

PREPARING TO MOVE

SUPPORTING NEWTOK's RELOCATION



QUESTION

What happened to this water before it arrived in the Hilton Hotel?

What is the source of Anchorage's water?

Campbell Creek

Eklutna Lake



Woohoo! The journey continues in the water treatment plant, where **poly-aluminum chloride** is added to the water. Why?

To kill bacteria

To get particles to stick together



The large particles stick together, sink to the bottom, and are removed. What happens to the water?

Chlorine is added
to kill bacteria

The water is filtered
through layers of sand



Great! The water is filtered through different materials: gravel, sand, and then coal. All particles still in the water are removed! Now what?

Chlorine and
fluoride are added

Nothing – the glacial
water is clean to drink.



The water is nice and clean! How does it get to the Hilton?

Water is pumped
through pipes

Beluga whales carry it
through the pipes







HOW DOES WATER GET TO THE HILTON?

- **SOURCE:** Eklutna Lake and the Ship Creek Reservoir provide 90% of Anchorage's water (groundwater wells provide the rest). This water originates in snowmelt and glacier melt.
- **COAGULATION:** Water is drawn into mixing basins at the water plant. Adding **poly-aluminum chloride** causes the small particles to stick together, forming larger particles
- **SEDIMENTATION:** the **larger particles become heavy** and sink to the bottom of the basin, where they are removed.
- **FILTRATION:** the water is filtered through layers of **gravel, sand, and coal**. Smaller particles are removed and clear water emerges.
- **DISINFECTION:** **chlorine and fluoride** are added to disinfect the water and strengthen teeth.
- **DISTRIBUTION:** the water is pumped through pipes to **destinations around Anchorage!**



WHY DOES THIS MATTER?

- Encourages system use
- Encourages system maintenance
- Introduces science & engineering topics
- Introduces career paths



