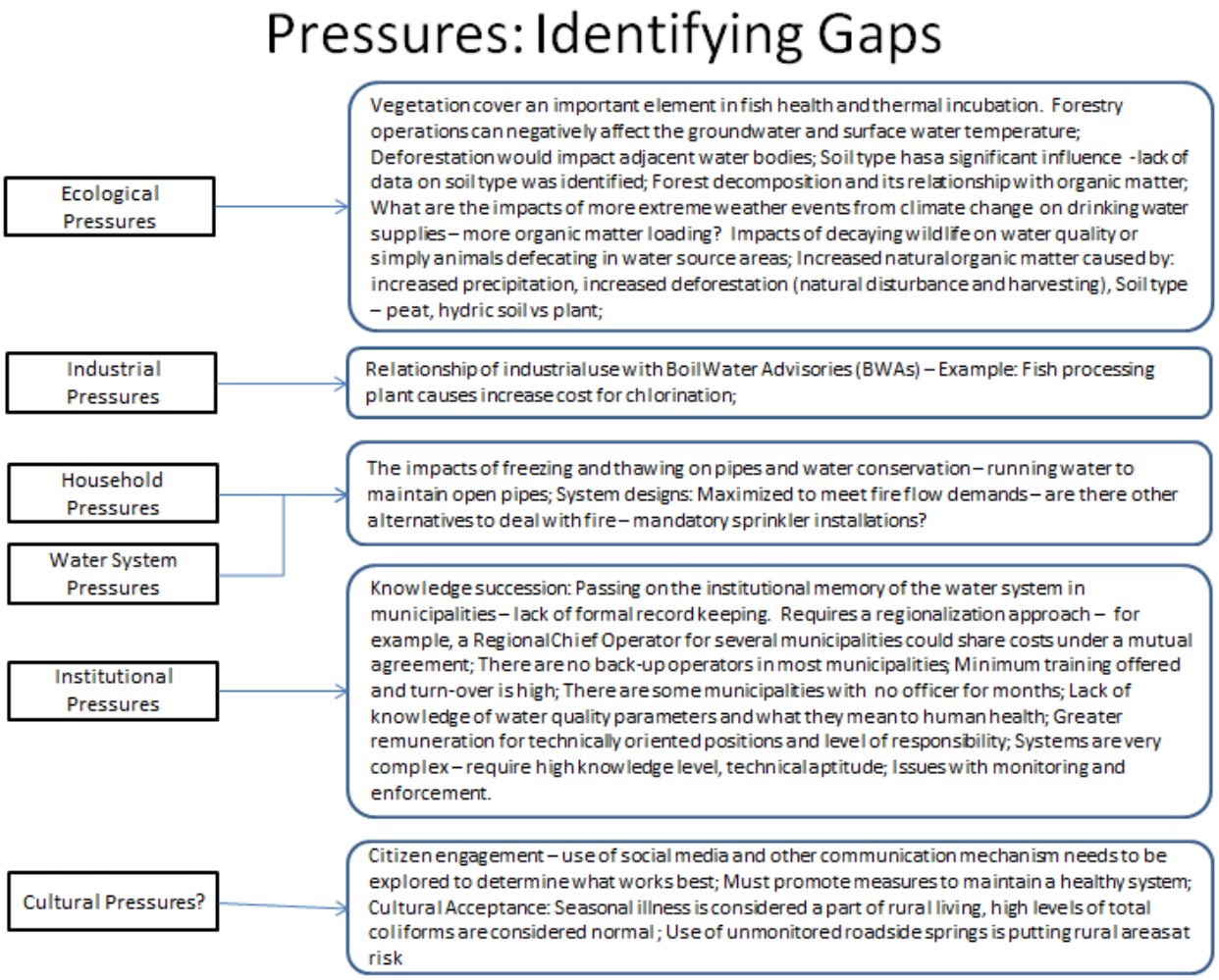
Overview and Gap discussion on Pressures:

The following flipchart notes and discussion relate to all of the pressures.



Slide 58

Flipchart Notes:



Discussion on Pressures

Institutional

- Overall there is a huge financial challenge for municipalities in providing safe, clean drinking water. Drinking water is a top priority so must be addressed first when it comes to capital projects, but they need to be able to afford the 10% required in cost shared arrangements. Some can barely manage this as there are restraints on the amount they can borrow based on their tax base. In many communities, residents are on fixed incomes so the tax base is minimal
- Operators may have minimal or no training, and there are often a lack of back up personnel
- Sometimes there is a large time gap between when one operator leaves the position and another one begins because the job is not necessarily very attractive financially
- Towns can often only afford part time/seasonal jobs that are poorly paid
- Often the job is seasonal because of the availability of personnel – they may have another job for part of the year such as fishing
- There is a lack of data on water systems, for example, in some towns there is no knowledge of who has private wells and where they are located

- Knowledge succession and infrastructure mapping is lacking as municipalities don't always know where all the pipes and other elements of the system are located underground
- There is a lack of personnel in maintenance/repairs at the provincial government level

Ecological

- Wild animals have the potential to contaminate water systems
- Climate change is a large pressure that will impact other ecological pressures; for example there will be an increase in precipitation, extreme weather events, and increased delivery of dissolved organic content
- Certain areas contain naturally occurring contaminants such as arsenic and other potential toxins

