Newfoundland Labrador

Water Resources Management Division

Department of Environment & Conservation

Permits to Operate: Inspections and Risk Rating

Drinking Water Safety Workshop, Gander

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Class of System

Owner

Expiry Date

Type of System

Date Issued

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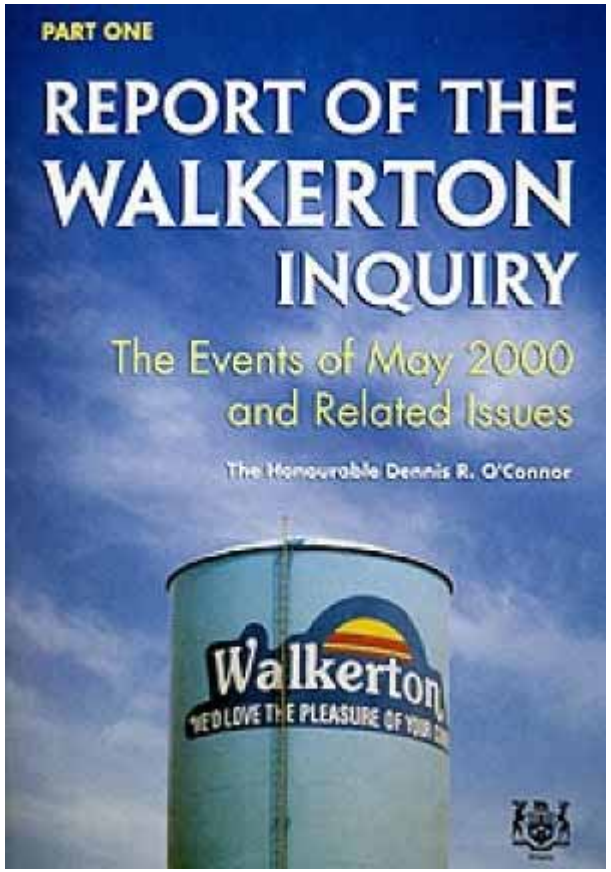
Permits to Operate 101

- Issued under Section 38 of the Water Resources Act
  - "All waterworks in the province shall at all times be maintained, kept in repair and operated in a manner and with those facilities that the minister may direct."
- Permits to Operate are issued to the **Owner** of the system
  - Community
  - Regional Service Board
- First issued by ENVC in 2002
  - Permits to Operate a recommendation of the Walkerton Enquiry



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Why are Permits to Operate Important?

- Provide guidance on how Owners should properly operate and maintain their drinking water systems
- Terms and conditions contained in the permit can be viewed as the minimum requirements necessary for the proper operation and maintenance of the drinking water system
- Having a Permit to Operate is a factor in the approval of capital works funding by the Department of Municipal and Intergovernmental Affairs
- Key component in the province's Multi-Barrier Strategic Action Plan for Drinking Water Safety

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Multi-Barrier Strategic Action Plan

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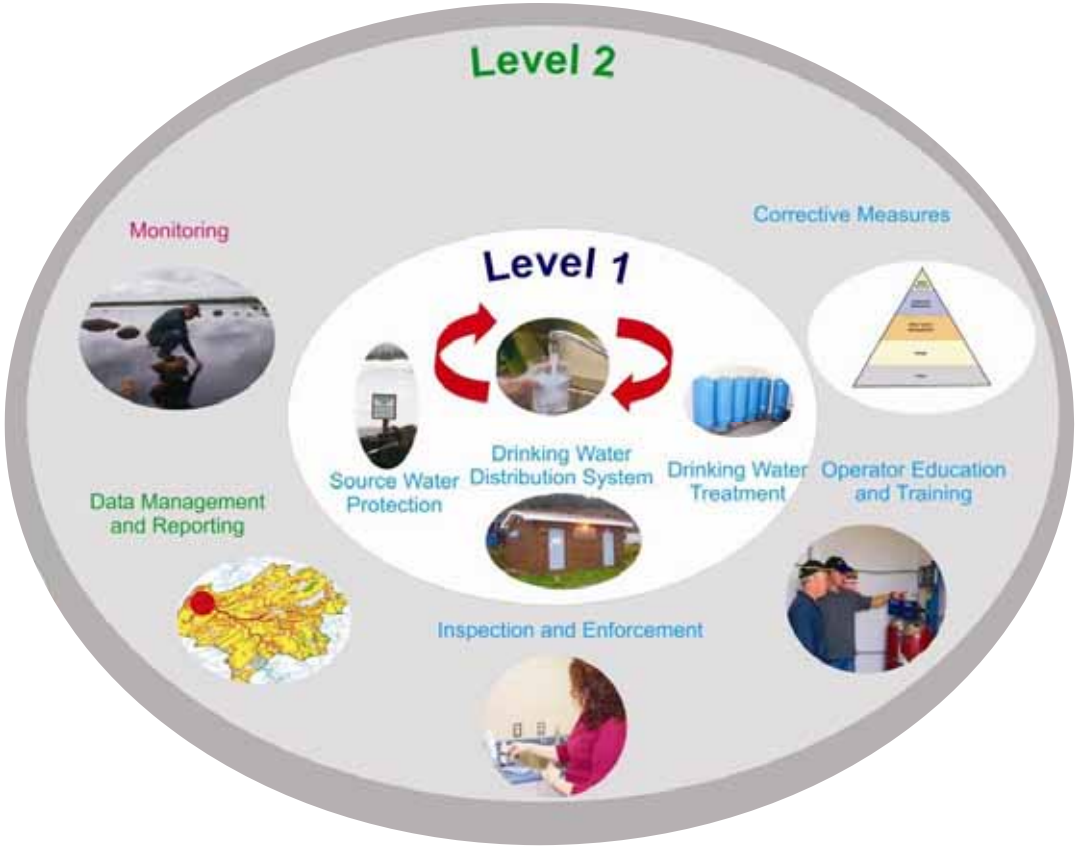
Multi-Barrier Strategic Action Plan