1. Background: Newtok

2. Relocation to Mertarvik

3. Community Outreach

- Written material
- Homeowner training
- Youth activities

4. Looking forward



BACKGROUND: NEWTOK



NEWTOK

Credit: Hakai Magazine





NEWTOK





NEWTOK

2017



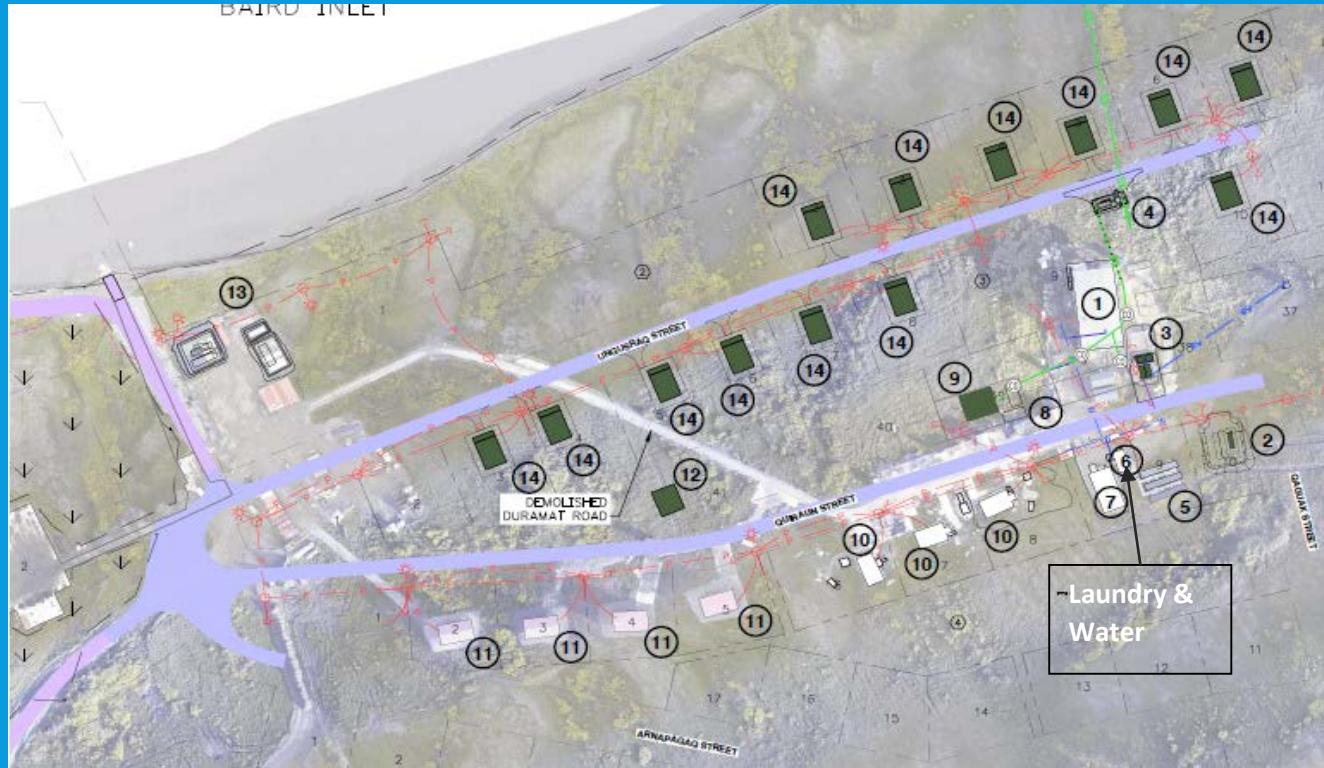
NEWTOK



