Social Sciences and Humanities Research Council of Canada

Conseil de recherches en sciences humaines du Canada

Canada

Collaborative Water Services Between First Nations and Municipalities in Ontario

Bethany Lipka and B. James Deaton

May 27th, 2019

CWRA 2019 Canada Water Resources Conference

University of Guelph

Ontario Agricultural College

Department of Food, Agricultural and Resource Economics

McCain Family Chair in Food Security

RBC

RBC Blue Water Project™

Background

- Water quality concerns in First Nation communities:
  - 39% of First Nations' water and wastewater systems can be classified as 'high risk' (Neegan Burnside, 2011)
  - Frequent boil water advisories (BWAs), some persisting for months or years
  - Problem is persistent despite being a stated priority of the federal government

UNIVERSITY of GUELPH
ONTARIO AGRICULTURAL COLLEGE
DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

First Nation – Municipal Water Sharing

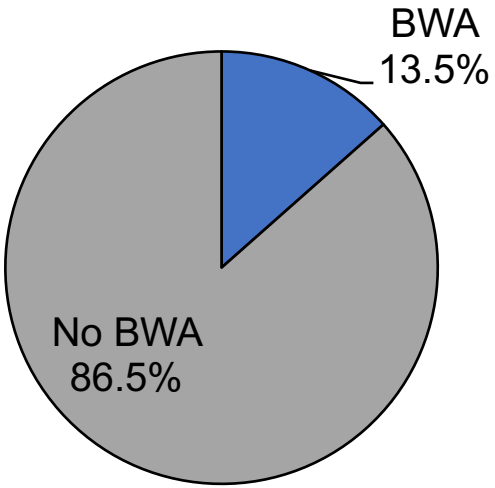
- Can take different forms: bi-lateral, regional network, shared water governance
- Most common: First Nation purchases treated water from a municipality to service all or a portion of population
- Generally the Band is charged per unit consumed, and remains responsible for cost/maintenance of distribution

UNIVERSITY of GUELPH
ONTARIO AGRICULTURAL COLLEGE
DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

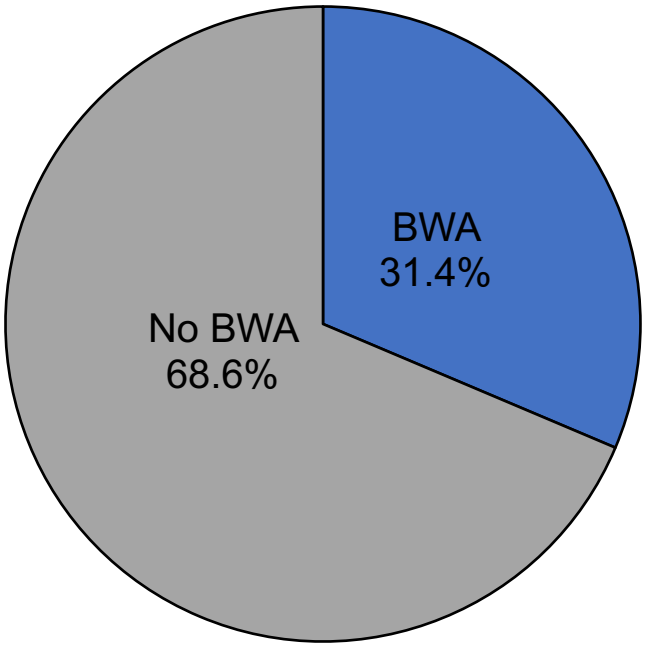
Water Sharing and Drinking Water Quality (Lipka and Deaton 2015)

- We found that First Nations with water sharing agreements were 11% less likely to be under a BWA, controlling for other contributing factors (Lipka and Deaton, 2015)
- Water sharing agreements also reduced the likelihood of failing to meet federal health (by 18%) and aesthetic (by 38%) water quality guidelines

First Nation Water Systems Supplied Through Water Sharing (Neegan Burnside, 2011) [n=141]



First Nation Water Systems with Independent Supply (Neegan Burnside, 2011) [n=628]