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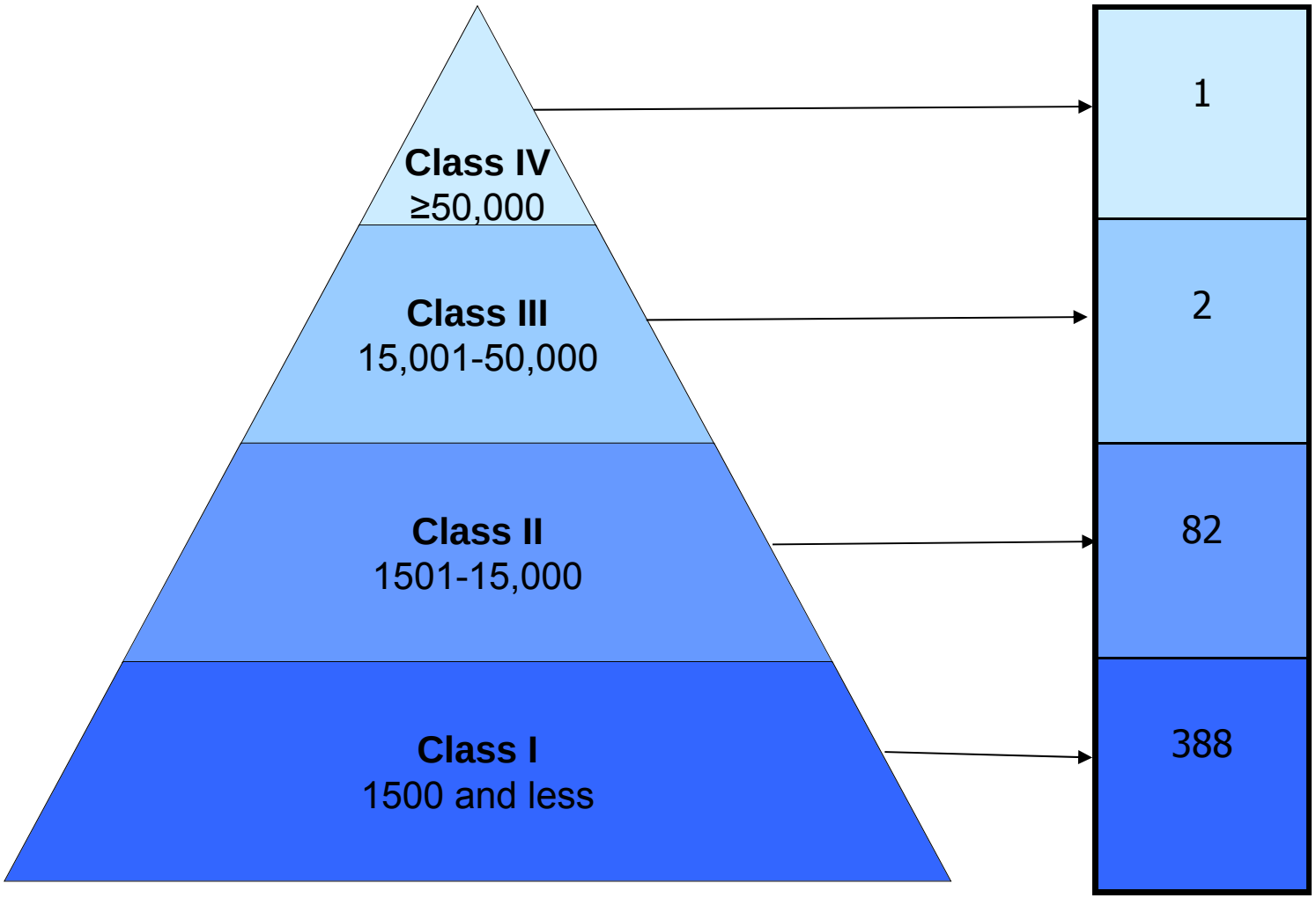
Classification: Distribution Systems