Credit: Mark Lester, Anchorage Daily News



RELOCATION to MERTARVIK



MERTARVIK

Credit: Hakai Magazine



MERTARVIK QUARRY







MERTARVIK

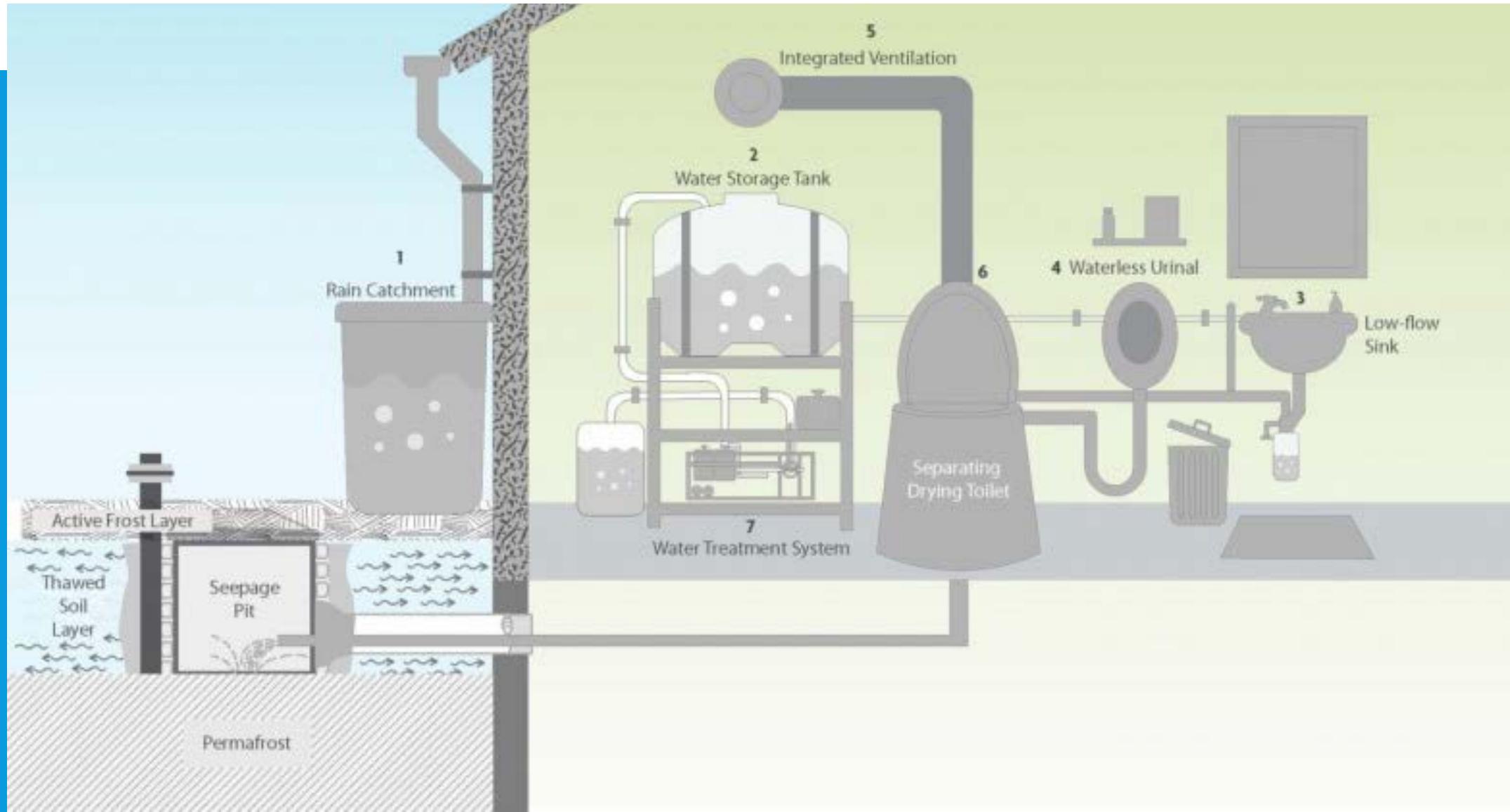




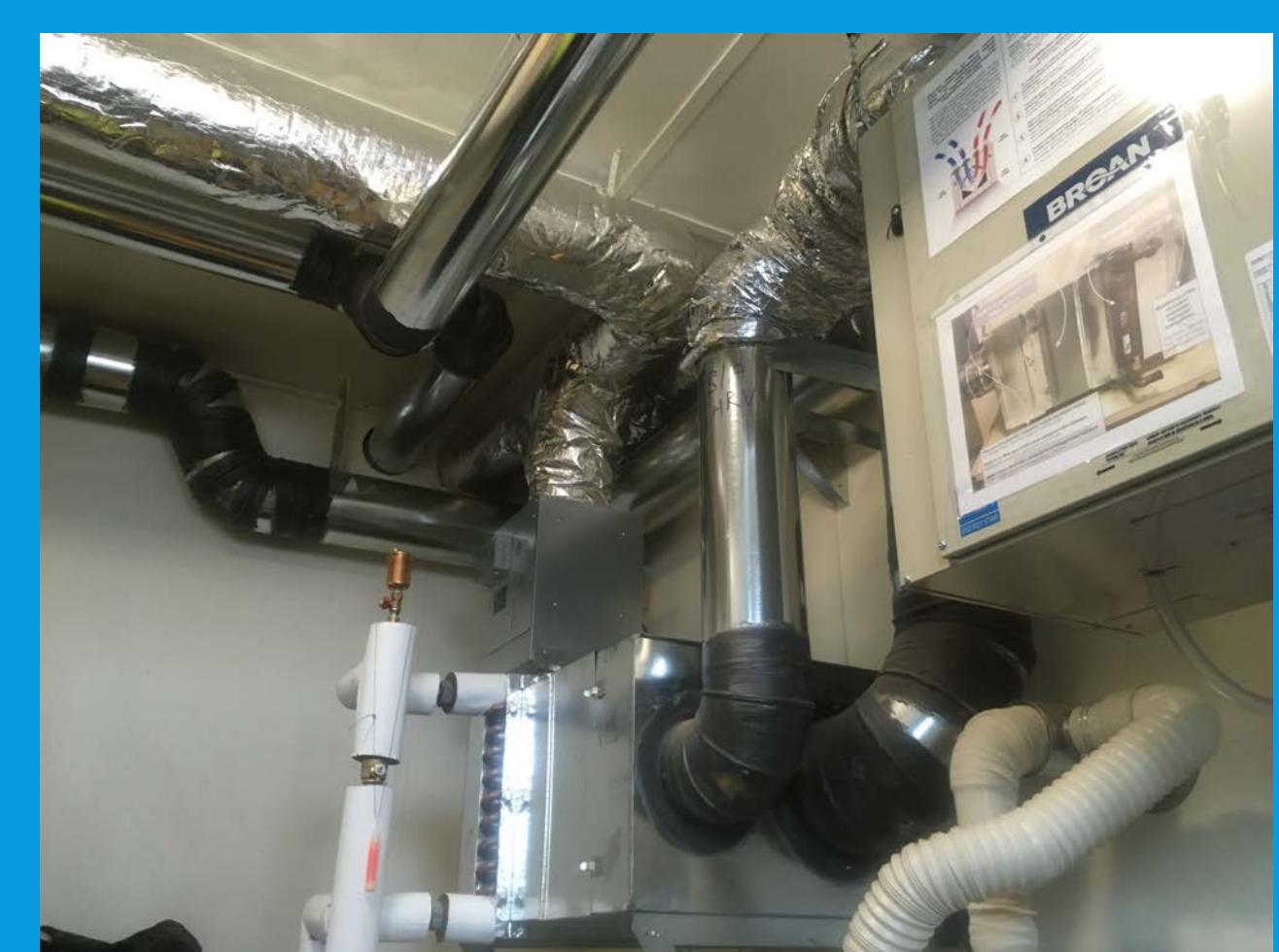
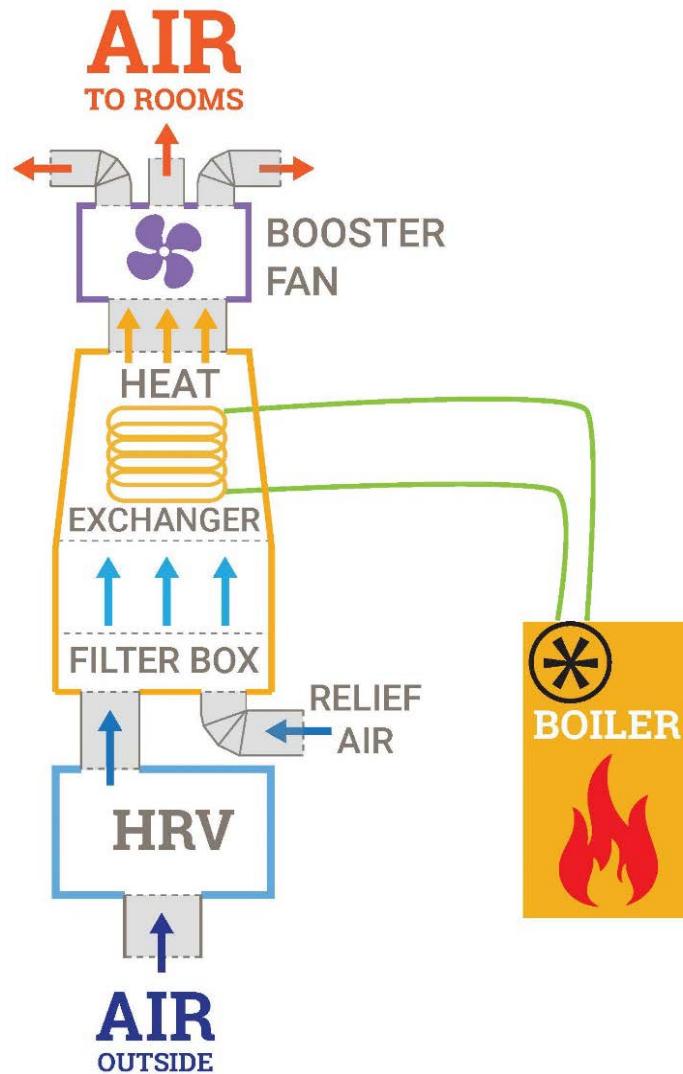
MERTARVIK: HOMES