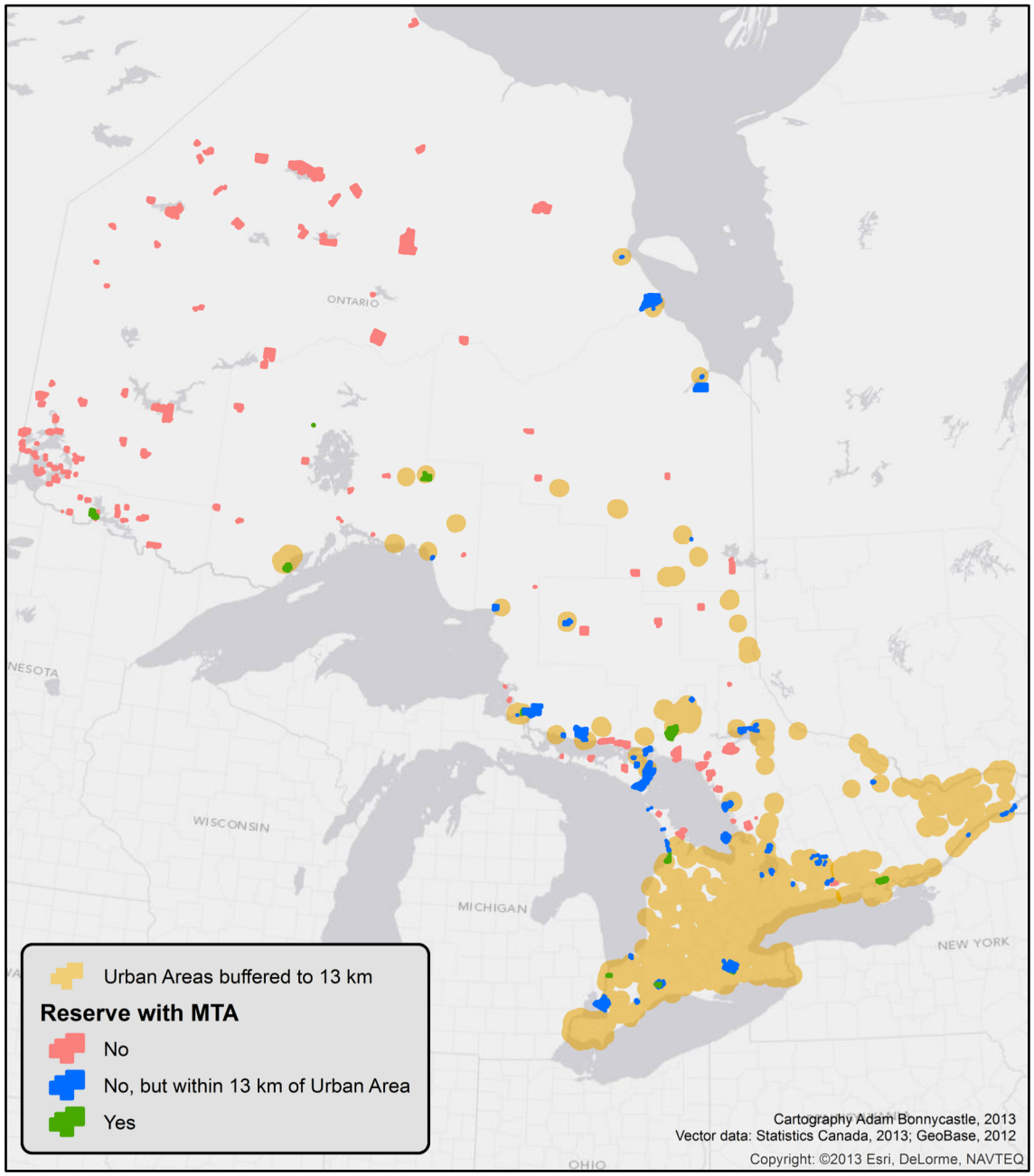


Factors That May Influence a First Nation's Decision to Share Water (Lipka and Deaton 2015)

- Economies of scale in water treatment vs. diseconomies of scale in distribution make these agreements cost-effective for First Nations with:
  - Smaller populations
  - Larger population densities
  - Geographic proximity to a potential water sharing partner

UNIVERSITY of GUELPH
ONTARIO AGRICULTURAL COLLEGE
DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

First Nation—Municipal Water Sharing in Ontario: Existing Agreements and 'Feasible' Partnerships



Ongoing Research (www.isnrg.com)

Collaborative Water Services Between First Nations and Municipalities in Ontario

- Five year SSHRC funded project involving an interdisciplinary team of researchers using a mixed-methods approach
- Key Research Questions:
  - Why do these relationships emerge in some situations and not others?
  - Is there potential scope to expand water sharing in Ontario?
  - Could water sharing be part of the portfolio of solutions needed to address drinking water quality on First Nations?