Water System

- In many cases, operators are nearing retirement or are already retired. They are simply trying to maintain the infrastructure they already have without being able to address anything new
- There is often a problem with design and overcapacity, as systems were created to handle maximum use for fish plants or for fire protection. The system therefore works best only when the plant is in operation during the summer so for most of the year there is too much water sitting in the pipes
- An example was given of a town (Campbellford) that built a more expensive water system than needed due to the recommendations of the consultants, who receive remuneration based on the total price tag of the project
- Some systems have become more complicated in recent years and there is a lack of associated training on how to operate them
- Right now drinking water is used for all water uses in a house rather than having a dual system to separate domestic from potable
- Sometimes municipalities have to require residents to run water to prevent freezing pipes

Cultural

- The lack of public knowledge about water conservation is a concern, as well as cultural habits. People don't value water and tend to waste it. In cabin areas in particular people don't tend to report issues because it is easier to ask forgiveness than permission
- There is a perception that if it tastes/looks good then it's fine; also that as long as there is no E. Coli there is no problem
- There seems to be a lack of political will – concern that in the current political climate there might be less emphasis on environmental protection and science-based policy
- Literacy levels can be an issue when it comes to communication on water issues – different methods should be used, as well as translation into other languages
- It's important to look into how people receive information about their water, whether through social media, mail, tax bills, word of mouth, etc. it's important to consider that internet is not available in all areas
- Some people have little choice when it comes to health concerns – for example in places where the water is not good enough to drink, it may be cheaper and easier to access pop rather than bottled water
- It is important to understand the choice around choosing roadside springs as a water source rather than tap water

Industrial

- There are some land use issues, including development such as Muskrat Falls which could affect drinking water.

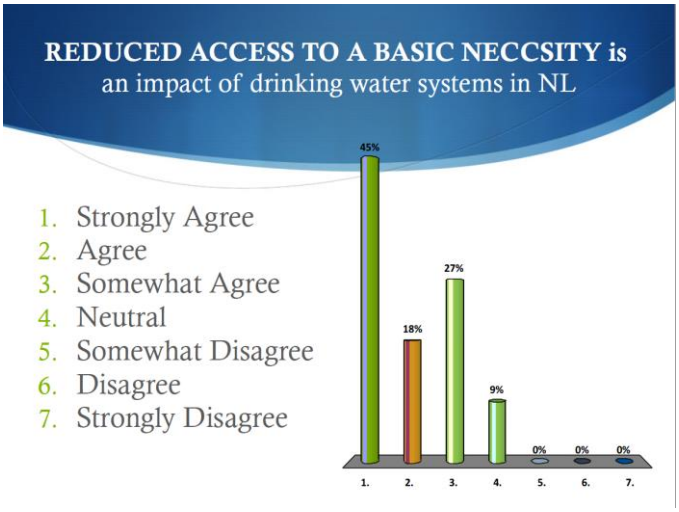
Other

- There is was a question about whether the 15 contaminants checked on by DOEC as 'indicator' contaminants are the appropriate ones to use

IMPACTS:

Definition: Environmental effects of pressures on the current state of the environment

Slide 59



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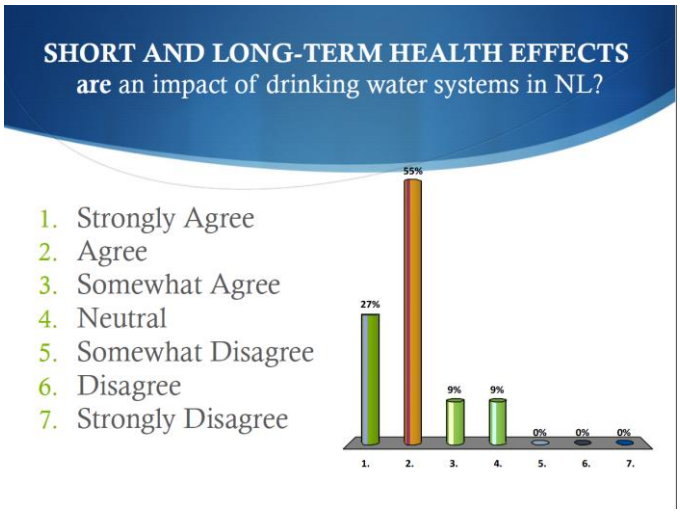

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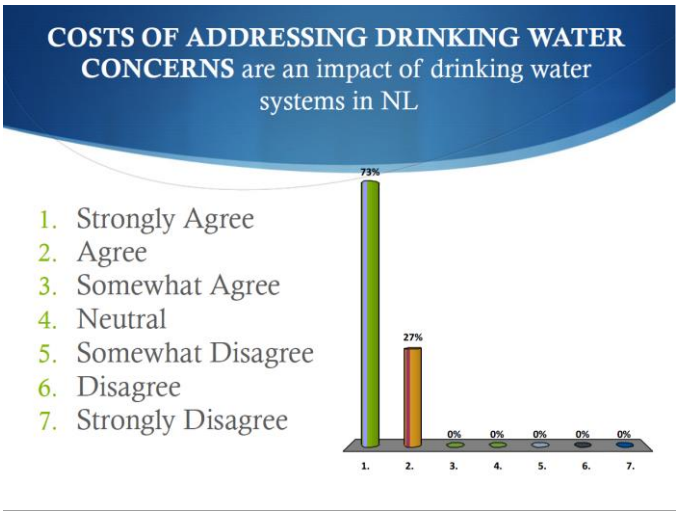