PASS System



BrHEAThe System



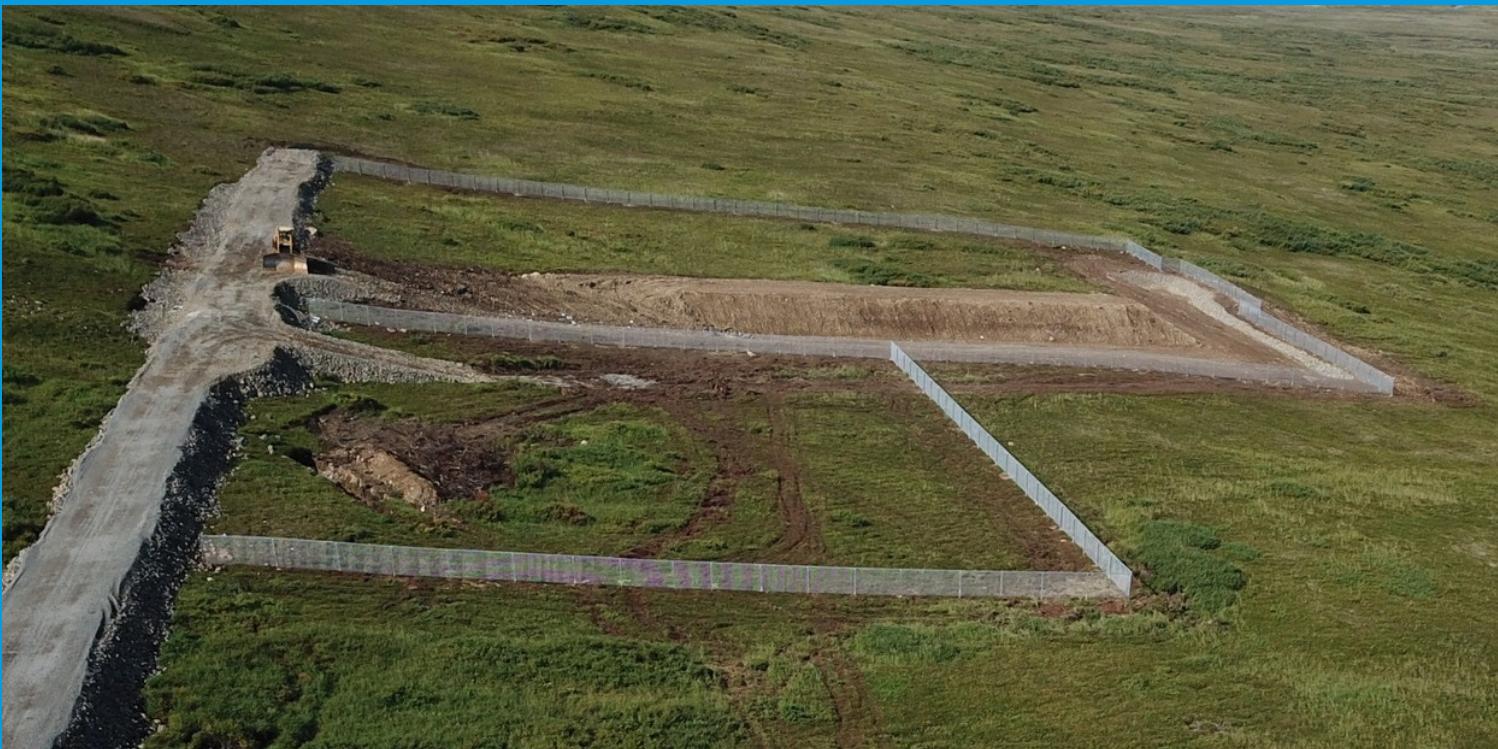
MERTARVIK: MEC



MERTARVIK: POWER PLANT + ELECTRICAL DISTRIBUTION



MERTARVIK: LANDFILL



Trash in Newtok (Sept. 2018)



165





COMMUNITY OUTREACH

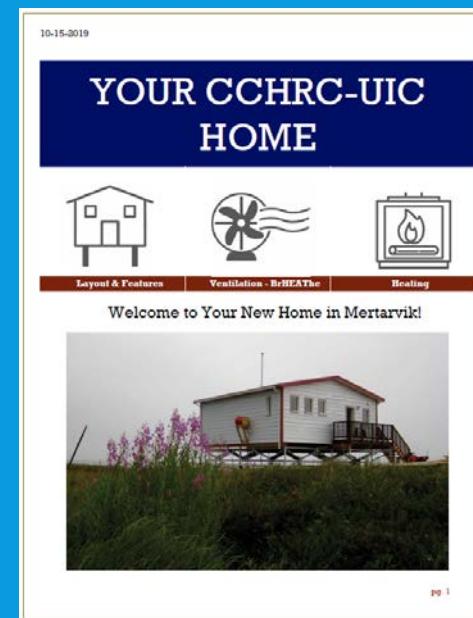
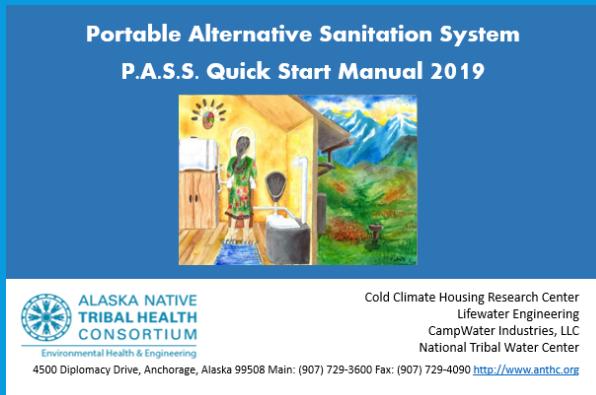


- 1. Written materials
- 2. Homeowner training
- 3. Youth engagement



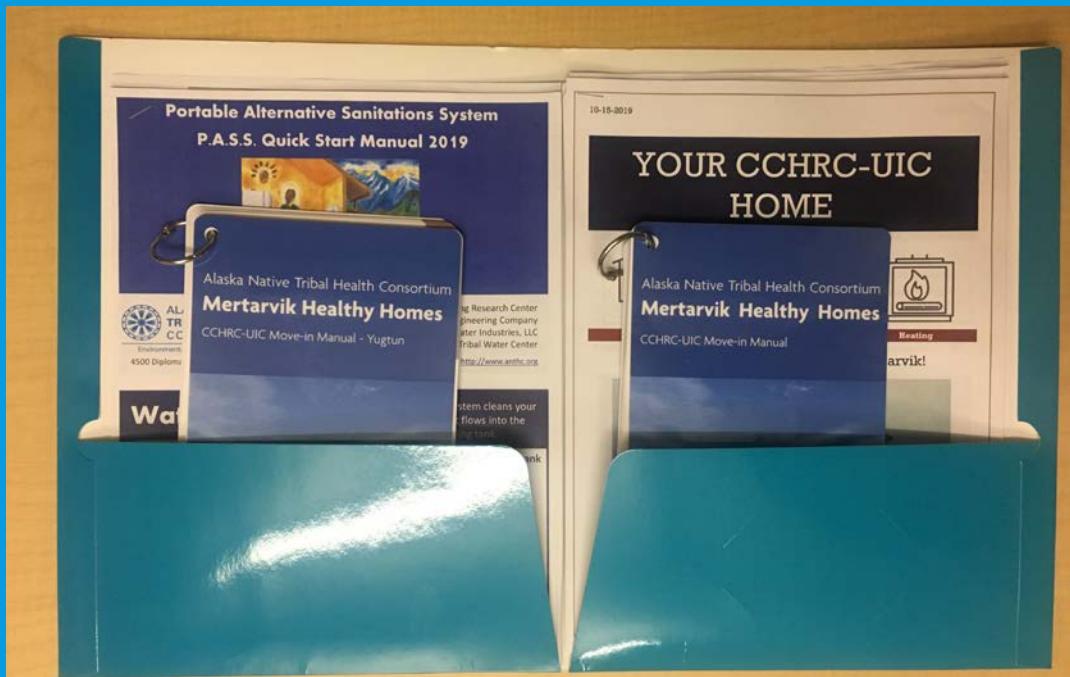
WRITTEN MATERIALS

- Objective: Provide reference materials and equip homeowners with information to troubleshoot problems down the line



