

Rural Alaska wastewater overview

John Nichols, P.E

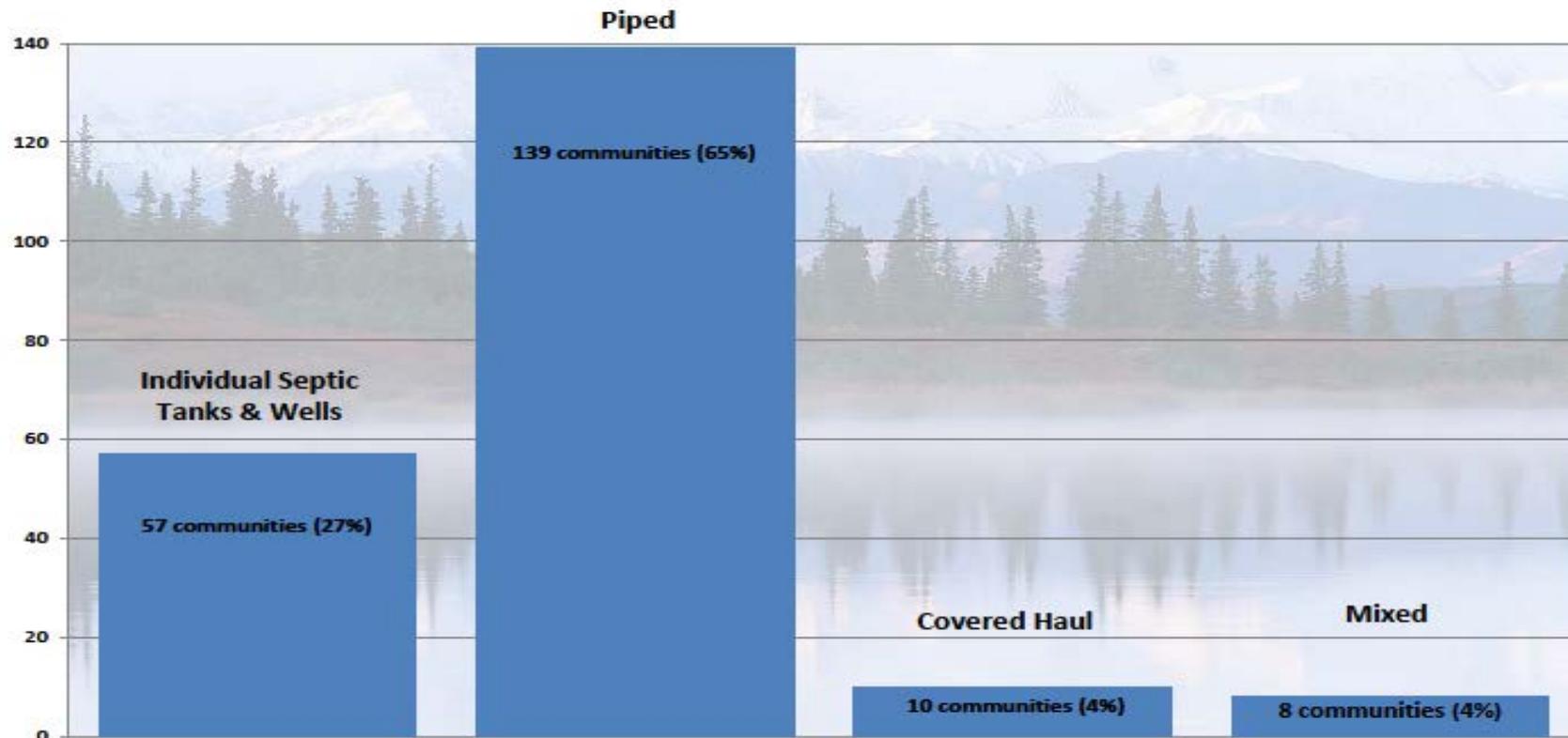
Director of Utility Management Services

Alaska Native Tribal Health Consortium



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

Rural Alaska Sanitation Types of Water and Sewer Systems



Notes: Data set includes served communities and communities with system construction nearing completion.
A served community is defined as one in which 55% or more of homes are served by a piped or covered haul system.



Wastewater collection systems

- Buried gravity, Arctic pipe or non-Arctic
 - Most have lift stations with power and heat
 - Many do not have a central lift station however
- Vacuum sewer, surface Arctic pipe
 - Sewer flows to heated & powered central station
- Low pressure sewer
 - Surface or shallow-bury Arctic pipe
 - Sewer may or may not go through central station



Savoonga Vacuum Sewer Station



Outside the Savoonga vacuum station



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

Community wastewater treatment

From least common to most common:

- Wastewater treatment plants
 - Usually in relatively prosperous, temperate areas
- Community septic tank and drainfield/outfall
 - Requires thawed ground, usually temperate areas
- Lagoons, typically not mechanically-aerated
 - Cheap and simple to operate
 - Standard in Arctic and sub-Arctic communities



Typical lagoon, Deering



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

View from the Deering lagoon



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM

Rural Alaska operations

- O&M funding is usually barely adequate
- Minimal operator hours to reduce expenses
- Transportation of sewer samples
 - Operator collects sample
 - Bush flight to regional hub
 - Manual transfer from bush flight to jet in hub
 - Jet flight from hub to Anchorage
 - Manual transfer from Anchorage airport to lab
- Samples to lab within 24 hours is very difficult



Sewer sampling challenges

- Heated & powered central sample locations
- Adequate operator hours for sampling
- Weather and flight delays
- Transfer of sample in hub
- Cost of freight and sample testing
- Expect high numbers of needed resamples



Questions?



ALASKA NATIVE
TRIBAL HEALTH
CONSORTIUM