Community Perspectives on Water Insecurity in Rural Alaska

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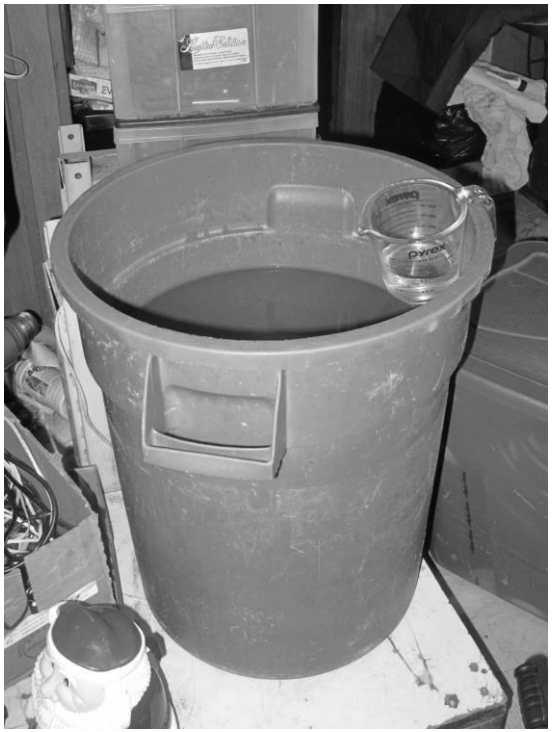
Water Insecurity

* ~20% households lack in-home plumbing.
* Many more others are water insecure:
  * Unreliable access to water
  * Poor sanitation
  * Water rationing
* System failures are common due to economic, environmental challenges.



Outline

* Define water insecurity and how anthropologists study this problem

* Report findings from research on
  * Dimensions of water insecurity
  * Social and environmental axes
  * Daily lived experiences: practices and concerns
  * Narratives of insecurity: “spoiled by technology”

Anthropology of water

Water as "total social fact" (Orlove and Caton 2010):

* enables life
* involves social interactions, social hierarchies, practices, and cultural meanings.
* culturally specific
* structured by infrastructure and policies

Anthropology of water

* **Waterscape**
  * Meanings people give to water in its different forms.
    * "Rain water is the most pure."
  * Social interactions and practices that are shaped by water, and which affect where it flows.
    * Water plant operators, utility managers, customers…
  * Political and economic factors that affect water
    * Policies
    * Affordability, poverty

My Research

* How does water insecurity affects daily life?
  * (practices around obtaining water and its uses)
* What are the affects on health and wellbeing, broadly defined?
* How people talk water insecurity?

Methods (Phase 1: 2008-09)

Northwest Arctic Borough
March 2008-June 2009

In-depth field research:

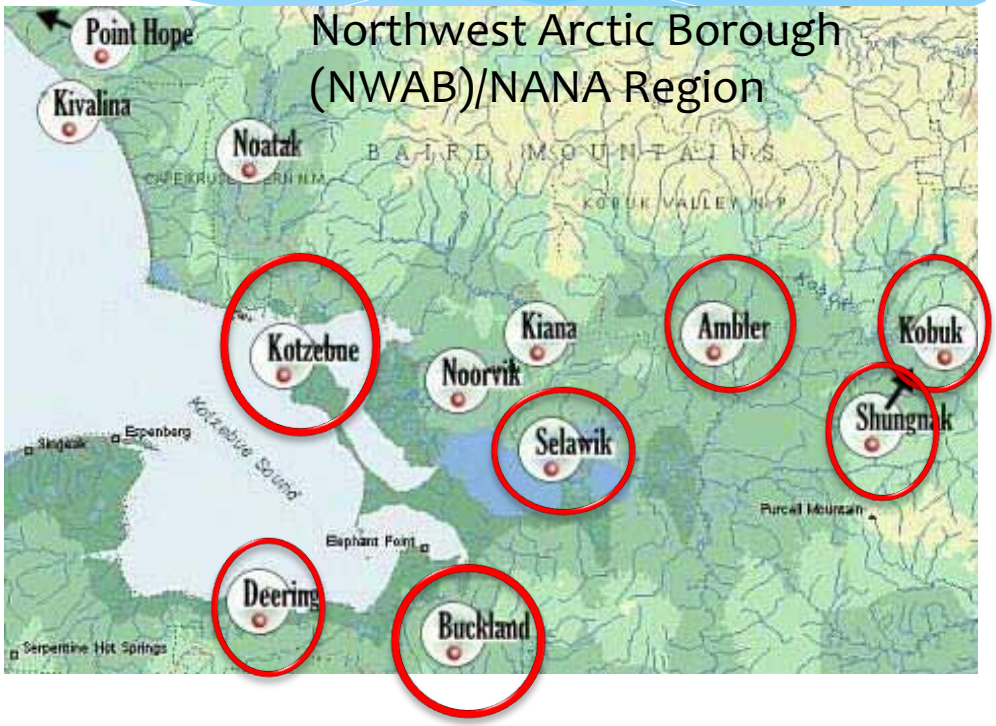
* 3 remote Iñupiaq villages
  * 2 with partial water/sewer service
  * 1 with "self-haul" (Buckland)
* Kotzebue (regional hub)

Participant observation

* CBPR: photovoice, community mapping
* Semi-structured interviews (N=101)
* Direct observation
* 21 surveys in Buckland

Archival research: history of

* Iñupiaq and village health
* Public health interventions
* Water/sewer development in remote Alaska



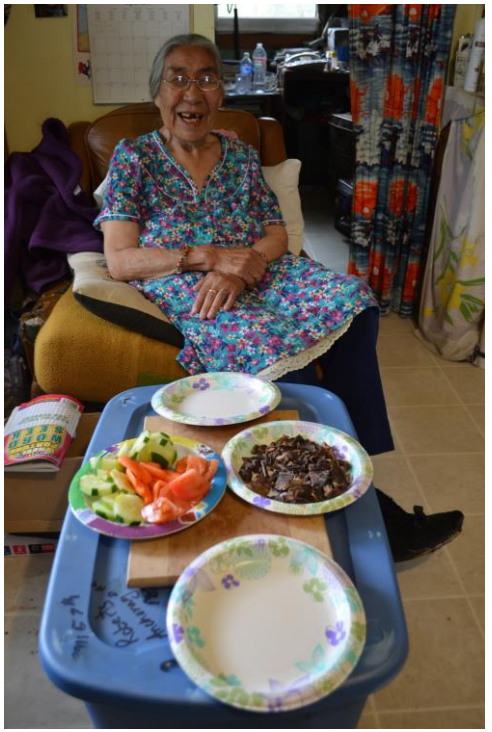
Methods (2015-16)

Follow-up Research:

* Ambler, Buckland, Kotzebue:
  * Follow-up key informant interviews
  * Participant observation

Preliminary Research:

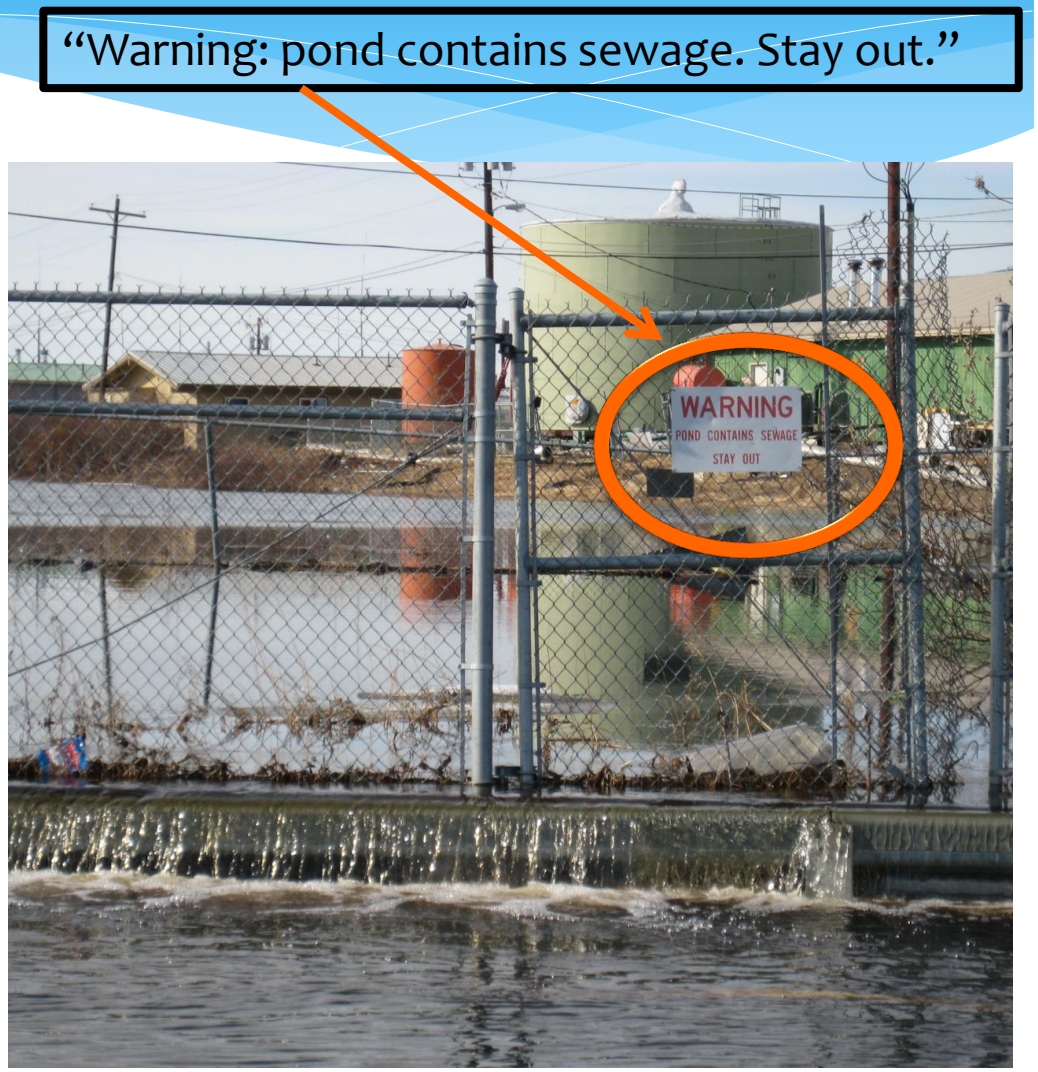
* Newtok:
  * Participant observation
  * Open-ended, semi-structured interviews (N=16)



Enjoying traditional foods with Minnie Gray, Ambler 2016

Buckland (2008-2009)

- Iñupiaq, NW AK
- Population: 450+
  - (now 500+)
- Self-haul & honey bucket
- Yearly spring flood increased cross-contamination
- 15-year long piped water and sewer project
  - Completed by VSW &Summit
  - 2016: all but 2 households connected
  - Problems with affordability
    - Disconnections
  - Erosion



Newtok (2016)

* Population: 354 (2010 Census)
* Self-haul & honey bucket
* Relocating due to effects of climate change.
  * Flooding
  * Erosion
  * Melting permafrost
  * Severe storms

Treated Water Access & Sewerage

Buckland (2008-09)

- "Washeteria"
  - Central watering point
  - Showers ($2/7 minutes)
  - Laundry facilities:
    - 4 washing machines for 450+ pop.
    - $4/load
- Untreated sources: river, spring
  - Limited use
- Cross-contamination from honey buckets

Newtok (2016)