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WRITTEN MATERIALS: PASS

Portable Alternative Sanitation System P.A.S.S. Quick Start Manual 2019



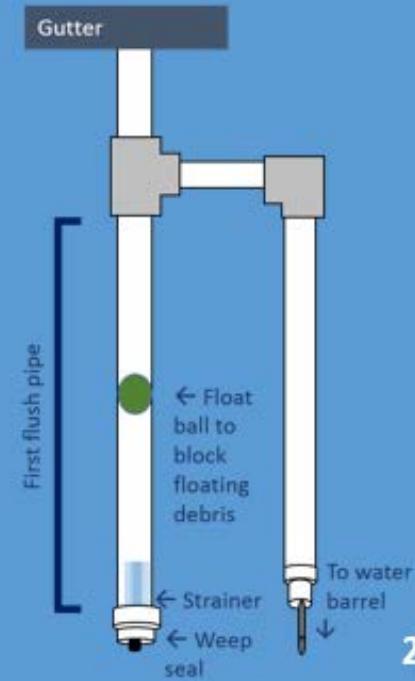
4500 Diplomacy Drive, Anchorage, Alaska 99508 Main: (907) 729-3600 Fax: (907) 729-4090 <http://www.anthc.org>

Cold Climate Housing Research Center
Lifewater Engineering
CampWater Industries, LLC
National Tribal Water Center

Rain Catchment System

The first flush pipe collects the first rain and the dirt and debris that comes with it. After that pipe is full, water will flow into the catchment pipe and into your rain container.

To make the first flush pipe work well, clean the strainer regularly.



WRITTEN MATERIALS: PASS

Portable Alternative Sanitations System P.A.S.S. – am Aturyaraa



Environmental Health & Engineering

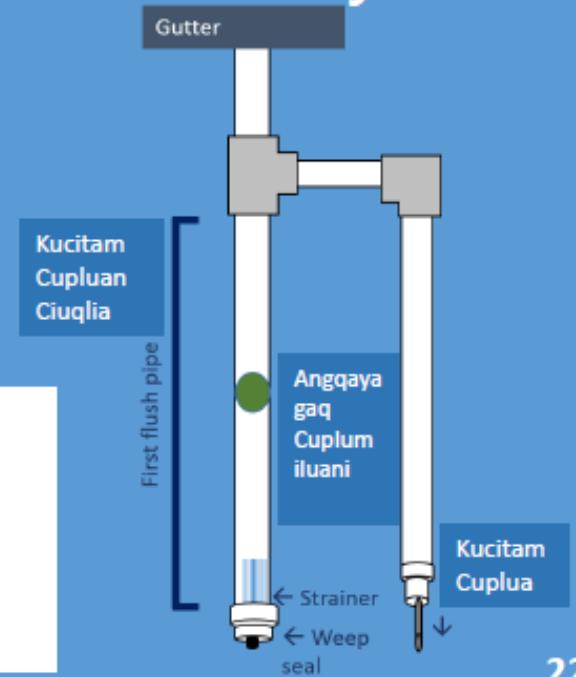
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Ellallum/Ivsum Kuciitaan Aturyaraa

Kucitam cupluan ciuqlian
quyurtelaraa ellalluk/ivsuk caarrlut-
llu. Cupluq muirraarcelluku
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meq kucitamun qurrlurciquq
cuplurkun puc'kamun/napartamun.

Elluarrluku calillerkaanun
kucitam cupluan ciuqlia,
carrieturaraqluku kataagun.



WRITTEN MATERIALS: HEALTHY HOMES

INTRODUCTION

This manual will introduce you to your home, the layout and systems, and guide you and your family in creating and maintaining the healthiest home possible.

Topics covered in this manual:



Features and Layout



Ventilation and Heating:
BrHEAThe System



Keeping your home Dry



PASS (Your new bathroom)



Maintenance



AND how best to keep your home:

Clean



Safe



Pest-free



Contaminant-free

Keeping your home DRY

Why dry?

It is essential that you keep your home dry. Excessive moisture can lead to [mold and damage to your home](#). Keep your house dry to prolong the life and health of your home.

Tips

- Keep your BrHEAThe system and HRV on. If you see water or ice on the inside of your windows, check to make sure your BrHEAThe system and HRV are working properly. You can also try turning your HRV on to a higher setting to flush more air.
- If you see moisture gathering anywhere in your house, act quickly. Dry area. Wet spots lead to mold.
- Don't boil water longer than necessary.
- Turn on your kitchen fan whenever cooking, even if you are just boiling water.
- Make sure your furniture isn't pushed up against exterior walls or directly on the floor. Furniture placed against walls and directly on the floor stop airflow. Moisture will gather where there is not airflow.



Condensation on the inside of a windowpane. Prevent moisture buildup like this in your home. Dry the area.

DRY

WRITTEN MATERIALS: HEALTHY HOMES

INTRODUCTION

Uum kalikam nalqigciqaa enen, ayuqucia aturyaraa-llu, ikayurluci-llu calritellerkarpecenun enevceni. Naaqirkat uumi kalikami:

-  Enevet Ayuqucia Cautai-llu
-  Ellvik Kiircaun-llu: BrHEAThe System
-  Enevet Yukutartenritllerkaa
-  PASS (Yuqerrvikeggtaran)
-  Auluksaraa
- Qaillun-llu enen:
 -  Carrillerkaa
 -  Aarnaitellerkaa
 -  Ciissitellerkaa
 -  Uqlanritllerkaa-llu Tuqunarqellrianek

Enen KINERRCEQUURLUKU



Ciin Kinerrcequurluku?

