

# Water & Health in Alaska

*considerations for water quantity*

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# Documented health benefits of improved water service in Alaska

- Acute respiratory infections
- Skin infections
- Invasive pneumococcal disease



# Bradley Classifications

- **Waterborne diseases:** where the pathogen is in the water and causes illness when ingested
- **Water-washed diseases:** where transmission of the pathogen is interrupted by washing with water





# How much water is needed for optimal health?



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# Water Quantity Guidelines

- With internal fixtures
  - The World Health Organization<sup>4</sup>: **26.4**
  - Cold Regions Utilities Monograph<sup>5</sup>: **15.9**
- No internal fixtures
  - Gleick<sup>3</sup>: **13.2**
  - The World Health Organization<sup>8</sup>: **13.2**
  - The Sphere Project<sup>6</sup>: **4**
  - The UN Refugee Agency<sup>7</sup>: **4-5**

*\*All units are gallons/person/day*



How much water is needed  
for optimal health (in Alaska)?



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# Impact of piped water on rates of infections

- Start with 4 villages with only self haul water
- Collected data on water use and health
- Most households were provided piped services
- Collect data on water use and health after pipes





# Opportunities for Observation

1. Water use in self-haul households
2. Water use in piped households
3. Water use in transition from self-haul to piped



# Water use in self-haul households

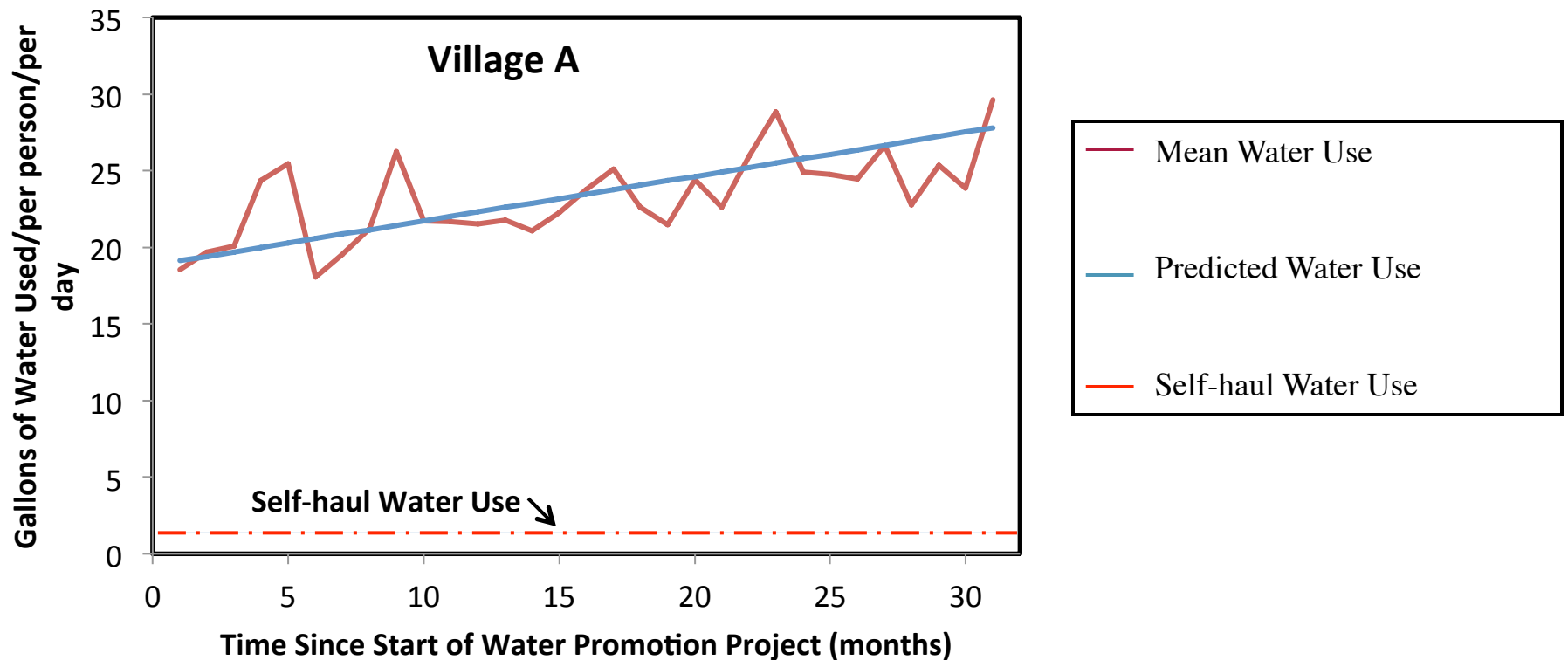


*Residential water use < 2 gpcpd*

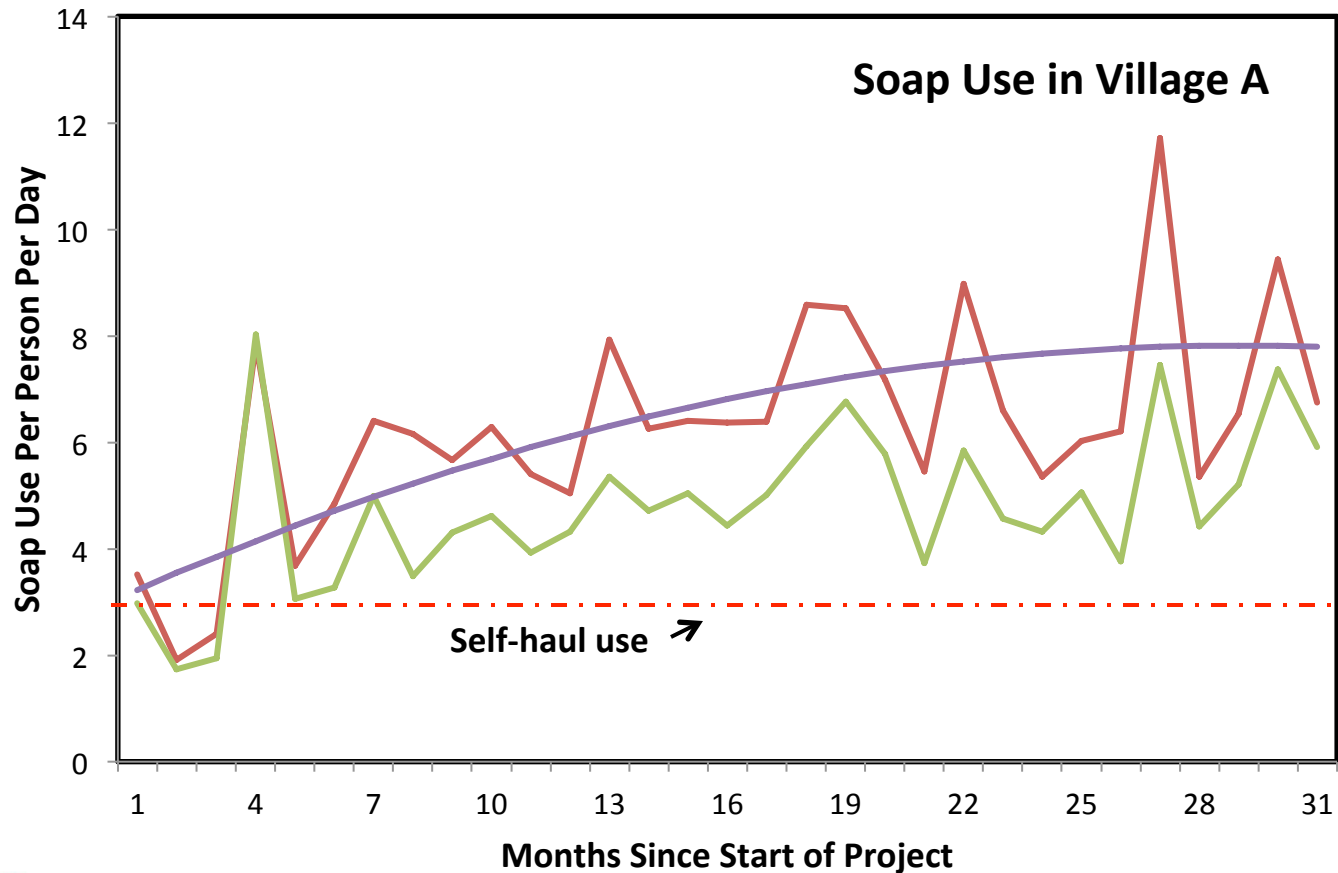


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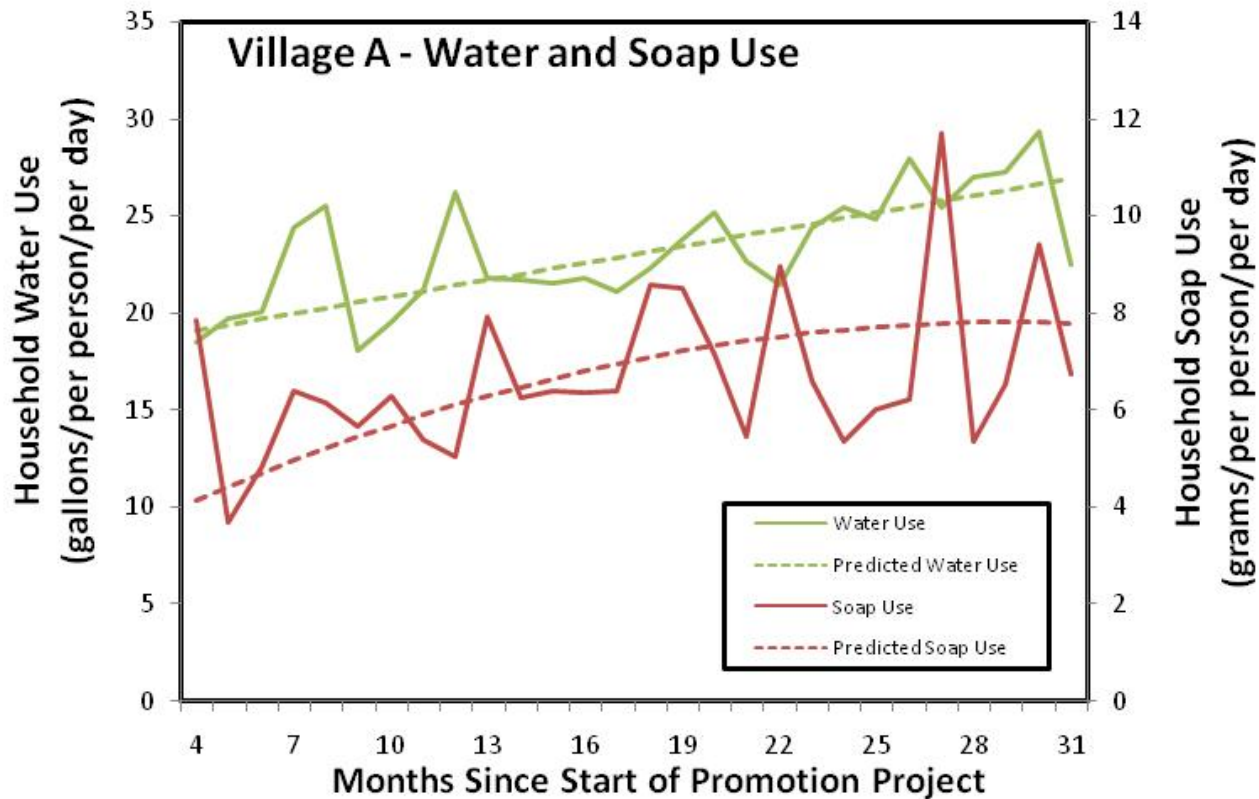
# Change in Household Water Use (volume)