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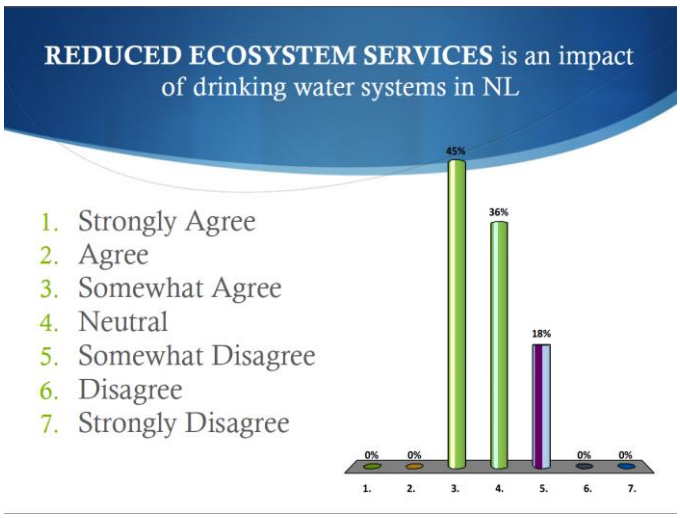
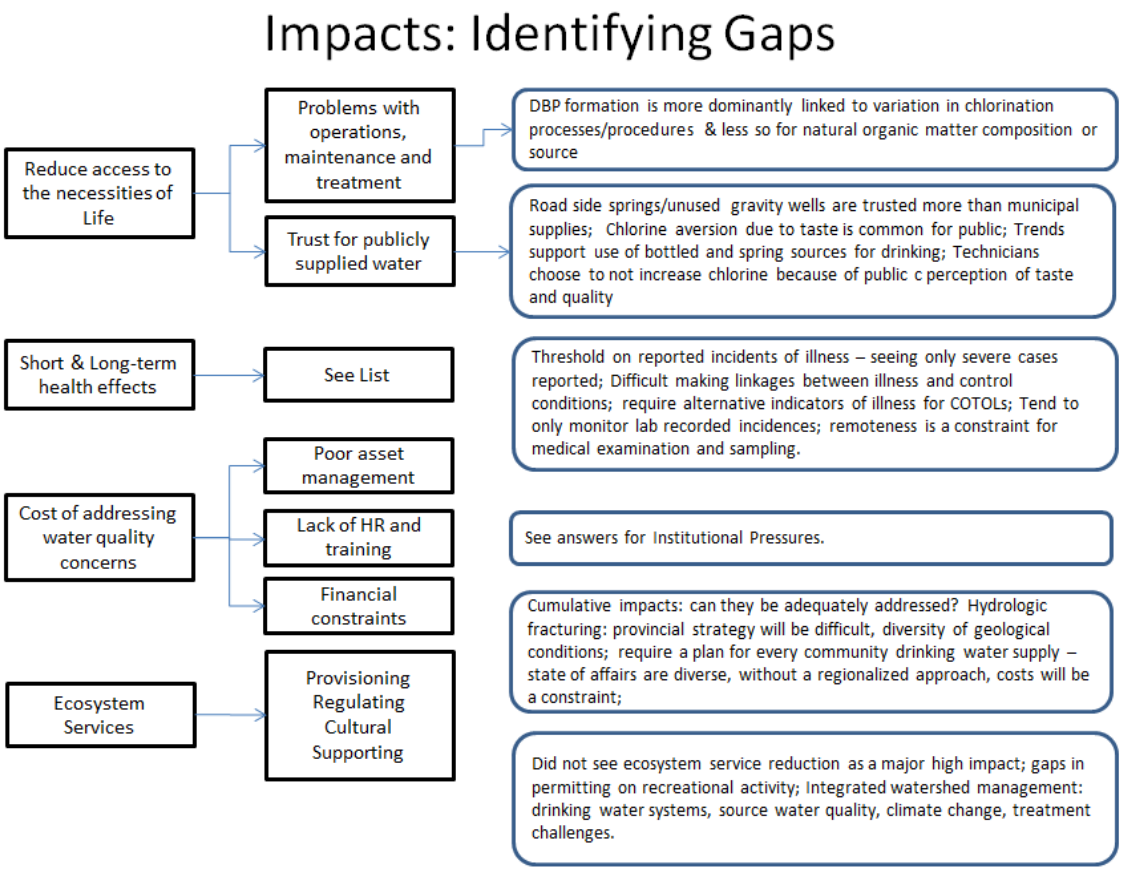


Slide 63

Slide 64

Flowchart Notes:



Discussion on Impacts:

Ecosystem Services

- Participants generally agreed that although ecosystem services are critical when it comes to drinking water, that in this province, they haven't been degraded as badly as in some other places, and therefore the impacts are not as great
- The destruction of forests and wetlands should be considered as potentially significant however as clearcuts do happen in watersheds, and there is also a lot of domestic cutting, all of which can impact water quality. 1/3 of the allowable harvest for timber is in watersheds in the province.

Health

- A discussion was had on the results of the question on short and long term health effects (Slide 61). Currently officials are not seeing a large problem with water affecting people's health negatively. This could potentially be due to under reporting of illness, or the fact that a local population can develop a tolerance for a pathogen they're exposed to, which then masks the problem
- Some illnesses are only able to be tracked through a stool sample which some people might be unwilling to provide
- In rural and remote areas it might be more difficult to access a community clinic
- There has been a rumour that in some areas there is a chronic background level of gastrointestinal illness which seems to be accepted as normal, rather than being properly addressed
- Long term health impacts are much harder to monitor including any negative health impacts from post disinfection by-products (ie. THMs causing cancer or other illnesses)
- The link to food security is also key. Water quality affects food quality. Moreover, some households may have to choose between purchasing water and groceries.
- Another health issue is that men who have to carry water in certain communities develop back problems but this hasn't been explicitly tracked as a water related illness
- The potential for hydraulic fracturing has garnered much attention recently and much is unknown about its possible impacts on water quality and health. An environmental assessment may not adequately look at human health impacts or at cumulative impacts of multiple projects
- There is a concern in Labrador about the potential for mining projects to have impacts on drinking water. A power dynamic exists between small communities and large companies, where community members don't always feel adequately equipped to express concerns
- Overall a concern was expressed about the need for different approaches in rural and remote communities as they have unique issues and will need unique solutions

Public Perception

- Some citizens have lack of trust in the water supply, while others think it's fine to drink despite boil water advisories, especially if no one has experienced an illness directly related to drinking water
- A negative perception of chlorine exists in the population, particularly because of the taste. Sometimes the preference is that a boil water advisory stay in place rather than increasing the level of disinfection. Sometimes residents will put pressure on operators to reduce the level of chlorination because of the taste and perceived health impacts. This pressure might be particularly strong in rural communities.