Enekegtaaaran kinerrcequurnarquq. Yukutam minkarcecungngaa navgurluku-llu enen. Enen kinerrcequurquvgu ak'aarnun enekciqan calritevkarluku-llu (health of your home).

Ikayutet enevet kinerrcequrautai:

- Kumaurcelluku brHEAThe system-aan. Egalerpeni tangerkuvet yukutarmek wall'u cikumek, paqluku HRV-n brHEAThe-an-llu elluarrlutek ayatassiarlukek.
- Yukutarmek tangerkuvet nani enevni, egmian perrirluku. Minkaryugngaa yukutam.
- Qallarvaumassiyaagcetevkenaki ak'anun egaatet.
- Kumarrluku kenirviim fan-aa keniraqavet.
- Aqumlleret, estuulut, wall' ingelret caniqanun agtuusngavkenaki wall' natermecetevkenaki ayagtaunaki. Caniqamun agtuusngalriit wall' ayagtailnguut natermi yukutartenglartut. Yukutangciquq ellviikan.

DRY



Condensation on the inside of a windowpane. Prevent moisture buildup like this in your home. Dry the area.

WRITTEN MATERIALS: DETAILED SYSTEMS GUIDE

10-15-2019

YOUR CCHRC-UIC HOME



Layout & Features



Ventilation - BrHEAThe



Heating

Welcome to Your New Home in Mertarvik!



pg. 1

10-15-2019

Clean the back side of the HRV cover door once every 3 months:

Step 1: Unscrew and remove HRV cover.



Step 2: Clean the back side of the cover door.

Clean the HRV core at least once per year:

Step 1: Remove HRV Cover.



Step 2: Remove HRV Filters.

Step 3: Pull out HRV Core.

Slowly pull out HRV Core

Step 4: Let HRV core soak in soapy water for three hours.



Step 5: Rinse core well and let air dry.

Step 6: Put core back in by lining up with orange dot on the front of the system and slide in.

Make sure to align core with orange dot on box

Step 7: Put filters back in so green part faces up.

Step 8: Screw HRV cover back on.

pg. 14

WRITTEN MATERIALS

CREATED BY HALEY NELSON,
CCRHC

MAINTENANCE OVER YEAR

Every Spring...

- Replace the **BrHEAThe MERV 8** paper filter
- Replace the **BrHEAThe MERV 13** paper filter
- Check the **boiler** for leaks/problems



Every Summer...

- Replace the **BrHEAThe MERV 8** paper filter
- Clean your **chimney** if you used your woodstove regularly
- Have your **boiler** serviced and change the **fuel filter** outside
- Test your **smoke alarms** and replace back-up batteries if necessary



Every Autumn...

- Replace the **BrHEAThe MERV 8** paper filter
- Replace the **BrHEAThe MERV 13** paper filter
- Clean your **HRV filters** and the **core**
- Check your **outdoor hoods** and clear of any debris
- Check the **boiler** for leaks/problems



Every Winter...

- Replace the **BrHEAThe MERV 8** paper filter
- Check the **boiler** for leaks/problems
- Empty **condensate bucket** under HRV as needed



WRITTEN MATERIALS

CREATED BY HALEY NELSON,
CCRHC

YUVIRIRARKATEN ALLRAKUM ILUANI

Allrakuaqan Up'nerkami...

- Cimiraqluku BrHEAThe MERV 8-aam filter-aara
- Cimiraqluku BrHEAThe MERV 13-aam filter-aara
- Yuvriraqluku **boiler-aaq** ellingallerkaanek wall' cat navlerkaatnek

Allrakuaqan Kiagmi...

- Cimiraqluku BrHEAThe MERV 8-aam filter-aara
- **Puyirvik** carriraqluku muragnek atulaquvet
- Yuvrivkaraqluku **boiler-aaq** nallunrilngurmum cimirluku-llu **filter-aara** ellamelnguuq
- Yuvriraqluku **smoke alarm-aq**, battery-a-llu cimiraqluku cimirnarqekan.

Allrakuaqan Uksuarmi...

- Cimiraqluku BrHEAThe MERV 8-aam filter-aara
- Cimiraqluku BrHEAThe MERV 8-aam filter-aara
- Carrirluku **HRV-aam filter-aara**, ilua-llu **qukaani uitalria**.
- **Ellami acquit** paqtaqluki, carrangllungqekan-llu carrirluki carranglluut
- Yuvriraqluku **boiler-aaq** ellingallerkaanek wall' cat navlerkaatnek

Allrakuaqan Uksumi...

- Cimiraqluku BrHEAThe MERV 8-aam filter-aara
- Yuvriraqluku **boiler-aaq** ellingallerkaanek wall' cat navlerkaatnek
- Paq'ertaqluku **imangqetacia qaltacuar** mermek imangtuli



WRITTEN MATERIALS: REFLECTIONS

- + Useful to point at while walking homeowners through systems; will be a resource for troubleshooting
 - Many put them immediately in a drawer. Not effective without accompanying training.
- Δ Prioritize illustrations/design (and culturally relevant design) to make materials more inviting

HOMEOWNER TRAINING

- Objective: Provide one-on-one, hands-on training on Mertarvik home systems (PASS, BrHEAThe) and give homeowners the opportunity to ask questions and express concerns