- "PHS" (water treatment plant)
  - Central watering point
  - No public showers (steam baths)
  - No laundry facilities (Danby washers @ home)
- Newtok School
  - Treated water, showers, laundry
  - Normal access limited to associate teachers
  - Emergency access: 10 gal/household/day
- Untreated sources: rainwater, ponds, spring
  - Frequent use
- Cross-contamination from honey buckets

Quantifying Water Insecurity

5 Factors	WHO: "Intermediate Access" (Howard & Bartram 2003)
Amount	50 liters (13.2 gal)/person/day
Distance	Tap <100 meters away
Time	<5 minutes collection time
Quality	Acceptable quality with minimum risk to health
Affordability	(Affordability)

Quantifying Water Insecurity

	WHO Criteria[1] (Ref.)	Buckland[2] (2008-09)	Newtok[3] (2016)
N		N=21	N=11
Amount (gal/c/day)	13.2 gal	2.4 gal	2.3 gal
Distance	<100 meters	>100 meters	>100 meters
Time	<5 min	15-45 min.	15-45 min.

[1]Howard and Bartram 2003; [2]Eichelberger 2010; [3]Eichelberger *Unpublished* preliminary data

Social & Environmental Axes

Social and environmental circumstances that overlap to increase insecurity:

* Age
* Ability
* Social/Kin network
* Access to vehicle
* Climate vulnerabilities

(Eichelberger 2010)

"It's elders … I worry about. Who takes care of them when the boys go off to do subsistence?...

"We tell [the kids], 'Go pack water, dump honey buckets, do their dishes. Visit them,' we say. 'It just takes thirty minutes."

--Mother and Yup'ik teacher, Newtok

Daily Lived Experiences & Hidden Costs of Insecurity

* Daily life revolves around when & how to get water.
  * For most: requires kin relationships
  * Sharing water with those without
  * Paying others to haul
* Time-consuming
  * Travel to alternative sources
  * Opportunity costs: subsistence, cultural & economic activities, etc.

"I have to run back and forth 5 or 6 times unless I borrow a larger bucket. I can do it in 15 minutes if I rush… 30 gallons will last you for one whole week if you're careful."

- Mother, Buckland

Hidden Costs: Gender & Age

Particular affects for women and children.

* Time:
  * 4-8 hours for laundry at washeteria
* High health risk for children
  * Women travel with sick children
  * Lost time at work, school
  * Stigma/social isolation at school
    * Contribution to depression?

"There's a degree of likeness and dislike. Kids don't want to be partners with kids who smell."

After the flood in Buckland 2008

Social Roles & Reciprocal Relations

* "Every day we'd go listen to **stories from the elders, but they wouldn't tell us any until we'd do something**. Chop wood, packing water, packing ice. It was a daily thing."

* "**Everyone used to share and help each other…** But that was before we had to pay for the lights, the stove oil, and the water. Now we need money."

Water as "Total Social Fact"

Water as "total social fact" (Orlove and Caton 2010):

* enables life
* social interactions practices, and cultural meanings
* structured by infrastructure and policies

Traditional values and water access:

* **Sharing, hard work, cooperation**
* **Respect for elders**

Centralized water systems thus far have not reflected traditional values:

* Paying for water
* Disconnecting elders, others

Seining in Buckland, June 2008

Narratives of distress: Trade-offs for water security?

Desire for running water/sewer

"Everyone deserves a hot bath and a good, cold drink of water. Our forefathers fought hard for this country and we deserve better… **It's like a Third World country here.**"

-

"Right now, in 2009, I have six honey buckets in front of my house. In 2009! … **My kids get sick every spring from it.** It's not good for U.S. people like us."