# Change in Soap Use (volume)



# Change in Water & Soap Use (volume)



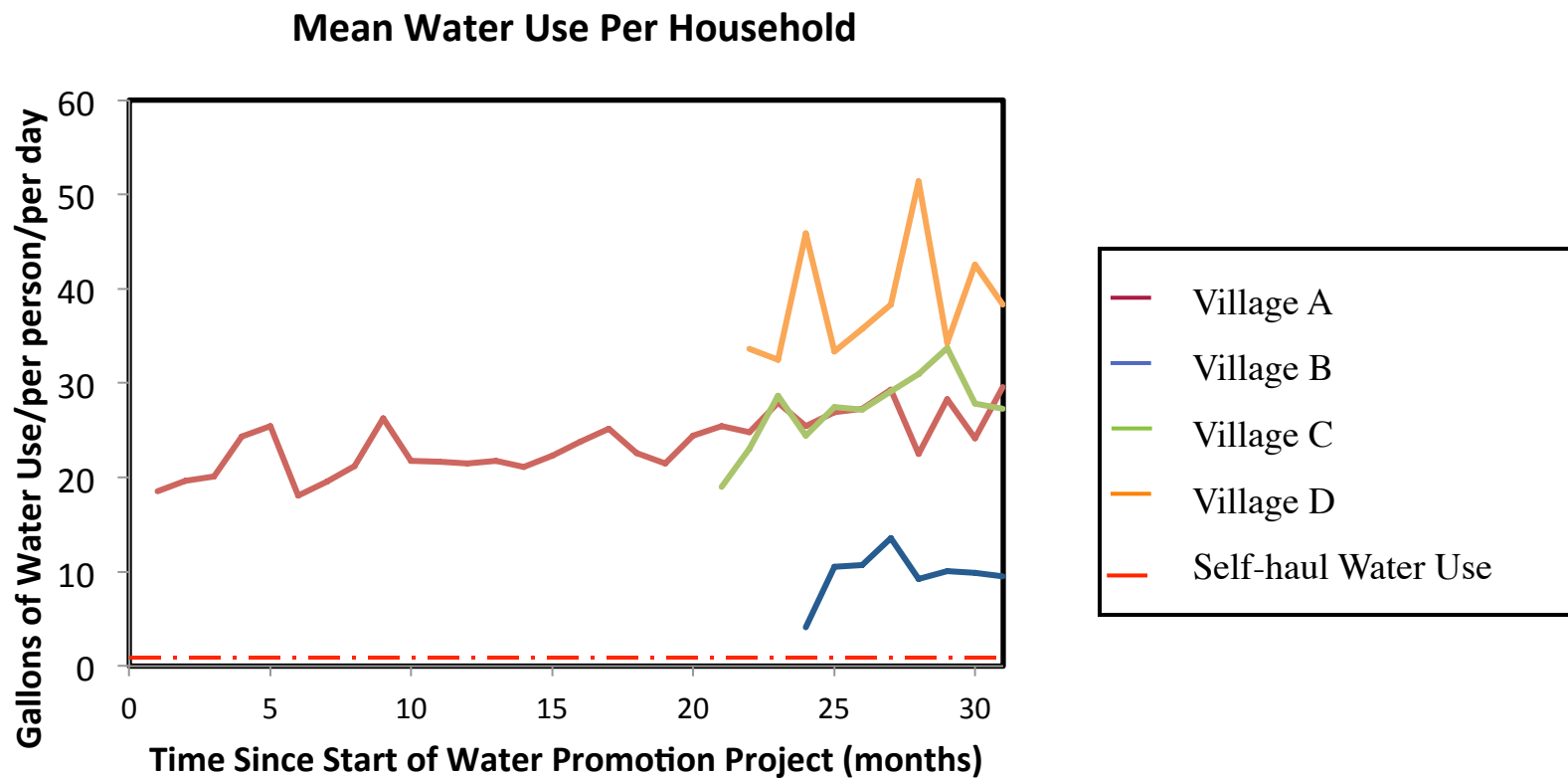
## *Comments about water use...*

- "When our kids come in dirty we just put them in the bath. It's really easy we don't have to heat water for the bath."
- "You can take shower anytime."
- "With the potable water, you can wash your hands more frequently."
- "We don't have to wash hands in the same water."
- "Cleaner kids. Cleaner house. Our family doesn't get sick that often."
- "People have readily available water to wash hands and dishes."
- "You can wash your hands. You have water all the time. Dishes are done whenever they need to be."
- "Has been nice to be able to wash everyday"





# Change in (piped) Water Use by Village



# What about small vehicle haul systems?



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# Self-haul vs. Small haul

## Water use in self-haul households



*Residential water use < 2 gpcpd*

## Water use in small-haul households



*Residential water use < 2 gpcpd*



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# Promoting healthy water use through education



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*“You can teach a dog to swim but you can’t  
teach a dog to snorkel”*

- Calie Ritter, age 6



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# Recommendations for optimal health

- There's no “magic number”. Water use needs are specific to the system and population.
- Optimal health is achieved through an integrated approach that includes provision of infrastructure, proper O&M and education to encourage healthy water use behaviors.
- Water service must be affordable in order to provide a health benefit. User fees should be independent of water use.





