

Citizens' Water Advisory Committee (CWAC) Agenda

October 11, 2022, 6:00 p.m.
Aspen Room, 2nd Floor, Aurora Municipal Center/Hybrid

Microsoft Teams Link:
[Click here to join the meeting](#)
or
<https://tinyurl.com/CWAC101122>

Call in (audio only) - 720-388-8447
Phone Conference ID: 301 200 383#

Members: Angie Binder - Chair, Richard "Dick" Eason -Vice Chair, Jay Campbell, Tom Coker, Dennis Dechant, William Gondrez, Janet Marlow, David Patterson, Daniel Widrich

- | | | | |
|----|---|----------------------------------|-----------|
| 1. | Approval of Minutes – September 13, 2022 | Chair | 6:00 p.m. |
| 2. | Introductions/Public Invited to be Heard | Chair | 6:05 p.m. |
| 3. | New/Old Business | Chair | 6:10 p.m. |
| 4. | Communications Update | Greg Baker | 6:15 p.m. |
| 5. | Environmental Education and Outreach
Annual Report | Natalie Brower-Kirton | 6:20 p.m. |
| 6. | PFAS Update | Sherry Scaggiari/
Todd Brewer | 6:50 p.m. |
| 7. | Review Follow-Up Questions | Greg Baker | 7:20 p.m. |
| 8. | Confirm Next Meeting – Tuesday, November 8, 2022 | Greg Baker | 7:25 p.m. |
| 9. | Adjourn | Chair | 7:30 p.m. |

Citizens' Water Advisory Committee (CWAC) Minutes
September 13, 2022, 6:00 p.m.
Microsoft Teams

Members Present: Dick Eason - Vice Chair, Jay Campbell, Tom Coker, Dave Patterson, Bill Gondrez, Janet Marlow, Daniel Widrich

Absent: Angie Binder – Chair, Dennis Dechant

Staff Present: Sherry Scaggiari, Leiana Baker, Greg Baker, Melina Bourdeau, Fernando Aranda, Jo Ann Giddings, Rory Franklin, Marshall Brown

Visitors Present: None

The meeting was called to order at 6:01 p.m.

1. Approval of August 9, 2022, Minutes

The August 9, 2022, minutes were approved.

2. Introductions/Public Invited to be Heard

None.

3. New/Old Business

None.

4. Communications Update

Conservation Ordinance passed. M. Brown discussed the shortages/imbalance on the Colorado River. Municipalities have a really small percentage of use on the Colorado River. There have been a lot of discussions across different sectors on who's willing to do the right thing and create conservation. Agriculture uses over 80% of the water from the Colorado River and will need to be a significant part of the solution to bring River uses into balance – many agricultural water users have been concerned that municipalities aren't willing to commit to appropriate conservation (non-functional turf has been specifically highlighted). We worked with multiple other municipal water providers including Denver Water, Pueblo Water, the Metropolitan Water District of Southern California and the Southern Nevada Water Authority to draft a Memorandum of Understanding committing to municipal water efficiencies and conservation. The MOU commits participants to taking the following actions:

- Continue to expand our programs to increase indoor and outdoor water use efficiency.
- Introduce a program to reduce the quantity of non-functional turf grass by 30% through replacement of drought and climate resilient landscaping, while maintaining vital urban landscapes and tree canopies that benefit our communities, wildlife, and the environment.
- Increase water reuse and recycling programs where feasible, contingent on the dependability and security of our existing Colorado River supplies essential to support these efforts.

- Implement best practices and sharing lessons learned to help one another accelerate our efficiency strategies.

There is a goal of 30% by when? M. Brown replied, it's up to the individual participant - we'll be coming to the committee with ideas and proposals and working with the PROS department. The city has a lot of non-functional turf and we'll create a program that focuses on those, and includes enhancements to our rebates. Which municipality is the biggest user by volume in Colorado? M. Brown replied, Denver. Is it fairly standard to take the total volume divided by the number of residents? M. Brown replied, that there are some inconsistencies with the way the numbers are calculated, but gallons per capita per day (gpcd) is the general measurement and it varies from around 80 gpcd to around 450 gpcd in the west. Who do we talk to about getting involved and lobbying with this type of work? M. Brown replied, the Bureau of Reclamation is getting a lot of feedback and the Colorado Water Conservation Board. Is the Department of Agriculture involved? M. Brown replied, they've been quiet on this discussion. Water rights are owned by individuals and controlled more at the state level. Is most of the water usage happening in the lower basin? M. Brown replied, California is the largest user of the Colorado River and Colorado is second.

5. 2nd Quarter Financial Update

J. Giddings gave an overview of the Second Quarter 2022 Financial Report.

With the supply chain issues, can the city get water meters? J. Giddings replied, City is able to get meters and we keep some meters at the warehouse. With the growth we're seeing and the connections is it mostly residential or commercial? J. Giddings replied, mostly residential.