SESSION 2: STATE OF THE ENVIRONMENT AND POLICY RESPONSES

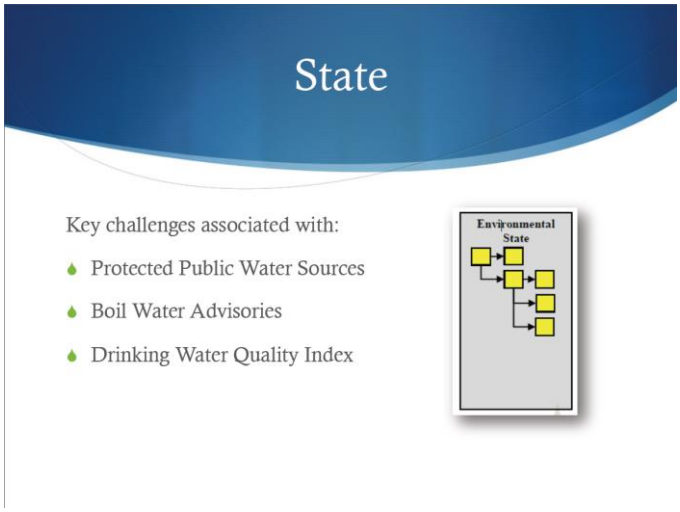
Sarah directed the polling based on three elements of the DPSIR process. The assessment material was taken from the document, "Exploring Solutions for Sustainable Drinking Water Systems in Rural Newfoundland and Labrador". The presentation of information, polling results, facilitation diagram and discussion topics will be included in that order.

STATE & POLICY RESPONSES

Definitions:

State: The current state of the environment in terms of the quantity and quality of natural source and its uses as an ecosystem service.

Response: Societal response to mitigate negative impacts on the environment and the ability to adapt to change.



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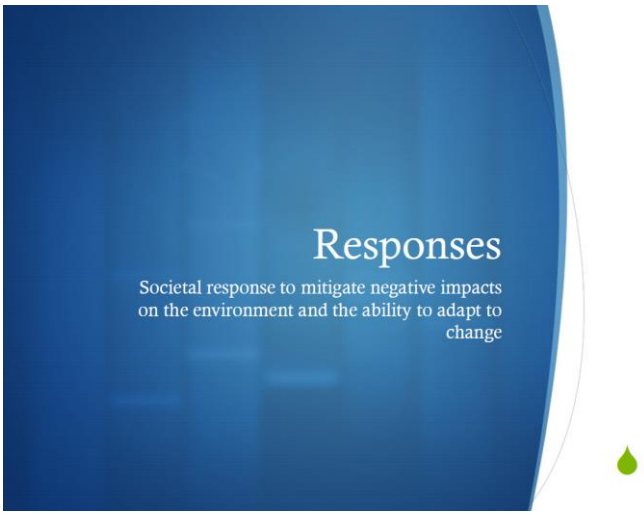
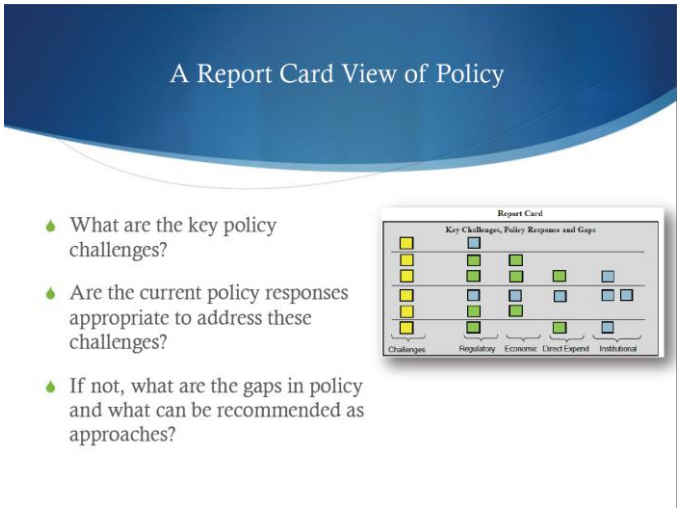