"Spoiled" by technology

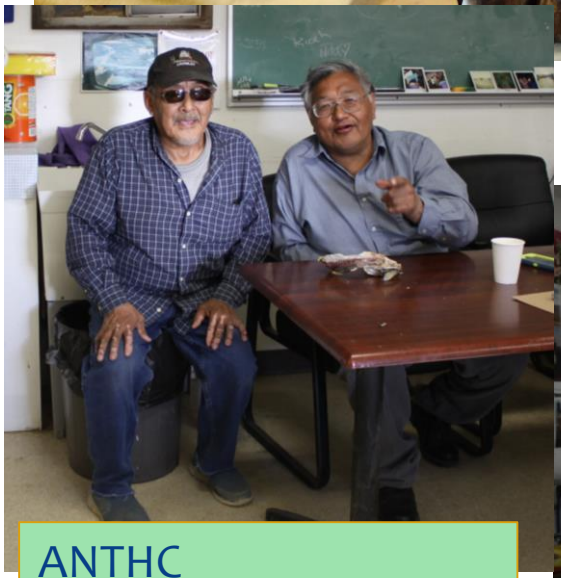
* **"The lights, the toilet… it spoiled us,** but we can't go back and unravel it."

* "Modern technology is making us sick… Electricity, water, sewer, TV… **You don't have to do anything physical."**

Quyana

Villages of Ambler, Buckland, Newtok, & Selawik

Maniilaq Association
Northwest Alaska Native Association
Northwest Arctic Borough