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Classification: Water Treatment

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Water Treatment Plant Facility Classification Calculator (updated 2013)

note: water supplies with only cl2 are considered a distribution system only

Input of T,t, F, or f is accepted.

Class I --- 30 pts or less
Class II --- 31 - 55 pts
Class III --- 56 - 75 pts
Class IV ---76 pts or more

Enter Plant Name Below: 32 Points

Plant->			Class II		
Item		Description	Input	Points	Comment
	1	**Size in m3/day (1 pt min to 20 pt max)**			
(i)		In m3/day, the larger of: Design Flow Avg Day or Peak Month Avg Day (min 1 pt, max 20 pt)	0	1	
	2	**Water Supply Sources- Rating Based on public health significance**			
(i)		Seawater/saltwater (T)rue/(F)alse (0 pts)	f	0	
(ii)		Groundwater source (T)rue/(F)alse (0 pts)	t	0	
(iii)		Groundwater under the influence of surface water (GWDI) (T/F) (8 pts)	f	0	
(iv)		Surface water (T/F) (10 pts)	f	0	
	3	**Average raw water quality variation**			
(i)		Little or no variation (T/F) -0 pts	f	0	
(ii)		Minor variation -eg."high quality" source appropriate for ss filtration (T/F) (1 pt)	t	1	
(iii)		Moderate variation in chemical feed, dosage changes made (M)onthly,(W)eekly or (Daily) (2,3,4 pts)**If N/A, leave blank**			
(iv)		Variation requiring pronounced/very frequent dosage changes (T/F) (5 pts)	f	0	
(v)		Severe variation - source subject to non-point discharges,agricultural/urban storm runoff, flooding (T/F) (7 pts)	f	0	
(vi)		Raw water quality subject to agricultural or municipal waste point source discharges (T/F) (8 pts)	f	0	
(vii)		Raw water quality subject to industrial waste pollution (T/F) (10 pts)	f	0	
	4	**Raw water is subject to: (see note 1 at end)**			
(i)		Taste and/or odour for which treatment process adjustments are routinely made (T/F) (2 pts)	f	0	
(ii)		Source Water Colour levels >15 TCU (T/F) (3 pts)	t	3	
(iii)		Iron and/or manganese levels > AOs: Fe 2 pts, Mn 3Pts. Maximum of 3 pts			

Sheet1 Sheet2 Sheet3

- Size
- Source type
- Chemical addition
- Types of treatment processes
- Residual disposal
- Process control