Slide 66

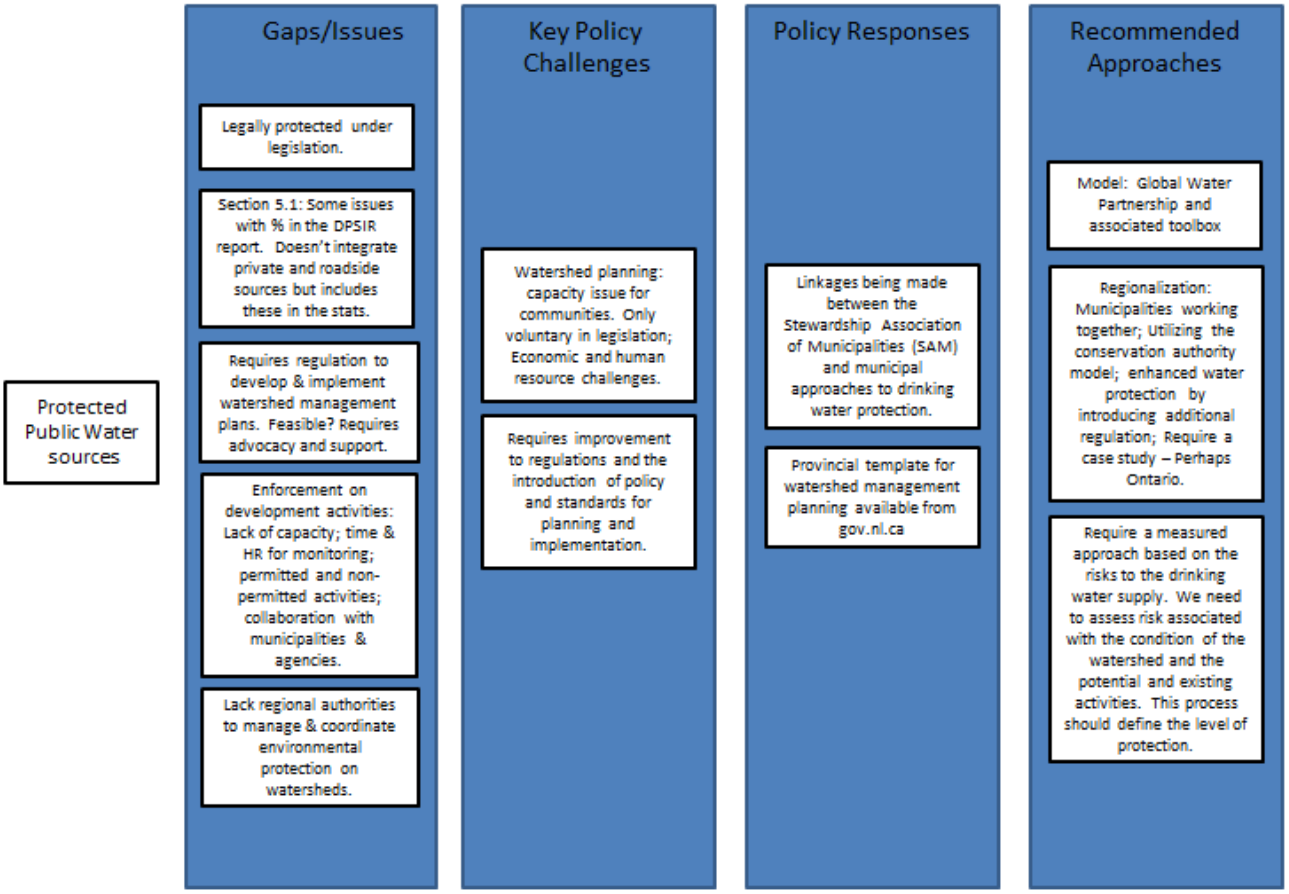
Each State and the associated Responses will be presented in separate flipchart notes. The policy responses are categorized into four columns:

- Gaps/Issues;
- Key policy challenges;
- Policy response to challenges;
- Recommended approaches to fill these gaps.



Slide 67

State and Policy Response: Identifying Gaps



Discussion on State and Policy Responses:

Protected Water Supply Areas

- Means that a watershed is legally protected under the Water Resources Act
- There are 3 watershed management plans and 5 committees in this province
- It is a community driven process: under the legislation, a community can request that the province put together a committee to help them do a plan, but there are some obstacles which prevent this from happening regularly

Gaps/issues

- There is a lack of capacity at the municipal level in many NL communities which often prevents them from voluntarily engaging in a lengthy planning process such as the creation of watershed management plan
- There are many provincial policies but little in the way of regulation
- There are very few institutions/organizations to help fill the capacity gap, unlike in Ontario where conservation authorities exist to act as the coordinators between the government and the public. The conservation authorities advocate for coordination of integrated watershed management
- Watershed plans can potentially be a good tool for water resources management but they are a huge effort (ie.

