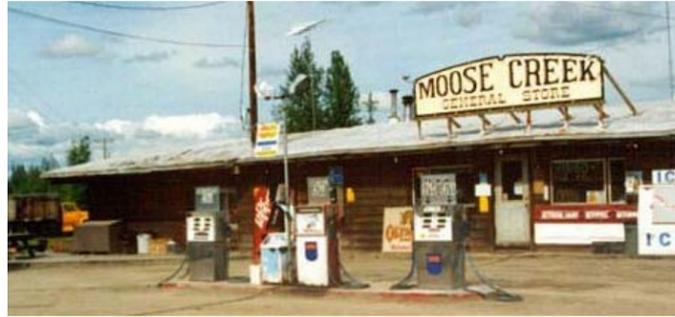


North Pole Possible Source of Potable Water for Moose Creek



In 2015, sampling of residential drinking water supply wells in Moose Creek, near Eielson Air Force Base, found the chemical perfluorooctane sulfonate (PFOS) at levels exceeding the U.S. Environmental Protection Agency's (EPA) Provisional

Health Advisory (PHA) level. PFOS is an "emerging contaminant," or chemical with limited data on human health effects. It is an ingredient found in many products, including firefighting foam. Contamination from PFOS likely originated from

historical fire-fighting foam use at Eielson AFB, roughly from 1970 to 2000.

Since the discovery of PFOS in drinking water wells on-base in late March, the Air Force changed to alternate supply wells on base, sampled groundwater for PFOS near the northern base boundary, and offered to sample drinking water wells for Moose Creek residents. The off-base well sampling detected numerous wells with PFOS above the health advisory. For the wells with PFOS levels above the health advisory, the

Air Force is providing residents with clean water for drinking and cooking, while it investigates long-term solution.

In 2016, the Air Force began an analysis of possible solutions to provide potable water to the individuals with PFOS contaminated wells. One of the solutions discussed in 2016 is to provide potable drinking water is water from the North Pole Utility. Any solution to use water from the City would be wholly at the expense of the Air Force and would not be borne by North Pole Utility customers or the City of North Pole.

Voters approved \$2 Million Loan for Sewer Improvements

The Utility Department continues to work toward a solution of the periodic loss of surface river flow at its sewer discharge on the Tanana River. In November 2014, the Alaska Department of Environmental Conservation (ADEC) issued the Utility a Notice of Violation (NOV) for its violation of its discharge permit because it periodically did not have a mixing zone to dilute its treated wastewater discharged to the Tanana River. Using a \$500,000 legislative award, the Utility identified a solution to resolve the NOV and to generate engineering and design documents to correct the problem—a longer sewer main to an active channel of the Tanana River. The estimated cost of a sewer main extension could exceed \$4 million. Constructing the sewer main extension is expensive because it requires installing the extended sewer main on land outside the city limits in wetlands. An access



The sewer outfall on the Tanana River is outside of the city limits on State of Alaska land and not under direct control of the City. The site ends up being a dumping site; place where people target shoot; and "party" place. The water bubbling out of the rocky area is the treated wastewater entering a channel of the Tanana River.

road also needs to be built to access the sewer main.

In 2016, ADEC notified the Utility it was eligible for a \$2 million loan to help fund the construction of the extended sewer main. To incur debt, the

registered voters within the City must approve accepting the debt. On October 4, 2016, City voters approved accepting the loan and associated debt. The vote was 180 in favor (72%) and 71 opposed (28%).

2016 Annual Report

CITY OF NORTH POLE UTILITY DEPARTMENT

AUGUST 2017

2016 Highlights

- 5 Sewer lift stations rehabilitated
- 2 mobile generators purchased
- \$2 million loan approved by voters for sewer improvements

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Five Sewer Lift Stations Rehabilitated in 2016



Cary Street lift station in 2016 prior to rehabilitation.

In 2016, the Utility completed the lift station rehabilitation funded by the \$1.9 million Municipal Matching Grant reported in last year's annual report. The Utility rehabilitated the five remaining lift stations not addressed in the first two phases of lift station upgrades. The lift stations included in the project were located on Cary Street, Hurst, Tanana, and Mockler Roads and Patriot Drive. The

rehabilitation work included repairing rusting buried lift station cans; replacing aging pumps, pipes and hardware; and upgrading the electronic controls. The two prior lift station projects incorporated sophisticated electronic controls and a telephone-based warning system. These systems were also included in the five lift stations that were part of this project

The lift station's electronic controls use the internet to report operational information to the Utility office. The electronic controls also send alarms to the Utility if there are operational problems at the lift stations. There was no internet service available at a reasonable cost at the Hurst Road lift station—the Utility would have had to install service poles and run internet service to the location. As a test case, the



Cary Street lift station in 2017 after rehabilitation.