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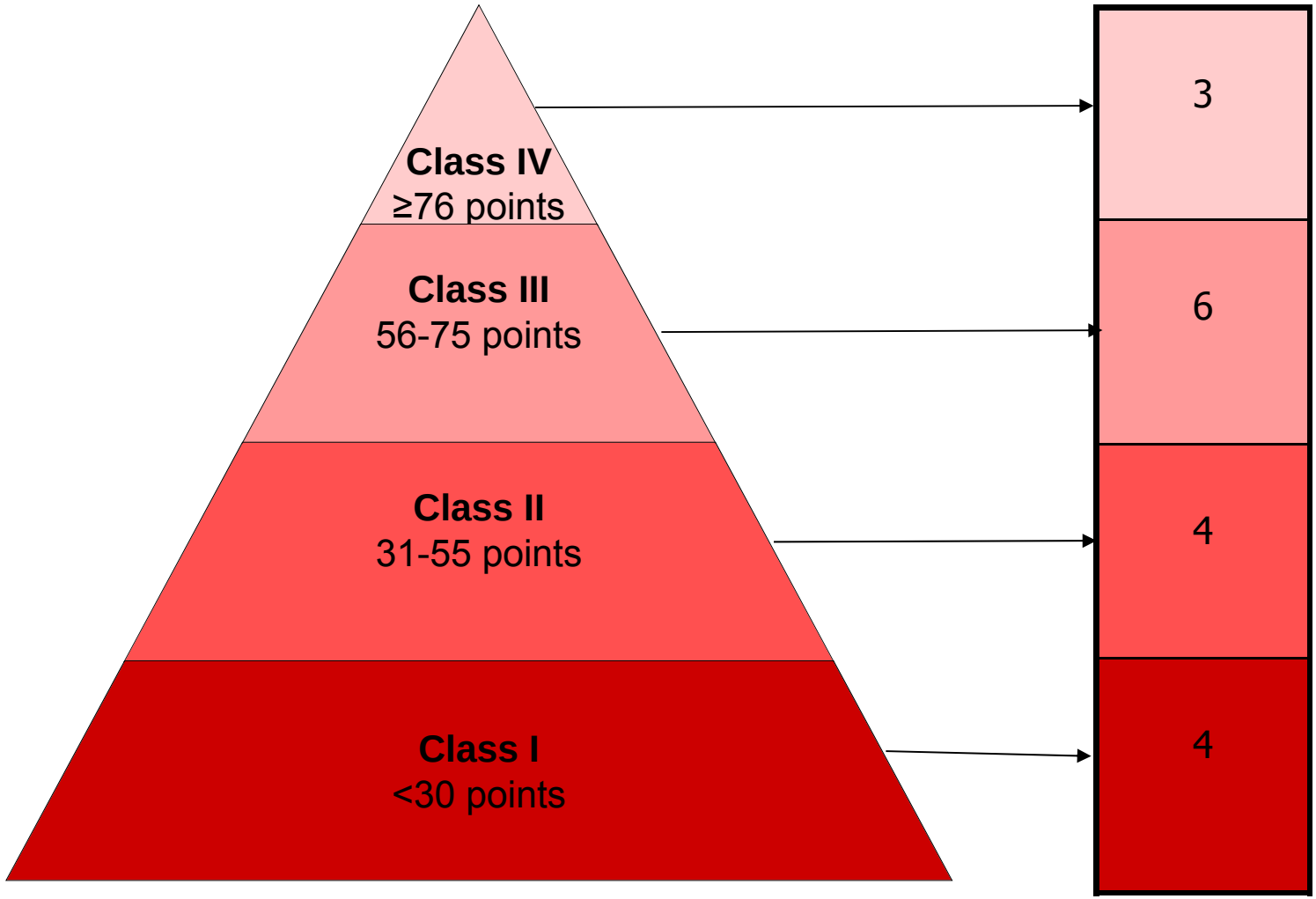
Classification: Water Treatment



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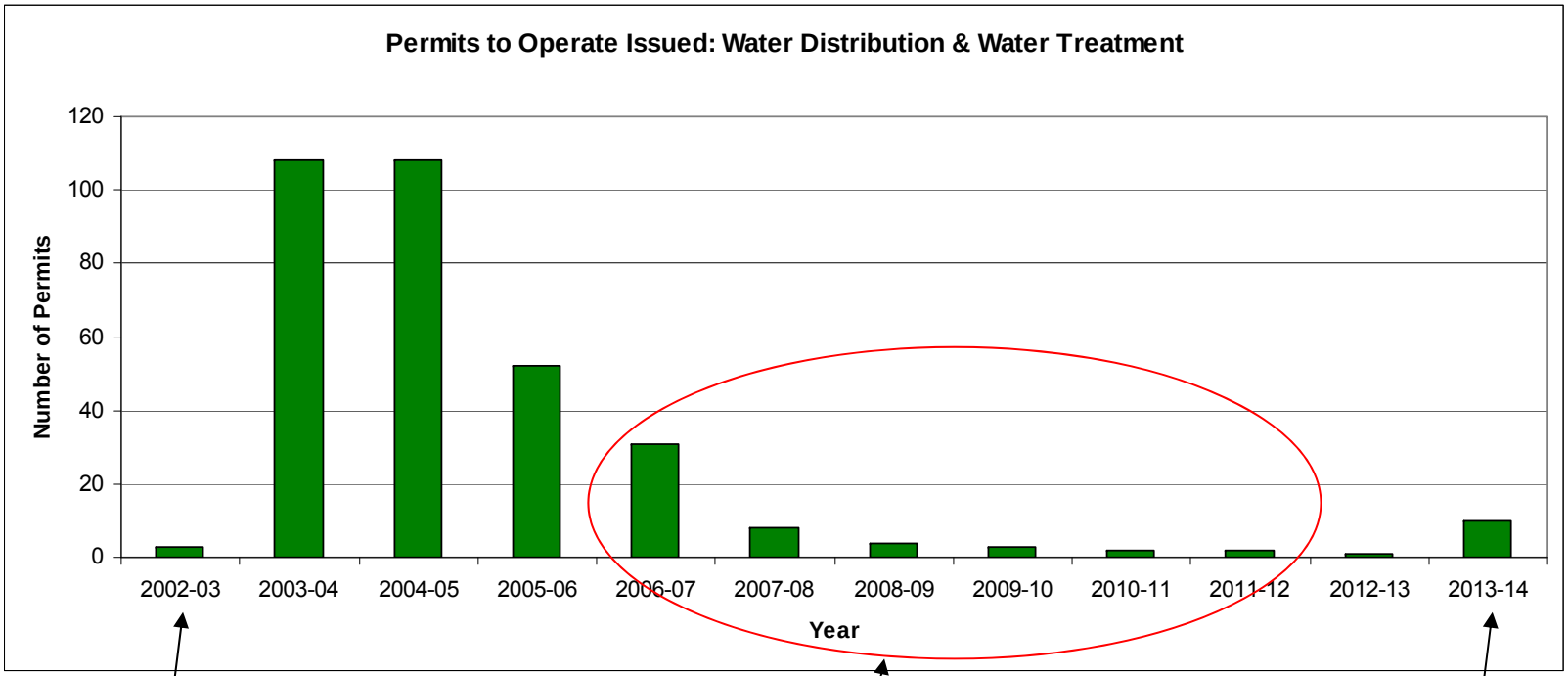
History of Permits to Operate