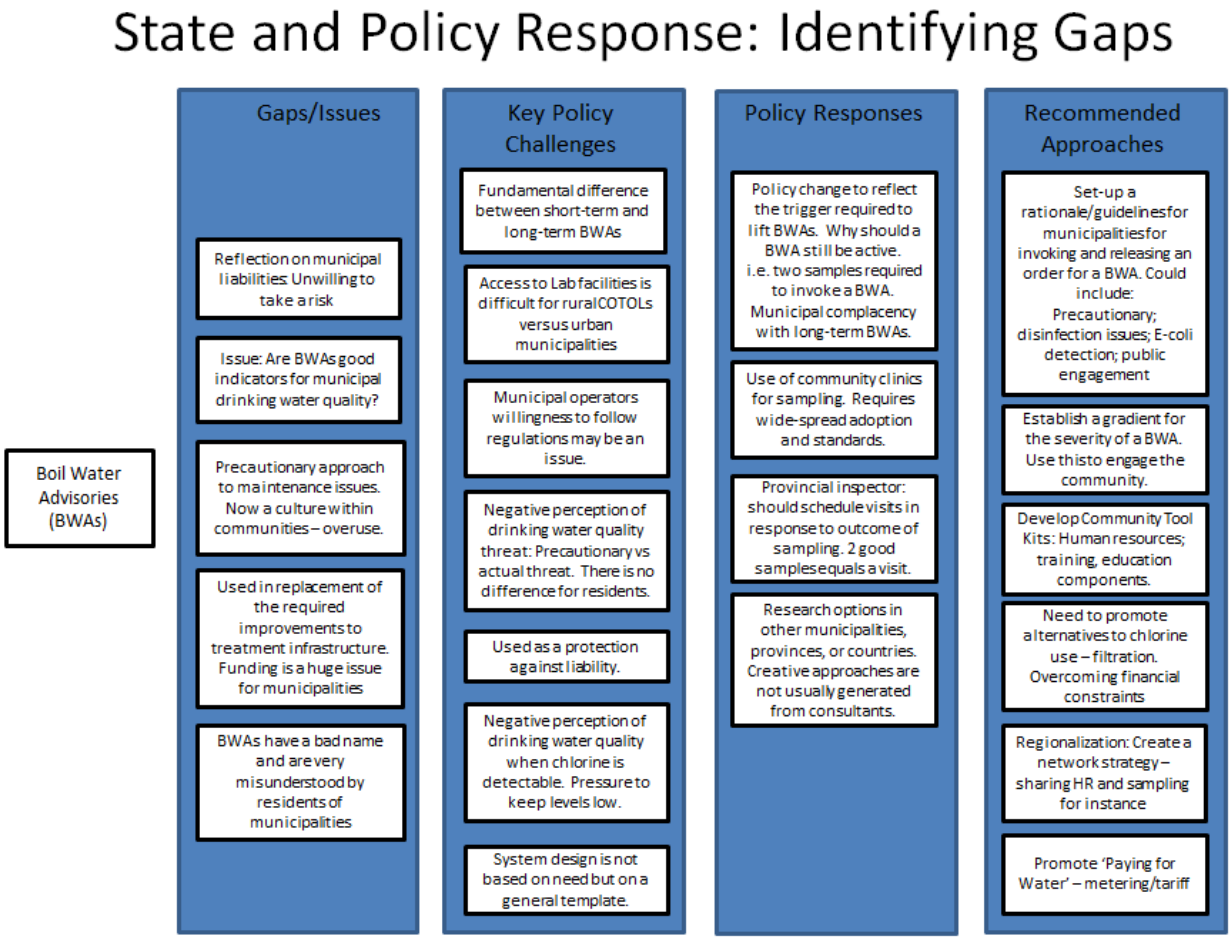
Corner Brook has been working on theirs for 4 years). However it is it doesn't work unless it is implemented, and implementation requires a lot of resources which many towns are lacking

- There isn't enough capacity at the provincial level now to do a watershed management plan for all communities even if they did want to do them
- There are gaps in monitoring and enforcement, as municipalities are required to do monitoring in order for the province to do enforcement. Again there is a lack of capacity at the municipal level

Recommended Approaches

- Currently the Stewardship Association of Municipalities has agreements to protect wildlife habitat and wetlands– perhaps it could evolve to encompass drinking water management as well. There are currently 33 towns in the program.
- The Global Water Partnership might be a good resource for water management
- Regionalization may be helpful to help communities coordinate and share resources
- There is a ranking on the vulnerability of publicly protected water supplies which was done 2 years ago – it would be a good idea to distribute this to municipalities

Flipchart Notes: Boil Water Advisories



Discussion on State and Policy Responses:

Gaps/Issues

- Boil water advisories may not be a good indicator of the state of the environment as they are pre-cautionary orders rather than indicators that something is wrong. Sometimes an order may be on for an extended period of time, simply because they are waiting for tests to be conducted. In some cases, they may be a good indicator because they may indicate infrastructure issues
- There is variation in how often different communities will put a boil water advisory in place, as there are not necessarily strict guidelines that they follow. There are also differences in how they communicate about boil water advisories to their residents. Although they are required to post the reasons for the boil water advisories online, this is not always done because they don't know about the water resource portal or can't find it online
- Issuing many orders can create a sense of complacency, or the feeling that it should be kept on simply as 'insurance'
- There is more pressure in smaller towns for operators to reduce the use of chlorine
- Residents will tend to get water from springs if they don't trust the water supply
- In Labrador, operators visits very infrequently

- Although a community toolkit has been created by the federal government for water sampling, there are capacity issues in being able to use them at the community level
- The design of the water system is sometimes not appropriate for the amount/type of water. Most municipalities only have a chlorinator as their system, as they make a decision based on recommendations of an engineer and what they are able to afford
- In a small town boil water advisories are often put in place for maintenance issues that in a larger town wouldn't trigger an order, simply because the issues are fixed more quickly and completely
- There is a liability fear due to the Walkerton case which has caused an increase in boil water advisories
- Because in many small towns, water is not filtered before it enters the system, it requires a lot of chlorination

Key Policy Challenges

- There are different types of boil water advisories and it's important to be clear about differentiating between them, as well as indicating the level of risk associated with each
- There aren't a set of guidelines for towns, so it is up to them to decide how large the risk is, as well as how to communicate to residents. Sometimes very small towns have an advantage in that they can notify everyone more easily and quickly
- Generally it is hard to come up with provincial approaches because all communities are unique, and particularly in rural and remote areas, certain strategies that work in other places (ie. regionalization) may not work there