Five Sewer Lift Stations Rehabilitated in 2016 (continued)

Utility installed an internet cellular modem at the Hurst Road lift station.

The Utility had been investigating various wireless means as communication options to bypass the internet. These systems proved expensive and untested in our environment--

temperature extremes and obstructions due to all the trees in the City. During the last four months of 2016, the cellular modem at the Hurst Road lift station proved more reliable and cheaper than the landline internet service. The Utility planned to switch to cellular modems at

the 12 remaining lifts stations as a cost-saving and reliability upgrade. Replacing the landline internet service is expected to pay for itself in two years, after that it will be a cost savings compared to the current technology..

Emergency Generator Project Completed

In October 2013, the Utility received a \$303,000 loan from the State of Alaska to purchase

emergency generators. The purpose was to replace the aging emergency generator at the wastewater treatment plant (WWTP) and for mobile generators. In 2014, the Utility purchased

a generator and installed it as part of the rehabilitation project at the WWTP. Not only did the WWTP generator need to be replaced due to its condition, but the old generator was un-

dersized for the renovations constructed at the plant. The Utility needs mobile generators to operate the sewer lift stations during power failures. The utility had two aging generators and a third generator purchased as part of the Phase 1 Sewer Rehabilitation Project. The old generators were not reliable and their power output restricted which lift stations they could power. The Utility has 13 active lift stations. The largest and newest generator has to be reserved to operate the sewer lift station on Holiday Road. That lift station pumps approximately 70% of all the wastewater in the City and has

the highest power demand. If multiple lift stations lose power, the Utility staff must move the generators from lift station to lift station to ensure the wastewater keeps flowing. The Utility purchased two mobile generators in 2016 that can operate all but the large lift station on Holiday Road. With a widespread power outage, five mobile generators makes it easier to keep all our lift stations pumping.

With the purchase of the two mobile generators, this project is completed.



Increase in Sewer Charge approved for 2017

The impact of Flint Hills ending oil refining at the North Pole Refinery in 2014 are still having an impact on the Utility. Approximately 25% of the Sewer Division's revenues came from sewer revenue from the refinery. The Utility also lost approximately 25% of the capital income used to fund large capi-

tal projects when the refinery stopped production. The Utility's first response was to reduce staff in 2015—the Utility cut one of its four positions. The Utility also cut its budget. In 2015 the Utility did not raise utility rates, but even with these cuts the Sewer Division was unable to operate with the same

level of service and needed to raise the sewer rate in 2016. To not operate in a deficit in 2017, the Utility needed to increase the sewer rate starting on January 1, 2017—a change from \$0.0134/per gallon to \$0.01645/gallon.

National Toxicology Program Sulfolane Research



Below is a summary of the sulfolane research currently being conducted by the National Toxicology Program in response to sulfolane contamination in North Pole. Results of some of the studies may become available as soon as 2017.

Studies	Description	Species	Exposure
28-day toxicity study	Mice, rats, and guinea pigs are given a range of doses to determine if any of the animal species studied is more sensitive to sulfolane toxicity than the other species and to identify appropriate dosing levels for longer duration studies.	Mice, rats, and guinea pigs	0 to 800 mg/kg/day via oral gavage
Absorption, distribution, metabolism, and excretion	Mice and rats are given sulfolane to determine how a chemical moves within the body by different routes of exposure, including whether there are any differences between sexes or rodent species.	Mice and rats	Oral gavage, intravenous, and dermal (various doses)
Subchronic toxicity study	Mice and rats from the two-year study will be assessed after three months of exposure to identify effects on development and reproduction, the immune system (rats only), and other endpoints.	Mice and rats	0 to 1000 mg/L via drinking water
Chronic toxicity study	This study will determine the effects of long-term exposure on rats and mice, including any potential carcinogenic effects.	Mice and rats	0 to 1000 mg/L via drinking water
Immunotoxicity	This study will determine the effects on the immune system in mice following three months of exposure by oral gavage and can be compared to results from the subchronic drinking water study.	Mice	0 to 300 mg/kg/day via oral gavage