Development of Permits to Operate post Walkerton

WTPs and stragglers

Reissuing of expired permits

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What's New with Permits to Operate?

- 319 Owners with Permits to Operate
- ENVC used to issue separate Permits for:
  - Water Treatment (expired after 5 years)
  - Water Distribution (valid until change in classification)
- ENVC now issuing a single Permit to Operate for the Drinking Water System
- Before reissuing expired Permits ENVC is conducting:
  - an inspection of system
  - a quantified risk rating of the system

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Purpose of Inspection & Risk Rating

- Determine compliance with terms and conditions in Owner's Permit to Operate
- Highlight areas of non-compliance that require attention
- Determine the risk posed to the system
- Provide guidance on corrective actions
- Give Owners an idea of how they are doing and how they are doing in comparison to other Owners
- To encourage Owners and Operators to work towards the continuous improvement of the O&M of their drinking water systems
- To establish a way to measure progress

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Inspection Process

- ENVC will arrange a date/time
- ENVC will discuss with operator ahead of time
  - Records, plans, manuals made available
- Inspection can take 2 hrs to all day
- ENVC will inspect facilities with operator
- ENVC will fill out an Inspection Field Sheet
- ENVC will complete a Drinking Water System Inspection Report and Inspection Rating
- Inspection Report and Rating sent to:
  - Owner and Operator
  - Other communities on a shared system
  - MIGA
- Permit to Operate reissued

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Inspection Field Sheet

- 12 Inspection Modules that consist of 85 questions:
  - Source
    - Source protection signage in place?
  - Treatment Process
    - Has max flow rate of WTP been exceeded?
  - Water Quantity and Quality Monitoring
    - Daily chlorine residual monitoring?
  - Waste and Process Wastewater
    - Does discharge meet Water & Sewer Regs?
  - Distribution System
    - Are up to date plans of distribution system available?
  - Operations Manuals
    - Operators have access to manuals?
  - Logbooks
    - Are logs kept for 5 years?
  - Contingency, Emergency and Long-Term Planning
    - Emergency Response Plan has been developed?
  - Security and Safety
    - Chemicals stored properly?
  - Consumer Relations
    - Log of consumer complaints kept?
  - Certification and Training
    - Operators certified to the level of their system?
  - Reporting, Notification and Corrective Actions
    - Permit to Operate posted?

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Inspection Rating

- Risk management approach
- Based on ON risk rating methodology applied to drinking water system inspection results
- Systematic approach to identifying potential hazards
  - understanding the likelihood and consequences of the hazards
  - taking steps to reduce the risk to the delivery of safe drinking water

Risk Methodology

- Risk = Consequence x Likelihood

Consequence	Consequence Value
Medium Administrative Consequence	1
Major Administrative Consequence	2
Minor Environmental Consequence	3
Minor Health Consequence	4
Medium Environmental Consequence	5
Major Environmental Consequence	6
Medium Health Consequence	7
Major Health Consequence	8

Likelihood of Consequence Occurring	Likelihood Value
0-0.99% (Possible but Highly Unlikely)	0
1-10% (Unlikely)	1
11-49% (Possible)	2
50-89% (Likely)	3
90-100% (Almost Certain)	4

- Each question has its own Risk Rating (of not complying) from a possible 0-32

Risk Methodology

- Individual question risk rating derived from an evaluation of every identified consequence and its corresponding likelihood of occurrence:
  - All levels of consequence are evaluated for their potential to occur
  - Greatest of all the combinations is selected