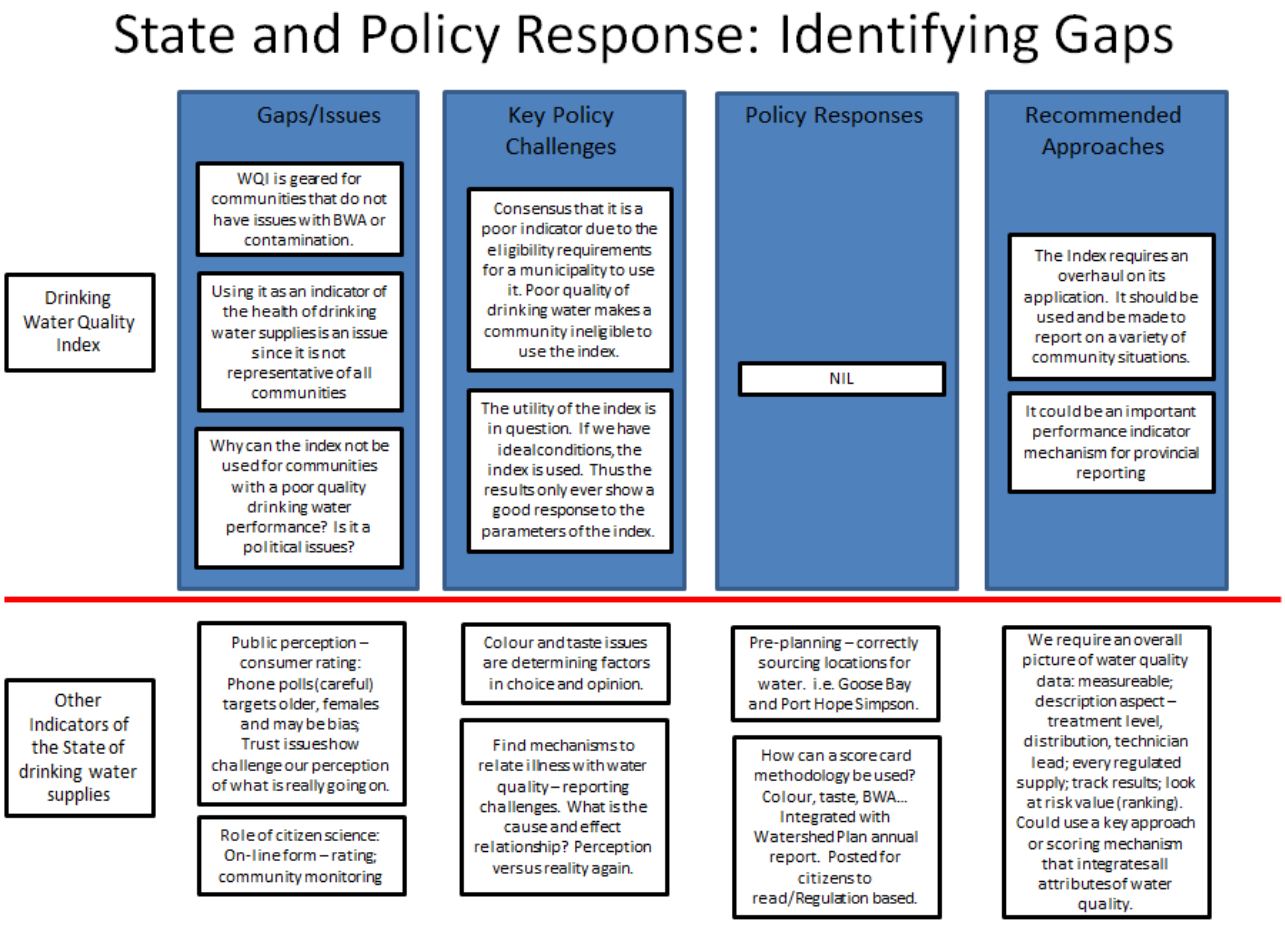
Policy Responses

- A change has been made already so that short term boil water advisories only need 1 set of tests rather than two. This was a reaction to the issue that there was over testing being done for certain advisories
- Some communities have also been permitted to collect their own samples which allows for a very quick turnaround on boil water advisories. This is allowed only in Labrador and in remote areas. Each of the 3 regions has different policies on this practice
- A list of boil water advisories and the reason they are in place is available online

Recommended Approaches

- The level of risk needs to be associated with each category of boil water advisory so that citizens are aware of the level of severity. This may help with public confidence
- All communities have clinics that could be more involved in sample collection (this used to happen more often but services have become more divided)
- An upcoming Health Canada document will initiate discussion on boil water advisories – participants should get involved in that discussion
- There is a need for a creative approach for small towns – potentially work together in a hub system. There could be one operator who acts as a chief operator who oversees others within a region.
- Metering and water tariffs may be a needed approach in the future

Flipchart Notes: Drinking Water Quality Index and Other Indicators



Discussion on State and Policy Responses & Discussion on Other Indicators:

Gaps/issues

- The Drinking Water Quality Index may not be a good indicator of water quality for the province because any community where the water quality is questionable does not receive a rating
- It seems to be more of a political rather than a practical tool, as it may give the illusion of a better situation than actually exists
- The index isn't able to handle certain things like THM/HAA exceedances
- It is not designed to look at annual averages
- When communities are on long term boil water advisories, the monthly bacteriological testing is not done, so are not included in the index
- It is not simply a matter of rating the non-rated communities as having poor water quality, because this may not be