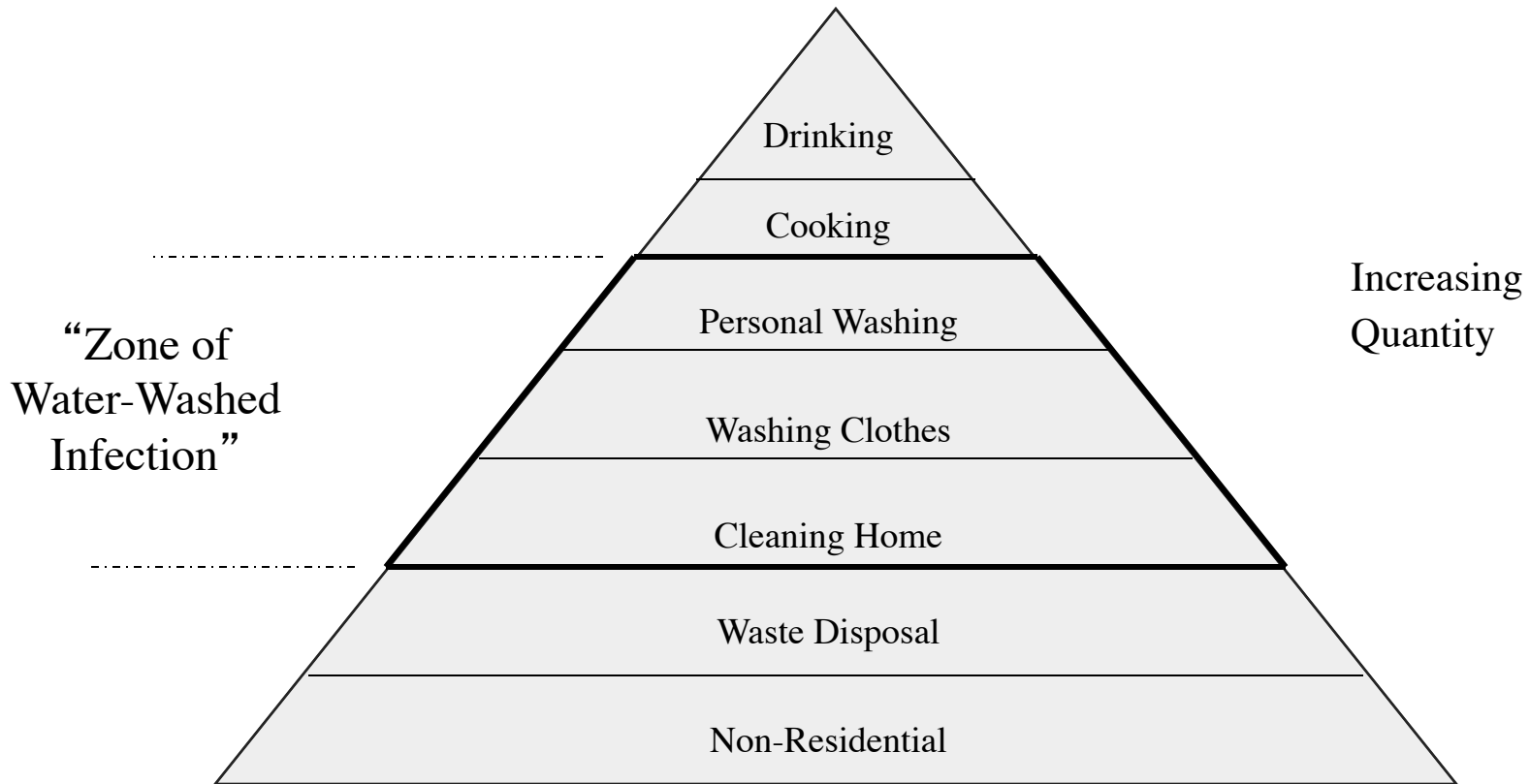
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# Hierarchy of Water Requirements

(after Maslow's hierarchy of needs)



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