Source protection signage in place?							
Risk = Consequence x Likelihood							
1	2	3	4	5	6	7	8
Medium Administrative Consequence	Major Administrative Consequence	Minor Environmental Consequence	Minor Health Consequence	Medium Environmental Consequence	Major Environmental Consequence	Medium Health Consequence	Major Health Consequence
2 (Possible)	1 (Unlikely)	1 (Unlikely)	2 (Possible)	1 (Unlikely)	1 (Unlikely)	1 (Unlikely)	1 (Unlikely)
R=2	R=2	R=3	R=8	R=5	R=6	R=7	R=8

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Risk Methodology

- Has max flow rate of WTP been exceeded?
  - Consequence = 7
    - Medium Health Consequence
  - Likelihood = 3
    - Likely a Medium Health Consequence will Occur
  - Risk = 7 x 3 = 21

- Permit to Operate posted?
  - Consequence = 4
    - Minor Health Consequence
  - Likelihood = 1
    - Unlikely a Minor Health Consequence will Occur
  - Risk = 4 x 1 = 4

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Final Inspection Rating

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Permit to Operate Inspection Summary Rating Record- Drinking Water System

Community:	
LGP #:	
Population:	
Region:	
Water Distribution Class:	
Water Treatment Class:	
Type of Inspection:	Detailed
Inspection Date:	26-Nov-12

Inspection Module	Non-Compliance Rating	Maximum Question Rating
Source	1	55
Treatment Process	0	104
Water Quantity and Quality Monitoring	45	110
Waste and Process Wastewater	10	22
Distribution System	27	89
Operations Manuals	0	22
Logbooks	0	30
Contingency, Emergency and Long-Term Planning	0	50
Security and Safety	0	37
Consumer Relations	0	15
Certification and Training	21	71
Reporting, Notification and Corrective Actions	16	73
Total	120	678

Inspection Risk Rating	17.7 %
Final Inspection Rating	82.3 %

- Total score out of 100 %

Rating Category	Rating Bands (%)
Poor	0-49
Marginal	50-64
Fair	65-74
Good	75-84
Very Good	85-94
Excellent	95-100

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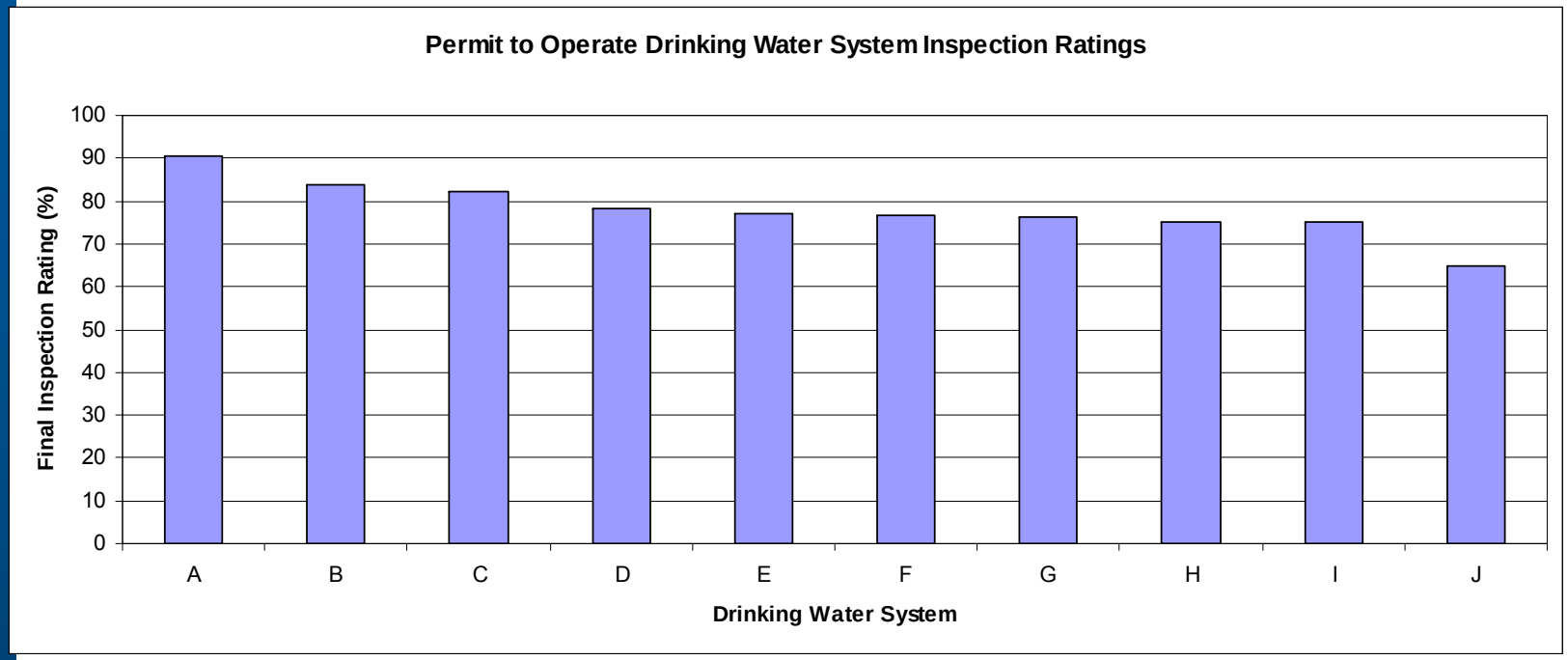