UNIVERSITY of GUELPH
ONTARIO AGRICULTURAL COLLEGE
DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

Empirical analysis contextualizes and informs case studies

Empirical Analysis

Sample: 850 water systems in 428 communities (114 First Nations, 314 municipalities)

Aim:
-characterize extent of water sharing in Ontario
-identify factors (social, economic, geographic, etc.) influencing water sharing and water quality

Key Research Questions
1) Are First Nations less likely to engage in water sharing than municipalities, controlling for important determining factors?
2) Does water sharing improve quality outcomes for municipalities and First Nations, controlling for other factors affecting quality?

Case Study Analysis

Case study region: selected based on community interest, and informed by previous empirical assessment of geographic feasibility of water sharing

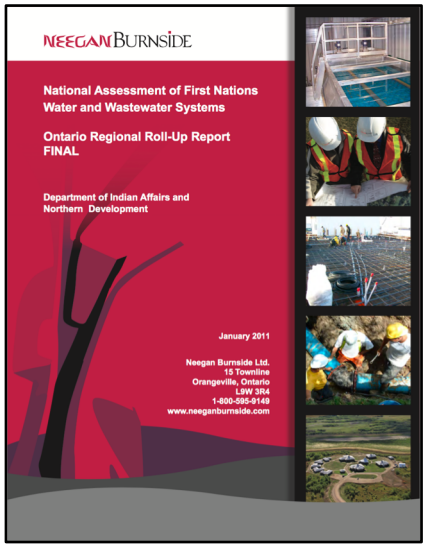
Aim:
-explore the nature and challenge of water provision, and attitudes toward water and water sharing
-explore perceived limitations to safe water provision and water sharing

Key Research Questions:
1) Why do communities choose to pursue or not pursue water sharing arrangements when geographically feasible?
2) How do community attitudes toward water sharing agreements vary, and why?

Case study analysis enhance empirical analysis with grounded knowledge

Data Collection:

	Water System and Water Quality Data	Community Characteristics

First Nations		• Census community profiles:
		  • Population
		  • Population density
		  • Community size
		• Census boundary files:
		  • Number of water systems in adjacent (bordering) communities
		  • Proximity to neighboring water systems
		• Natural Resources Canada:
		  • Elevation data
		• Environment Canada:
		  • Climate data

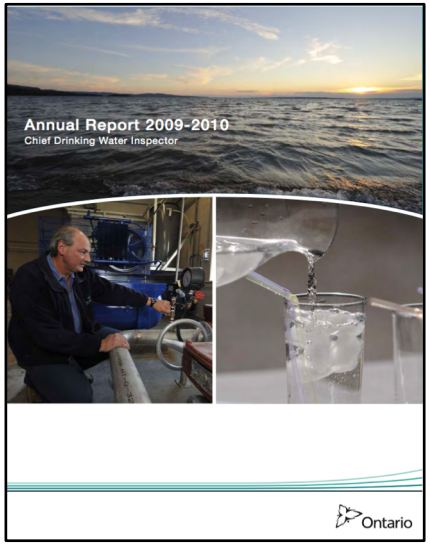
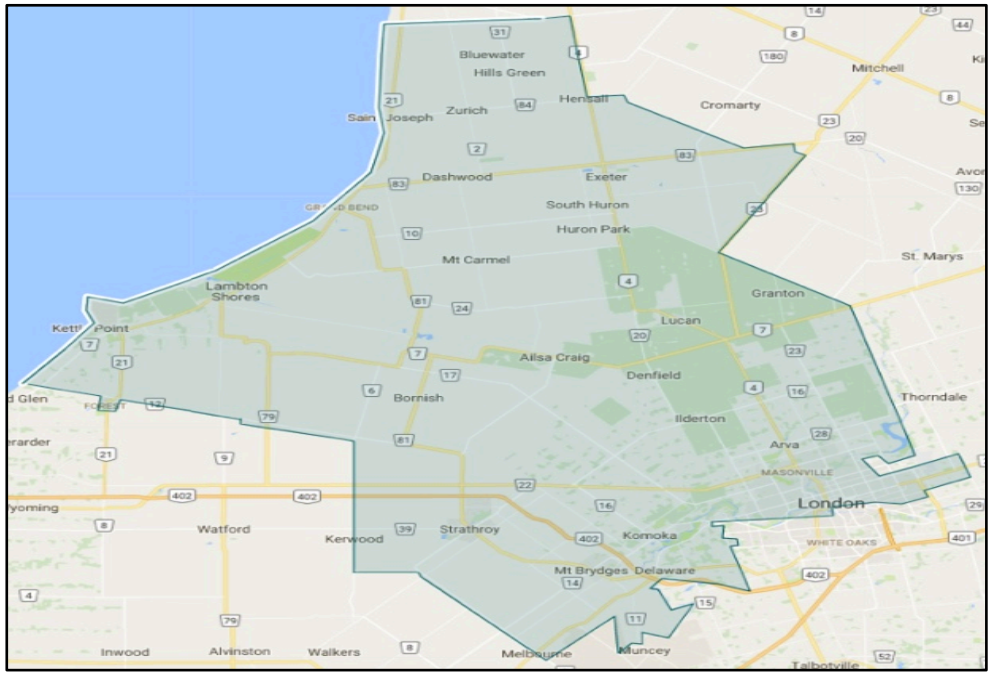
Municipalities	 + Key municipal water system documents from study period (2009/10): DWQMS, MOE Inspection Reports, Annual Water System Reports	

