

Water and Sanitation Briefing for State of Alaska (July 2011)
Water and Sanitation Steering Committee*

The purpose of this document is to brief policy makers about the impact of unmet water and sewer needs on health and the quality of life in rural Alaska. A strategic plan, new approaches and funding are needed to maintain existing structures and resolve the challenges of hard-to-serve communities with appropriate technology. There are novel technologies and approaches to water preparation, recycling and sewage treatment in development. We urge you to acquaint yourself with these issues; recognize the importance of adequate quantities of quality water and efficient waste management systems; and commit to ensuring that these issues are resolved.

Water Service and Health Within Alaska there are significant health disparities between communities and groups within communities that are due to lack of access to in-home water and sewer services. Alaska ranks last among U.S. States for adequate sanitation service; approximately 23% of rural Alaskan households lack in-home water and sewer service. There is increasing evidence that in-home water and sewer service is linked to better health. Prior to 2008, data linking water and sewer service to health in Alaska were limited. However, recent research has shown that rates of respiratory hospitalizations (Figure A), skin infections, invasive bacterial infections and dental caries are all higher among persons living without running water. **This research demonstrates that having in-home running water is directly linked to the improved health of rural Alaskans, especially infants.** The likely mechanism for this relationship is that ample supplies of in-home running water improve hand, body and oral hygiene decreasing person-to-person spread of germs and thus reducing the frequency and severity of infections.

Sanitation Funding Gap Over the last 50 years, much progress has been made in Alaska village sanitation. Today ~75% of homes in rural Alaska have indoor plumbing, as compared to ~25% in 1980. About half of Alaska’s historical sanitation funding (50 years) has been spent during the last ten years (AK DEC statistics, Griffith W, 2011). In the past decade over a billion dollars have been spent on water and sewer needs. Unfortunately this is not enough to complete the task. The total health-related need that remains is ~\$736 million (Indian Health Service Sanitation Deficiency System, Dec. 2010). This estimate only includes the costs associated with upgrades to address critical health threats and to institute first-time service in homes without piped or hauled water/sewer (it excludes costs associated with addressing minor health threats). While health related needs continue to rise, the total funding available for sanitation in rural Alaska has declined by ~48% between Federal Fiscal Year 2004 and the President’s FFY 2012 budget.

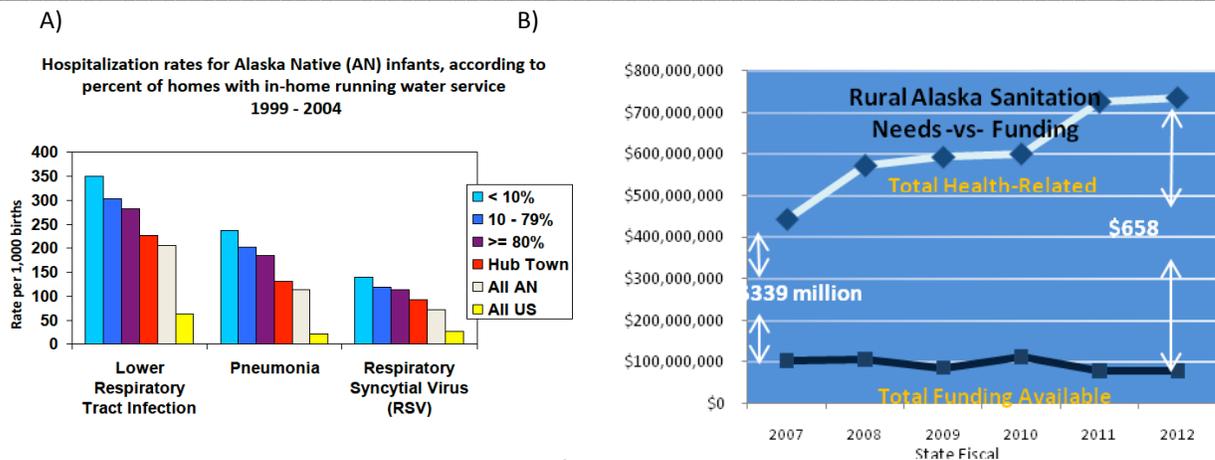


Figure (A) Respiratory hospitalization rates are higher for infants living without in-home water and sewer services (Hennessy T, Am. Journal of Public Health, 2008); B) Rural Alaska sanitation funds needed exceed those available.

