Alaska Update
–Five Years Later:
Honey Bucket Still Not Retired

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Five years after former Alaska Gov. Tony Knowles' targeted date to retire the state's traditional honey bucket to the museum, it still isn't an antique.

In 1995, Knowles set a 10-year priority to retire the honey bucket, a toilet seat affixed to a five-gallon plastic bucket that gets its name from the plastic bucket, which was once used as a container for honey. Today, though, one out of five residents still lives without wastewater or water service.

In fact, only 110 out of 185 villages, or 60 percent of the communities, in the state meet the criteria to be considered "served" with wastewater and water, according to Ed Lohr, P.E., director of Tribal Utility Support for the Alaska Native Tribal Health Consortium (ANTHC). A community is considered "served" if more than 80 percent of the homes have water and sewer.

A 1994 *Small Flows* newsletter headline read, "Sanitation Conditions in Alaska Compared to Third World Countries." The story outlined the difficulties many Alaska Native Americans faced without running water and flush toilets.

Unfortunately, that still seems to be the case today for those Alaskans who continue to use honey buckets for toilets. Disposal methods range from self-haul to community pickup. The Consortium considers the community pickup system an intermediate service level.

Today, five communities are still on the flush and haul system, according to Lohr. People on the flush and haul system have a tanker vehicle delivering water to their homes, which is usually stored in a big tank outside.

Another tank holds the wastewater that is flushed down the toilet or drained from the sink. Then, another vehicle pumps the wastewater from the tanks and takes it to the community wastewater lagoon system.

Alaska's Wastewater History

Alaska became a part of the United States in 1959. That same year, Congress authorized the Public Health Service to work with Alaska Native communities to construct water and sanitation systems.

In the 1970s, sewage disposal bunkers were built and fenced sewage lagoons were constructed; meanwhile, wells were dug and watering points were established to provide a centrally located water source for clean drinking water. It was during this decade that washaterias were constructed, providing flush toilets, sinks, drinking water for hauling, showers, and washers and dryers.

The honey bucket was the historical means of collecting wastewater. In the early 1980s, a new and more sanitary way of transporting the wastewater, called the hopper system, was developed. Hoppers or bins were located at central points in the villages, making it easier for residents to dump their honey buckets.

The bins were later towed to a sewage lagoon, often as frozen cubes in the winter. This system was known as the "open haul" system.

In the late 1980s, wastewater and water systems for homes began being built. The flush-and-haul system, whereby communities pick up household waste, was developed in the early 1990s, along with piped wastewater and water systems.

Money Matters

Since 1960, approximately $1.3 billion has been spent on wastewater and water infrastructure improvements in Alaska, according to Lohr. From 2005 to 2010, some $651 million was spent and Lohr estimates that, assuming there are no regulatory changes, another $840 million is needed to complete all of the required projects to have 100 percent of the communities served.

Approximately 139,000 Native Americans live in Alaska today, some 76,000 in rural villages. Of the 231 Native American tribes in Alaska, only 185 are large enough to support a community wastewater system. Today, 112 communities currently are receiving project funding in Alaska.

Various agencies have been responsible for the funding over the years. One of the longest running contributors is the Indian Health Service, which began providing funds in 1960 and has continued every year since. The U.S. Environmental Protection Agency (EPA) also has been a major contributor.

Accessibility Obstacles

More than 200 remote villages exist in Alaska today where the residents' only links to the outside world are small planes flown by "bush pilots."

Providing wastewater and water service to the remote villages is often an expensive endeavor. In areas where residents are unable to pay, the village will sometimes opt to pay for whatever services they deliver out of another account, like revenue sharing or bingo proceeds.

To compound the problem, Lohr said some homes are not occupied year-round or don't have a permanent heat source, meaning they do not meet the requirement for providing a wastewater or water source.

Having a heat source is one of the main requirements for being eligible for wastewater and water systems because of the extreme temperatures. Homes without heat may cause a line to freeze, affecting the entire system.

Cold Weather Systems

In addition to the accessibility problem for many living in remote areas of Alaska, frigid temperatures also make supplying wastewater and water treatment difficult. Alaska, the largest state in the country, has a variety of climates.

Southern Alaska has a fairly mild climate with temperatures averaging between 10 to 32 degrees F in the winter and 50 to 55 degrees F in the summer, according to *worldbook.com*.