accurate. There are a number of reasons why a community may not receive a rating

Key Policy Challenges

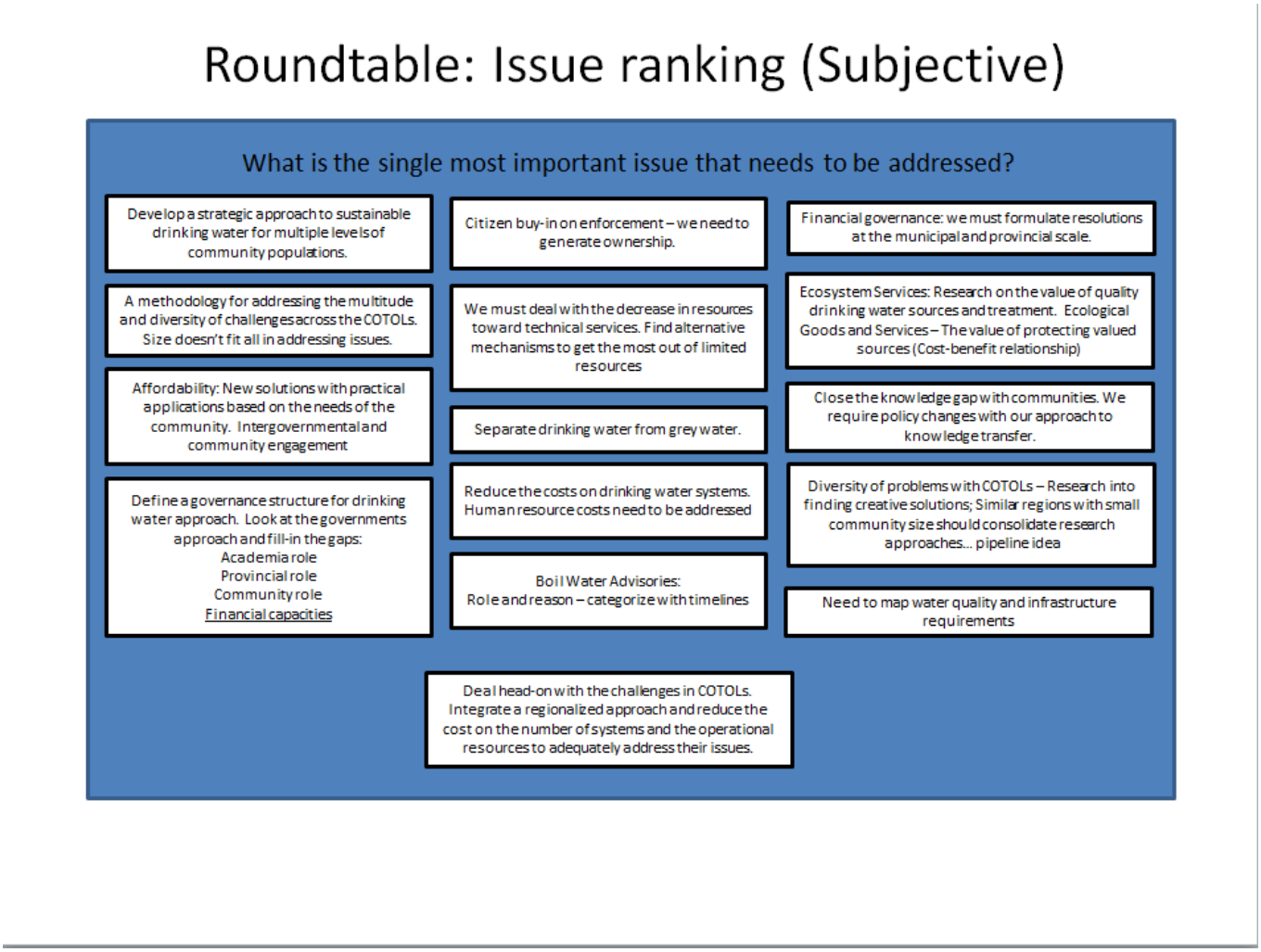
- A better index is needed which includes all towns and that also rates infrastructure, distribution etc, but how to do this?
- More monitoring and enforcement is required – the municipality needs to do monitoring so that the province can do enforcement

Other potential indicators of water quality

- Public perception
- Phone polls (have problems because of participation bias – mainly access an older female population)
- Citizen science – mechanisms for communities/citizens to monitor and rate their own water supply
- Colour and taste
- Incidence of water related illness (however there is lots of under reporting)
- Scorecards – these are currently part of the Watershed Management Plans. They received a card each year. They are supposed to do signage and surveillance but this is not done.

CLOSING PLENARY: NEW DIRECTION

Sean decided to change the approach to the closing plenary by looking at the most important issues that should be resolved according to the participants. A roundtable format was used and the following slide depicts the comments from each of the participants.



The main issues from each person are as follows:

- Financing and structure of local government. MNL would like to use some of the results of this research to formulate resolutions in order to lobby the province. Often research on local government bypasses local government
- How can we address the diversity of challenges that exist? We need to keep in mind the variety of issues. Citizen buy-in is key in order to generate a sense of ownership over water sources, as well as an appreciation for good quality water. We should look at models of citizen buy-in on other resources
- There needs to be a plan to deal with dwindling resources of towns and to make more efficient use of current resources.

- Regionalization and sharing of resources could be a good solution, however in remote communities this may not be possible
- The knowledge gap in communities is big
- The affordability of systems and the need to involve communities in government discussion
- Important to conduct research into other jurisdictions with high organic matter but small populations – look at their supply and the quality; infrastructure in other places; look into mapping out where water pipelines could work between communities
- Requirement for a clearly defined governance structure for safe and clean drinking water – assess structures we already have and evaluate what else is needed to fill gaps.
- Costs of the systems and the human resources needed to operate them a big issue
- Simplifying current categories of boil water advisories important and timelines should be added so that municipalities and residents know why they are in place and for how long. Better communication could give residents more confidence in the system

CONCLUDING REMARKS— DR. KELLY VODDEN PI

Dr. Vodden thanked all the participants for their valued contribution to this day's discussions.