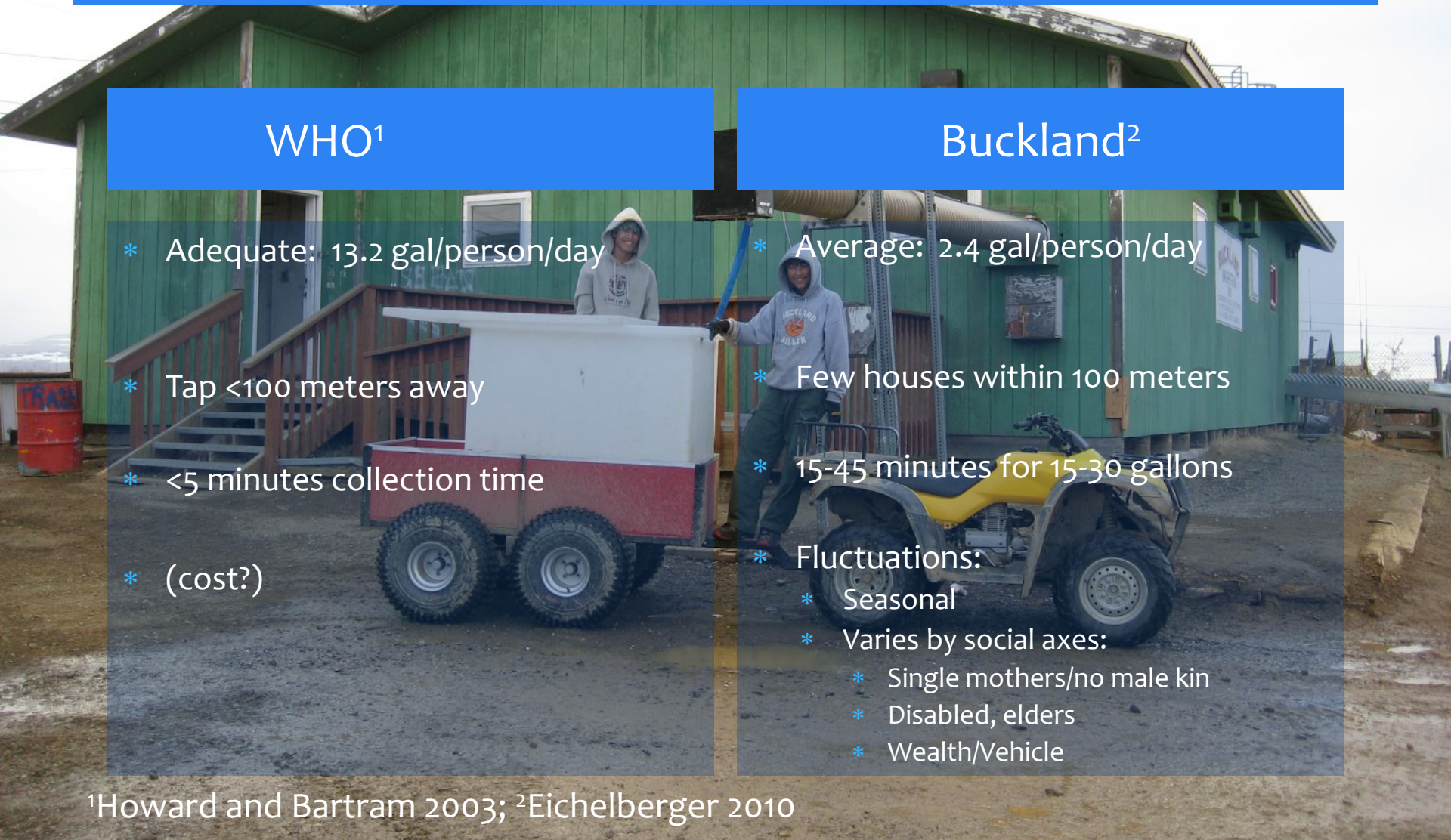
ANTHC
VSW
CDC AIP
UAA ISER

National Science Foundation
WHERE DISCOVERIES BEGIN

“Spoiled by technology”

* Decreased sharing
  * Replaced by bills
  * Paying someone to haul water
* Loss of traditional and subsistence knowledge

Access & Adequacy: Summary



WHO[1]

- Adequate: 13.2 gal/person/day
- Tap <100 meters away
- <5 minutes collection time
- (cost?)

Buckland[2]

- Average: 2.4 gal/person/day
- Few houses within 100 meters
- 15-45 minutes for 15-30 gallons
- Fluctuations:
  - Seasonal
  - Varies by social axes:
    - Single mothers/no male kin
    - Disabled, elders
    - Wealth/Vehicle

[1]Howard and Bartram 2003; [2]Eichelberger 2010

Practices: Uncertainty of Access

* Sharing
  * Allowing kin to use running water
  * Hauling water for kin
* Paying others to haul
  * Usually if weak kin network
* Collecting as much possible from natural sources
  * (difficult to quantify)
* Rationing:
  * Reusing water in washer, washbasin, bathtub
  * Using wipes instead of handwashing

Daily Life: Time

Buckland (2008-09)

* Hauling water:
  * 15-45 minutes for 5-30 gallons
  * Depends on access to vehicle
* Laundry: 4-8 hours
  * 4 washing machines for 450+ pop.
  * Most busy on weekends
  * Affects women more than men
* Health-related
  * Travel with children to hospital
  * Missed work, school

Newtok (2016)

* Hauling treated water:
  * 15-45 minutes: 5-30 gallons
  * Depends on access to vehicle
  * Multiple trips if doing laundry and/or hauling without vehicle
* Hauling water from other sources
  * Requires access to vehicle/boat
  * Having/paying others to haul

Practices: Risk Perceptions & Preventing Disease

* Preference for natural (untreated) sources
  * (Can also be cultural preference)
* Not bathing children under 1 year old
* Pouring gasoline into puddles to kill bacteria
* Avoiding traditional berry picking areas
* Removing shoes in home

Daily Life: Health & Stigma

* Avoiding particular areas, households, individuals
* Households with disease characterized as “lazy”
* Stigma: children socially ostracized
* There’s a degree of likeness and dislike. Kids don’t want to be partners with kids who smell.”