There are 11 ongoing construction projects in Alaska villages to provide first-time piped water and sewer services. Most of these projects have been ongoing for several years, some for more than a decade. The estimated cost to complete these projects is \$200 million. Once these projects are done, there will still be 31 villages (6000 residents and 1700 homes) with no water and sewer services to individual homes.

100 M/year for a period of two years will allow AK DEC to finish these projects and get them off their priority list, thereby allowing accommodation of the new priorities listed herein.

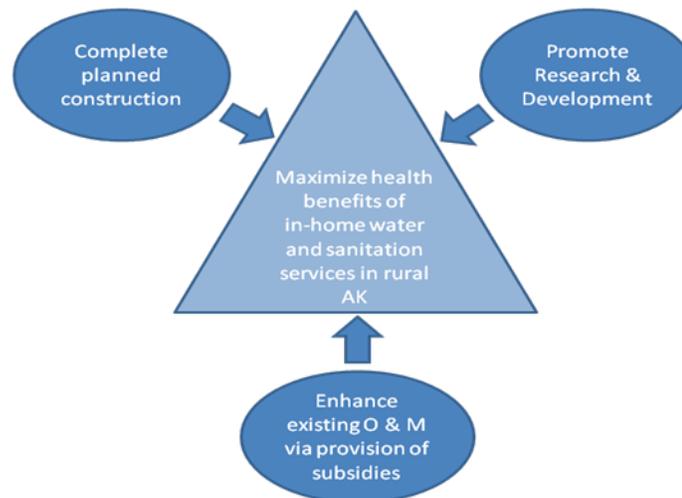
Current approaches to addressing rural Alaska water and sewer needs are not achievable or sustainable:

- The kind of facilities constructed for the past 50 years are increasingly unaffordable to build and maintain.
- Current funding is not adequate to serve remaining homes or to make improvements required for healthy living.
- New technologies are needed to address health problems associated with water and sewer system deficiencies.

Recommendations To address these concerns, a Steering Committee of health, water and sanitation experts has been convened by the U.S. Arctic Research Commission and the US Centers for Disease Control and Prevention (CDC). This group has met multiple times and recommends adoption of the following overarching goal and specific recommendations:

Goal: Maximize the health benefits of in-home running water and sanitation services in rural Alaska

We think improving health through provision of water and sewer services requires support from three key strategies.



Specific Recommendations to achieve this goal:

1. Promote research and development through specific funding and capacity building to encourage and test innovations that address technologic challenges for provision of water and sanitation services.
 - a. Dedicate 1% of capital funds for sanitation to support a research agenda (\$500,000 - \$1 M, annually)
 - b. Create and fund a dedicated professional position that could serve as a catalyst for development of an R & D plan, catalog and prioritize needs, create an assessment strategy, conduct outreach and coordination functions.
 - c. Develop research in specific areas:
 - i. How to promote water conservation in small systems to reduce costs and still encourage hygienic practices?
 - ii. How to provide in-home water service in communities without municipal systems?
 - iii. Investigate the relationship between water service and health to include:
 1. Economic evaluations of impact of water service on health in different systems
 2. Role of diarrheal disease in rural communities without water service
 3. Water quantity used in different delivery systems and its role on health.
2. Complete the ongoing capital construction projects to provide first-time water and sanitation services in 11 communities at a cost of \$200 M over the next two years.
3. Work with federal and state appropriators to get 5% of state and federal capital funds to be set aside annually as an incentive for communities to follow best practices through O & M support.
4. Reduce human illnesses that result from insufficient quantities of in-home running water in rural Alaska communities. Develop specific targets for water-related health indicators: Pneumonia and influenza, skin infections, invasive bacterial infections, dental cavities in children, and diarrheal disease

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