

## **Alaska Water Sewer Challenge Phase 3**

### **Monthly Progress Report #8**

**Reporting Period:** February 1<sup>st</sup>, 2017 – February 28<sup>th</sup>, 2017

**Submission Date:** March 9<sup>th</sup>, 2017

**Revision Date:** April 10<sup>th</sup>, 2017

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Per the professional services agreement, monthly progress reports will include a one page overview of how the monitoring and testing of the prototype is progressing and how the system is working. All major changes done to the system in the ending month and any changes planned for the following month will be disclosed. In addition to a progress report for this period, this report will also include the “Interim End User Report” per the professional services agreement. No video is included now as it is under development, it has been delayed to better capture the final treatment system.

### ***System Overview for February 2017***

The month of February was primarily used to develop prototype 2. While we anticipated that we would utilize a ceramic microfiltration membrane, the selected membrane did not perform as anticipated. Our system goal was to create water in a short period of time daily, this membrane resulted in that not being achieved. We returned to cartridge filtration and reconfigured the system. The system was programmed and installed in the conex during the week of February 20<sup>th</sup> and started up on February 27<sup>th</sup>.

### ***Considerations for March 2017 and Future***

We look forward to submitting an amended QAPP once the new prototype is in stable operation and we can plan the next water quality based stress scenarios. We have also continued to seek a test dust that more suitably matches the reported particles sizes found in the literature.

### ***General Notice of Data Sharing***

All of our data (raw and processed) are being posted publicly as well as all progress reports.

Direct link to website resources:

[http://reusewaterak.com/?page\\_id=10](http://reusewaterak.com/?page_id=10)

Direct link to photos of water samples:

[http://reusewaterak.com/data\\_AWSC/?dir=daily\\_photos](http://reusewaterak.com/data_AWSC/?dir=daily_photos)

(photos now taken only intermittently)

Direct link to data:

[http://www.reusewaterak.com/data\\_AWSC](http://www.reusewaterak.com/data_AWSC)

### ***End-User Interaction***

During this month we hosted a booth and presented at the Alaska Forum on the Environment. The system was well received and we answered a variety of questions from potential end-users from communities around the state.

### **Interim End-User Report**

To date we have visited each of our communities once. Kipnuk in October and Koyukuk in November. During these visits, Kaity Mattos, Cara Lucas and Elizabeth Hodges-Snyder collected rain water and stored water samples from people’s homes, discussed the project and performed a survey associated with this work.

Mid-January, we hosted a 1 day meeting at UAA where we invited three community members from each of our communities. Two people from Kipnuk and three people from Koyukuk joined us for the day’s activities. The schedule of the day is attached to this document for reference.

To date we have also hosted a variety of on-site tours as well as presented our progress in a variety of venues that are directed more broadly at all potential end-users, engineers (including other teams) and regulators. Below is a list of those activities:

Presentations at:

- 1) 2016 Spring UAA Seminar Series
- 2) 2016 AWWMA Conference
- 3) 2016 Annual WaterReuse Symposium
- 4) 2016 WIHAH Conference
- 5) 2016 UNC Water & Health Conference
- 6) 2016 ATCEM Conference
- 7) 2017 Alaska Forum on Environment (and conference booth)

Tours:

- 1) 2016 Project Steering Committee
- 2) 2016 ANTHC Staff
- 3) 2016 WIHAH Voluntary Site Visit
- 4) 2017 Community Member Visit

Looking forward, we have a second visit scheduled to each of our communities in late March to assess household specific habits and associated operation & maintenance costs. During this visit, our team will also provide updates and show photos of current progress to all homes where the survey is performed. Finally, we anticipate visiting the communities for a third time in the summer to share our final results and collect a second round of rain water samples.

We also anticipate further outreach associated with the following public presentations:

Presentations at:

- 1) 2017 ARCUS Arctic Research Day
- 2) 2017 AWWMA Conference (accepted)
- 3) 2017 ASCE Congress on Technical Advancement (accepted)
- 4) 2017 AWWA WQTC (abstract submitted)

### ***Changes made due to end-user feedback***

Based on feedback provided directly by our end-users in our communities and those associated with WIHAH end-user forum comments we have made the following changes:

- 1) Discontinued use of flush toilet and shifted to dry toilet only (Separret).
- 2) Rebuilt the treatment system into a skid to allow installation in home, vestibule or conex.
- 3) Redesigned treatment system to be
  - a. constructed without any glue (i.e. chemical shipment)
  - b. have a single plug thus treating it like a large appliance (like a washing machine).
- 4) We have projected testing Gojo, an abrasive hand soap, as an additional chemical contaminant during Spring system testing.

Details of past end-user input are provided in the following documentation per DEC's request during April 3<sup>rd</sup>, 2017 monthly update conference call.