Practices to Prevent or Treat Water-Wash Diseases

* Traditional medicines & lay epidemiology:
  * Ear aches:
    * Beluga oil
    * Cigarette smoke
  * Sore throats:
    * Beluga blubber
    * Duck oil
    * Sliced potato compress
    * Willow buds

* Order of use:

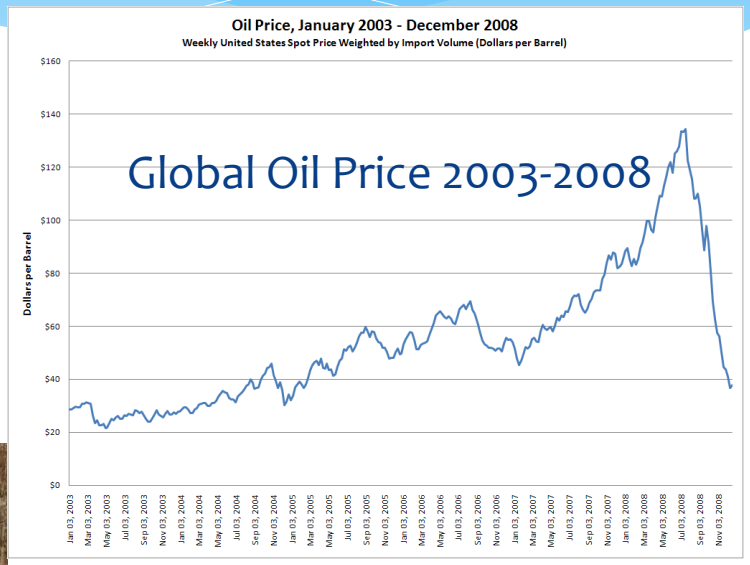
1) Traditional medicines
2) OTC/Prescription

* Save antibiotics after cessation of symptoms

* "Blubber is good for sore throats with white patches and things stuck in the throat because everything sticks to it and comes out."

Environmental Axes & Water-Energy Nexus

* Extreme cold
* Flooding
* Permafrost
* Turbidity
* Climate change



- Energy-intensive, extremely expensive
  - Dependent on state subsidies
- Vehicles to haul water

Social Axes of Insecurity

* Social circumstances that overlap to put individuals at risk for adverse health outcomes (Farmer 1996)
  * Age
  * Gender
  * Physical ability/disability
  * Socio-economic factors: Can you afford the water?
  * Social network: Is there someone who can haul water for you?

(Eichelberger 2010)

Social Axes: Buckland

Social circumstances that overlap to put individuals at risk for adverse health outcomes (Farmer 1996)

Wealth:

* No vehicle ➔ 5-10 gallons/haul
* Vehicle ➔ 18-400 gal/haul
* Flush-hold ➔ 200-400 gal/haul

Gender: single mothers

* range: 5-60 gal
* w/o vehicle: 5-15 gal

Environmental Axes of Water Insecurity

Buckland

Washateria closures

* Spring ice jam flood
* Broken generator for pumping raw water
* Extreme cold
* Unknown reasons

No alternative sources for treated water

Newtok

PHS closures

* Limited pumping season (summer) & inadequate storage capacity for treated water
* No electricity ➔ PHS froze up
  (Still unrepaired)
* Storms
* Flooding
* Erosion: impending loss of water source

School provides emergency access: 10 gal/household/day

Social & Environmental Axes of Water Insecurity

	WHO Criteria (Ref.)	Buckland (2008-09)	Newtok (2016)
N		N=21	N=11
Average (gal/c/day)	13.2 gal	2.4 gal	2.3 gal
Social Axes			
Single mothers	13.2 gal	2.0 gal	
Flush-hold system	13.2 gal	4.8 gal	
No vehicle	13.2 gal	1.8 gal	
No male kin* at home	13.2 gal	1.0 gal	
Single mother without male kin*	13.2 gal	0.7 gal	
Climate Vulnerabilities		0 gal	1.8 gal

Sewerage

Buckland (2008-09)

* Honey buckets
  * City hauled sewage to lagoon
  * ~1 mile from village

Newtok (2016)

* Honey buckets
  * No sewage lagoon
  * Households self haul
  * Residents dispose of over 2 riverbanks bordering community
    * ~20 feet from some homes