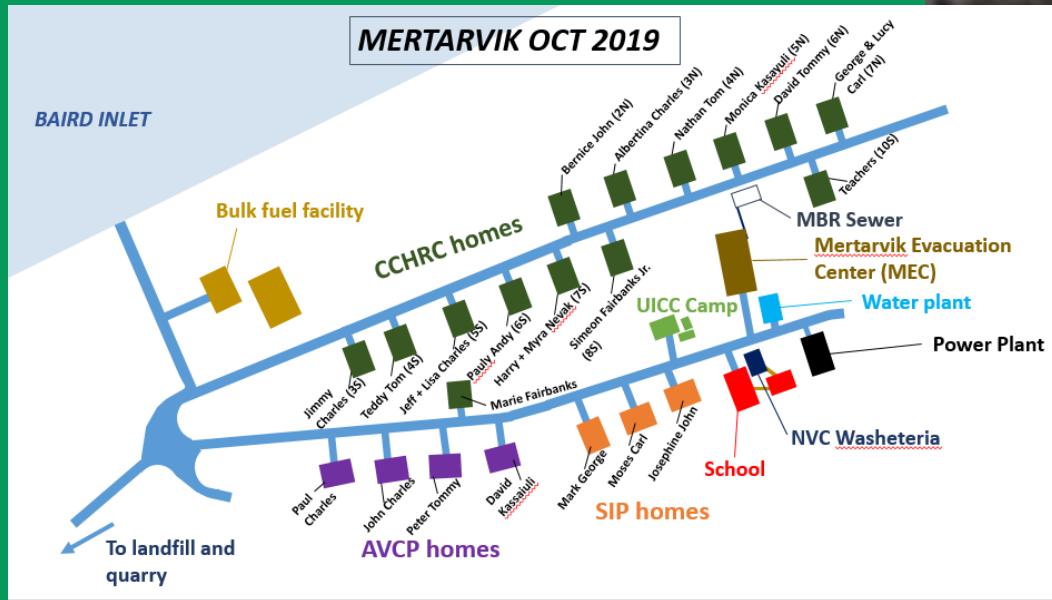
HOMEOWNER TRAINING: NEWTOK

- Meet with each homeowner in school or Newtok Village Council building
- Introduce system using PASS 3D model and example separating toilet



HOMEOWNER TRAINING: MERTARVIK

- Meet in-home with residents
- Walk through PASS, BrHEAThe, and Healthy Homes





HOMEOWNER TRAINING: REFLECTIONS

- + Absolutely essential to use and maintenance of new systems
 - Systems were missing materials and were not ready for training
- Δ Make pre-move PASS meeting more hands-on (bring model of water system)



YOUTH OUTREACH

- Objective: Introduce Mertarvik home systems to students so students can participate in maintenance tasks
- Objective: Introduce science and engineering topics to students

YOUTH OUTREACH



DIY Air Filters

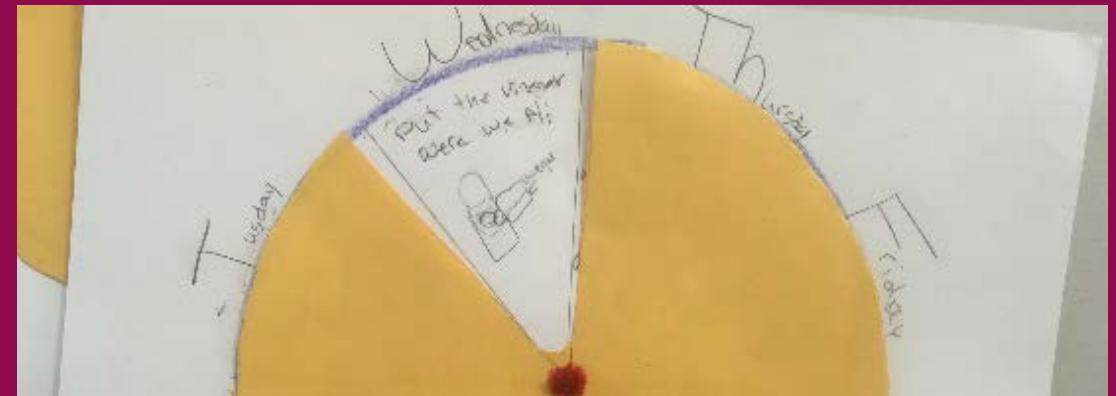
- Grades K-2
- Instructions:
 1. Identify things in the air (bugs, dust, etc) and make cut-outs of them
 2. Weave paper together to create an air filter
 3. Test the filter using bug cut-outs
- Skills: Air Quality/Healthy Homes material, science, creativity and self-expression

YOUTH OUTREACH



Maintenance Wheels

- Grades 4-6
- Instructions:
 - Brainstorm maintenance tasks
 - Create circles with one task per day/month, and attach circle on top



YOUTH OUTREACH



PASS Card Game

- Grades 9-12
- Instructions:
 1. Put the PASS cards in order
 2. First team to finish (and get the cards in the right order) wins!
 3. **Can play “Go Fish!” afterwards**
- Skills: PASS content, system design/engineering