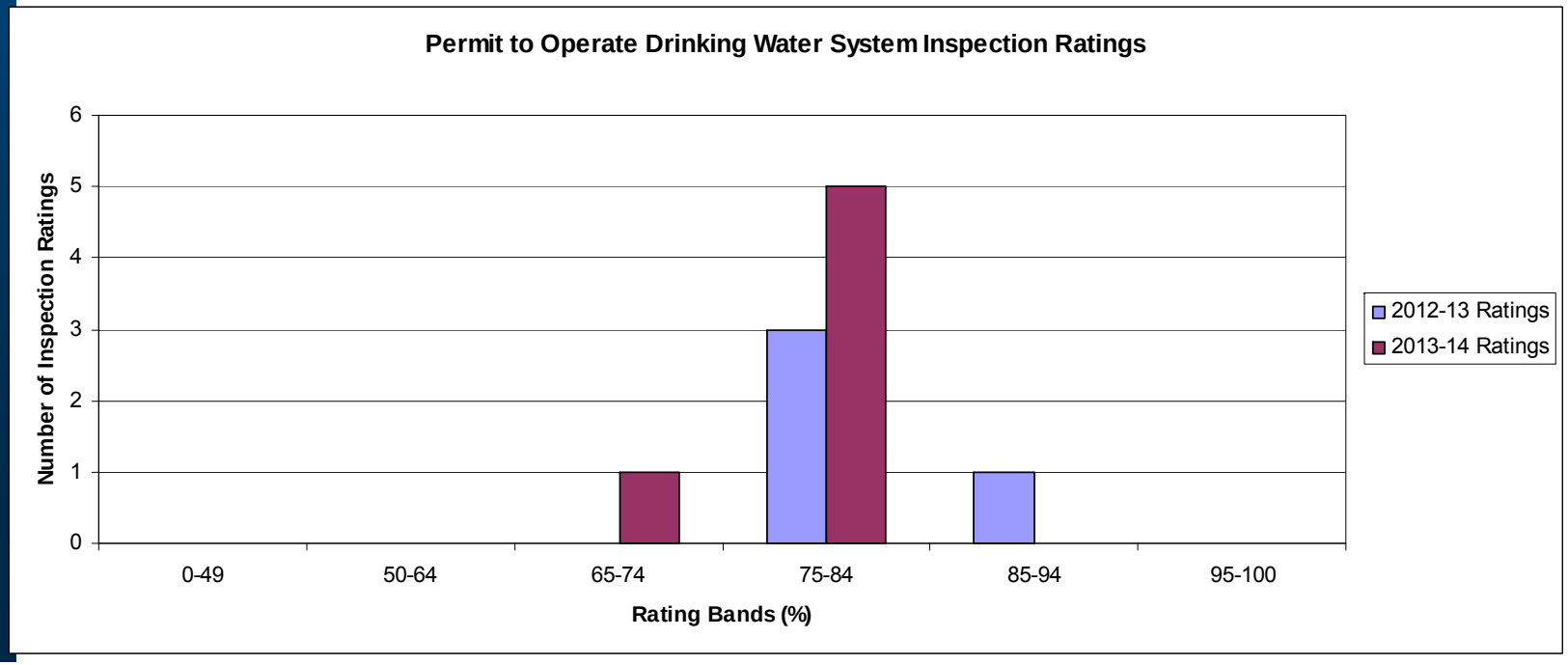

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Inspection Report

- Inspection Module questions and field notes
- Drinking Water System Description
- Summary of Non-Compliance Issues
- Recommended Corrective Actions
- Final Inspection Rating

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Most Common Non-Compliance Issues