Northern Alaska temperatures average minus 10 degrees F in the winter and approximately 45 degrees in the summer. Although the average is minus 10 degrees F, temperatures have dropped as low as minus 80 degrees F.

In southern areas of Alaska where the temperatures are milder, community-type sewer systems are used. In northern Alaska, the systems are typically above ground because of permafrost and the high cost associated with heating buried systems.

In the colder temperatures, conventional septic tank systems do not work because the ground is frozen year-round, and soils consist of large amounts of ice and silt. Warm wastewater, 40 to 45 degrees, melts the ice and creates large sinkholes in the ground.

With most of the community-type systems, the wastewater is collected and discharged to one or a series of tundra ponds for treatment.

"Most of the new systems that we build have been above ground because ice rich permafrost makes conventional gravity systems unfeasible," Lohr says. "We are trying a modified technology in Alaska, and that is the arctic pressure sewer. This [system] will allow us to bury a sewer in a few communities that we previously thought would need above ground vacuum systems."

Lohr says it is beneficial to limit the amount of pipe exposed to the extreme temperature of below 50 degrees Fahrenheit. "When the pipe is shallow buried just under or at the bottom of the active layer, it only sees temperatures of around 27 degrees Fahrenheit, and a temperature differential of 77 degrees greatly reduces heating expenses," he says.

Subsistence Lifestyle

One of the most difficult issues to tackle previously was covering the cost of operation and maintenance (O&M) to keep these systems running. Lohr says keeping wastewater and water systems at minimum sanitation standards involves substantial costs for electricity, labor, fuel, equipment, utility management, and personnel training.

He adds that the issue with O&M in Alaska "is a subsistence lifestyle with little cash economy."

To alleviate these problems, the ANTHC is currently managing 18 community systems under contract across Alaska to ensure O&M costs are collected and utilized efficiently. Lohr says in the past, communities have had problems for a variety of reasons.

"Being a subsistence lifestyle, billings don't always come every month," he says. "For instance, the clerk goes to fish camp to gather food, and the bills don't go out."

He adds that there is a high turnover of utility clerks, managers and operators. "Think about changing the mechanic for your car once

or twice a year, and they don't know how to fix cars yet. Your car probably won't last," he says.

"Some rural city managers have little knowledge on the operation and maintenance of water and sewer systems. When faced with decisions, they lack the experience in utility management to decide if a pump should be bought or the runway lights [for airplanes] should be repaired, so what appears to be the most immediate issue, getting supplies into the community, gets priority," he added.

Another problem is the high cost of emergencies. "When the system does break, it costs an exorbitant amount of money to fix something that, if you would have had the spare part to start with, would have cost you a few dollars," he says.

To counter these problems, Lohr says through the management contracts, the ANTHC:

- Provides a billing service that is on time and accurate,
- Collects all revenues and pays all expenses,
- Hires the operators with benefits and a method for advancement,
- Keeps spare parts on the shelf, and
- Establishes and enforces collection and shut off policies for delinquent bills.

"Accomplishing these things has allowed the revenues to meet, and in some communities, exceed expenses," Lohr adds.

Kicking the Bucket

Although there are still some limitations to the Alaskan lifestyle, overall, great improvements have been seen in the quality of life in Alaska Native villages, according to Lohr.

As for retiring the honey bucket, Lohr adds, "At some point, all communities will be served, but the honey bucket will always be required. It will never be totally eradicated. There are a few houses out there that we won't be able to serve for one reason or another.

"Just like the outhouse in the lower 48, some people will choose that level of service, or they will be too far from the community system to get pipes."

For more information about wastewater and water in Alaska, check out these resources:

Alaska Native Tribal Health Consortium. Accessed January 7, 2010, at *http://www.anthc.org/*.

Eddy, Natalie. "Goodbye Honeybucket? Wastewater Treatment in Alaska Native Villages." Small Flows Quarterly, Spring 2004, Volume 5, Number 2. Available at *www.nesc.wvu.edu/pdf/ww/publications/small-flows/magazine/SFQ_SP04.pdf*.

"North American Climates: Alaska," World Book. Accessed February 16, 2010, at *www.worldbook.com/wb/Students?content_spotlight/climates/north_american_climate_alaska*