RAIN
CATCHMENT



RAIN CATCHMENT
BARREL

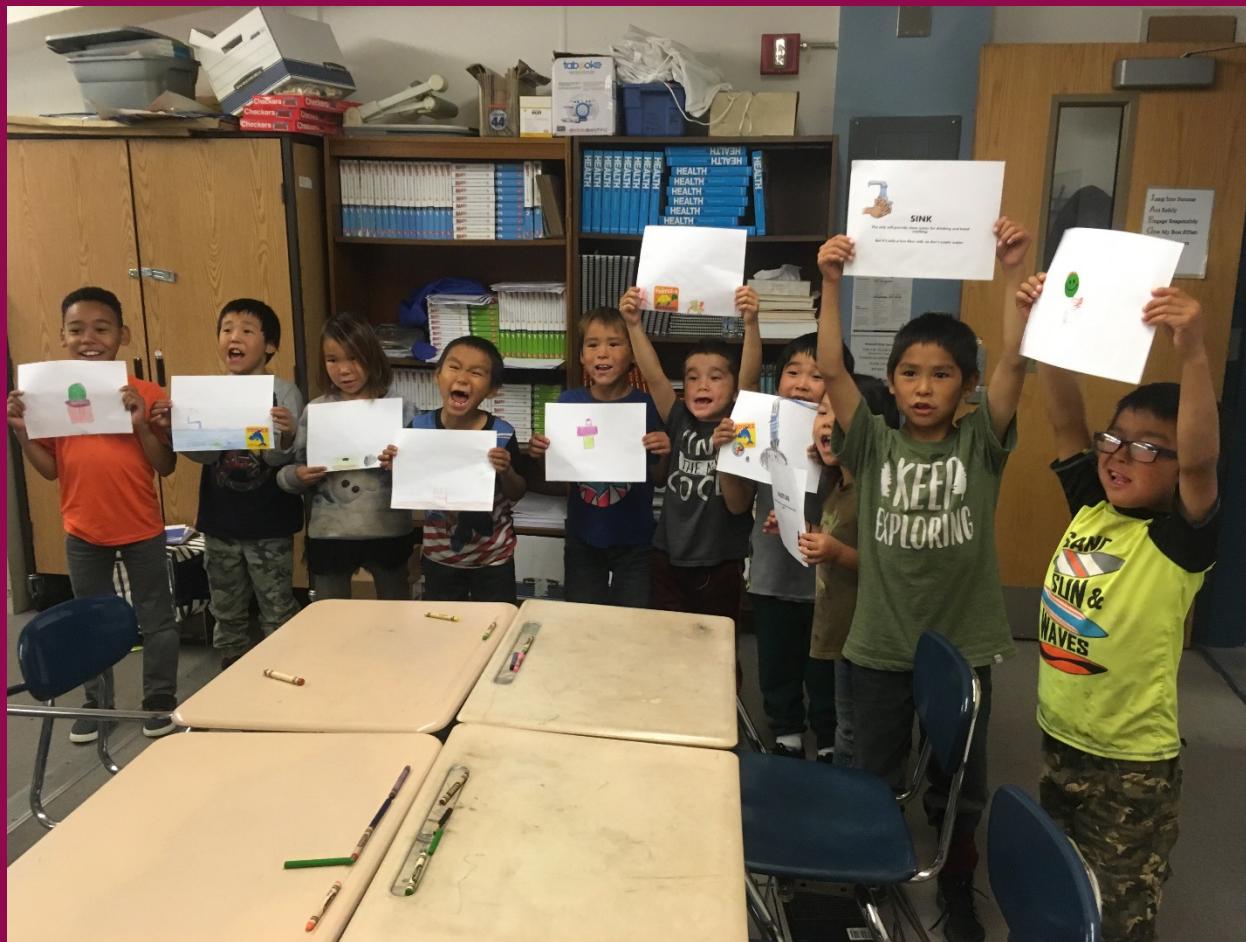


WATER PUMP



WATER STRAINER

YOUTH OUTREACH



Create a Class PASS

- Grades 2-6
- Instructions:
 1. Draw a picture of your PASS component
 2. Get in line in the right order!
- Skills: Coloring, critical thinking, PASS content, movement



YOUTH OUTREACH



BrHEAThe Dioramas!

- Grades 7-12
- Instructions:
 1. Discuss 3 components of BrHEAThe
 2. Divide into 3 groups. Each group creates a model of one BrHEAThe box.
 3. Put boxes together to show how system works.





Science

What are 3 ways heat
is transferred?

Engineering

How to recover heat
from warm air?

Design

How should we
illustrate the system?

How does BrHEAthe work?

Finance

Why does fuel
efficiency matter?

Daily Life

How does this
relate to your ATV?

Communication

Explain the system
to your peers.

WHY DOES THIS MATTER?

- Encourages system use
- Encourages system maintenance
- Introduces science & engineering topics
- Introduces career paths
- Art & creative expression
- FUN!!!

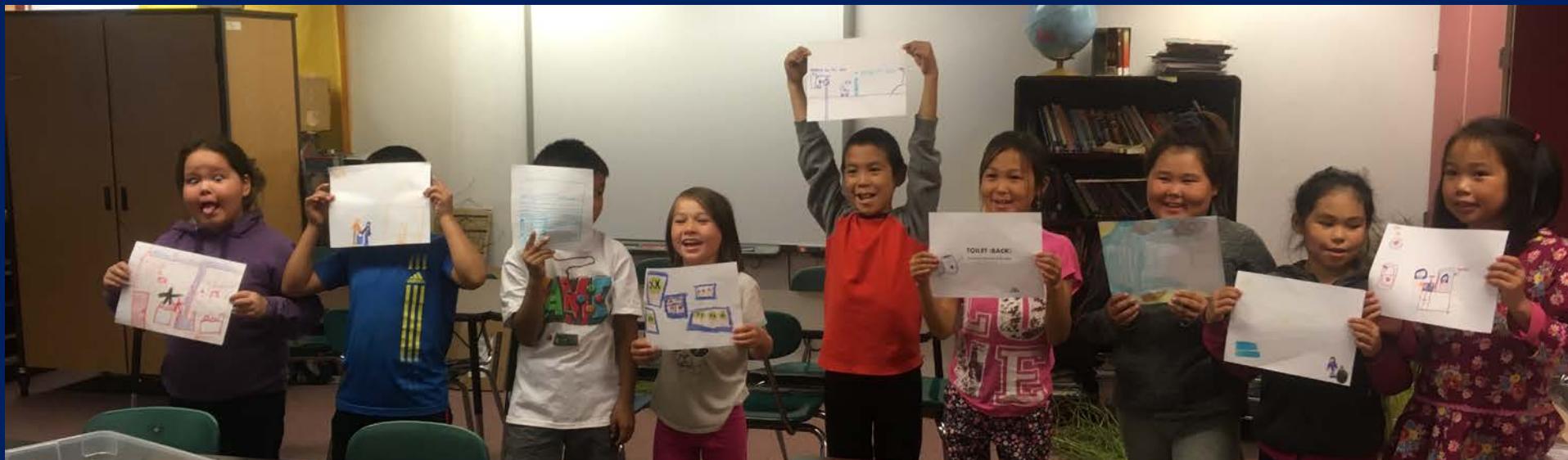


YOUTH OUTREACH: REFLECTIONS

- + Prepare youth to help with system maintenance and introduce science/engineering topics to students
- Hard to gauge whether students were learning/what they will retain
- Δ Share curricula with teachers so they can do activities when ANTHC isn't there

Moving Forwards

We can do outreach projects like these in other communities ANTHC works with!



QUESTIONS?



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