- Source
  - Potential pollution sources identified in source area
  - No source inspection program in place
  - No Water Use Licenses
- Treatment Process
  - Proof that chemicals used in the treatment process meet AWWA/NSF standards
  - Capacity of WTP has been exceeded or near to being exceeded
- Water Quantity and Quality Monitoring
  - Flow monitoring devices not calibrated
  - Chlorine residual monitoring is not undertaken for total chlorine or not done daily
  - Drinking water quality exceedences
- Waste & Process Wastewater
  - Process wastewater from the WTP is not being tested
- Manuals and Logbooks
  - Incomplete or missing operations and maintenance manuals
  - Logs of scheduled O & M activities were not kept

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Most Common Non-Compliance Issues

- Distribution System
  - No regular maintenance program in place for backflow prevention devices
  - No cross connection control program in place
  - No program in place for inspecting/exercising valves
  - No leak detection/repair program in place
  - No monitoring of pressure in the distribution system
  - No program in place for inspection and cleaning of water storage tanks
- Contingency, Emergency and Long-Term Planning
  - No emergency response plan
- Consumer Relations
  - No water conservation program
- Certification & Training
  - Operators not certified to the level of the drinking water system
- Reporting, Notification and Corrective Actions
  - Permit to Operate not posted
  - Annual water system audit/report not completed

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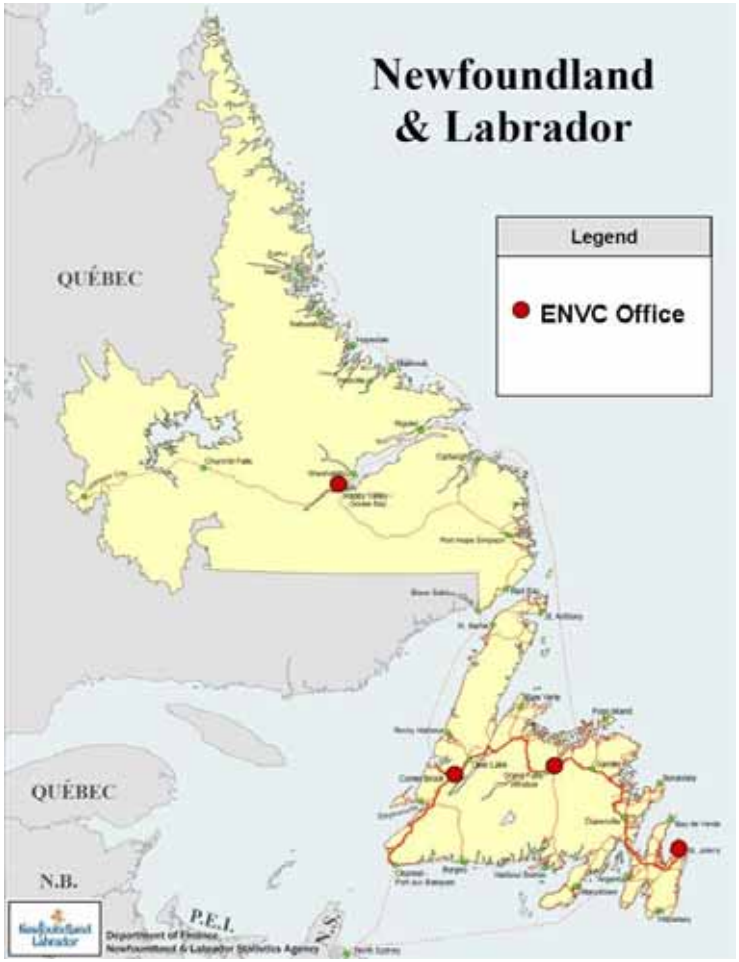
Future Implications

- Non-compliance issues will be reevaluated when your Permit to Operate is up for renewal again

- Where risk is deemed to be high and/or compliance is an ongoing concern, further action may be taken by this Department

Want to Schedule an Inspection of Your Drinking Water System?

- Western & Labrador contact Corner Brook Office



- Eastern & Central contact St. John's Office

WaterAndSewer@gov.nl.ca

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Path Forward

- ENVC to complete inspections of all systems with WTPs
- ENVC to move forward with inspections and permit reissue for systems with:
  - PWDUs
  - pH adjustment
  - Filtration systems (Fe/Mn, arsenic, lead)
  - UV
  - Systems that have had significant changes that may affect their classification
  - Special requests from Owners
- ENVC looking at classification of systems with water treatment facilities other than WTPs
- Review risk rating methodology periodically to account for changes in regulatory requirements, Permit to Operate terms and conditions, etc.
- 5 year cycle of Permit to Operate Inspections and Renewals
- Work toward the goal of 100 per cent compliance

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Questions?

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