Image Sources: https://bit.ly/2MmprcJ; https://bit.ly/2CHfYZt

Case Study Region

- City of London and Chippewas of the Thames First Nation
- Lake Huron and Elgin Area Primary Water Supply Systems



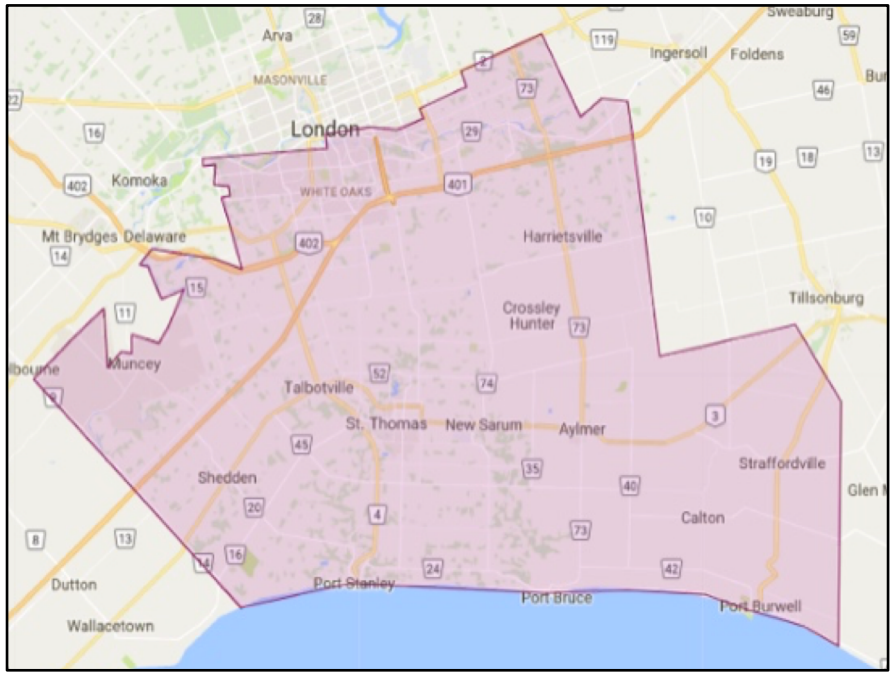


Image Source: https://huronelginwater.ca/about-us/

UNIVERSITY of GUELPH

ONTARIO AGRICULTURAL COLLEGE

DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

Thank you, I am happy to answer any questions!

UNIVERSITY of GUELPH

ONTARIO AGRICULTURAL COLLEGE

DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS

References

Lipka and Deaton. 2015. Do water service provision contracts with neighbouring communities reduce drinking water risk on Canadian reserves? *Water Resources and Economics*, 11(2015): 22-32. https://bit.ly/2TZfvsh (accessed 23 February 2018).

MOE. 2011. Chief Drinking Water Inspector Annual Report 2009-2010 [pdf]. Queen's printer for Ontario. http://bit.ly/2fooMsg (accessed 18 January 2018).

Neegan Burnside. 2011. *National Assessment of First Nations Water and Wastewater Systems*. Report prepared for AANDC. https://bit.ly/2RyObVl (accessed 18 January 2018).

UNIVERSITY of GUELPH

ONTARIO AGRICULTURAL COLLEGE

DEPARTMENT OF FOOD, AGRICULTURAL AND RESOURCE ECONOMICS