6. Water Management Plan Overview

G. Baker presented on the Water Management Plan Overview, which provides demand management elements during drought stages. Aurora Water may suggest declaring stage I drought in 2023, which would mean 2 day-per-week watering for residential customers. D. Eason asked, We've got four days that people are watering, three that they are not. Does this have an impact on the treatment plants? G. Baker replied, it does not on a daily basis. We use the non-residential watering days for irrigation, municipal, commercial and multifamily to balance the load on the system. D. Widrich asked, How often do we expect a Stage 2 or 3? M. Brown replied, we're in the process of updating our Integrated Water Management Plan (IWMP) and in that plan we do scenario planning which looks the ability of avoid stages and at the community's acceptability for the frequency of stage declarations. We'll bring an update of the IWMP to the committee in about a year. D. Widrich asked, Do we offer reclaimed or recycled water to our customers? G. Baker replied, we do not due to the cost of dedicated infrastructure for reclaimed water. Recycled water is the basis of our Prairie Waters potable reuse system. J. Marlow asked, If temperatures continue to rise and we get less snowpack how would that affect everything? M. Brown replied, most of the precipitation will still be applied and those models don't predict the amount of precipitation changes much. We are building for more storage to capture the water.

7. 2022 Proposed Budget Presentation

G. Baker stated, the meeting is Tuesday, September 20, 2022, and will be a virtual meeting on Webex. What is the difference between the water fund projected revenue excludes proceeds from borrowing but includes wastewater funds? J. Giddings replied, we are not planning, however, we are looking at some debt in the wastewater.

8. Review Follow-Up Questions Generated at this meeting

9. Confirm Next Meeting – Tuesday October 11, 2022

10. Adjourn

The meeting was adjourned at 7:29 p.m.

Angie Binder, Chair
Citizens' Water Advisory Committee

Adopted: _____

MEMORANDUM



City of Aurora

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To: Citizens' Water Advisory Committee

Through: Marshall P. Brown, General Manager, Aurora Water
Greg Baker, Manager of Public Relations, Aurora Water

From: Natalie Brower-Kirton, Environmental Education and Outreach Program Manager,
Aurora Water

Date: October 11, 2022

Subject: Aurora Water Education and Outreach Team
2021-2022 Annual Report & Update

Purpose:

Aurora Water has provided water education and outreach programs for the community in many forms reaching a wide range of community members for over twenty years. Staff will present highlights of the Education team's work during the 2021-2022 school year including adaptations for virtual learning, new workshops and school assemblies.

Action Required:

No action at this time is required. This presentation is purely informative in nature.

Attachment: 2021-22 EE&O Annual Report

cc: File copy



Environmental Education & Outreach Annual Report 2021-2022



The Aurora Water Environmental Education and Outreach team provides consistent, creative and impactful education and outreach programs that promote water literacy, water conservation, water pollution prevention, water careers and water stewardship in Aurora. This report summarizes the programs and projects completed during the 2021-2022 school year and outlines future programming.

**Aurora Water
Environmental Education and Outreach Annual Report
2021-2022 School Year
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Introduction

For more than 20 years, the Aurora Water Department has provided water education and outreach programs for the community in many forms reaching a wide range of community members. Providing water education programs on all levels from preschoolers to adults not only creates a community that is knowledgeable about water and values water, but acts on that knowledge to change behaviors and make water smart choices. For many of the water department's programs to be successful – whether they be new water projects, incentives or regulations – a water literate public that values water as a natural resource is fundamental. Over time, the need for education and outreach programming has increased and in January 2018 the Environmental Education and Outreach Section of the Public Affairs Division of Aurora Water was created. The mission of the Environmental Education and Outreach (EE&O) team is to continue to provide consistent, creative and impactful education and outreach programs that promote water literacy, water conservation, water pollution prevention, water careers and water stewardship in Aurora.

This report summarizes the programs and projects completed during the 2021-2022 school year and outlines the direction of work for future programming. By driving excellence in the field, the Aurora Water Environmental Education and Outreach team continues to foster collaborations and provide programs that educate the community about water.

Driving Excellence	Fostering Collaboration	Educating the Community
<ul style="list-style-type: none">• We drive the excellence of Environmental Education in Colorado creating programs that impact behavior change.	<ul style="list-style-type: none">• We foster water education in Aurora through professional affiliations, partnerships and collaborative projects both internally, within other City of Aurora Departments and with external organizations.	<ul style="list-style-type: none">• We educate the community on multiple aspects of water at all levels through programs that lead to the efficient use and protection of water.

Project WET Educators of the Year- 2021



Project WET (Water Education Today) is dedicated to solving critical environmental challenges by teaching the world about water. They provide hands-on, science-based water education curriculum and resources to formal and non-formal educators around the world. The Aurora Water Environmental Education and Outreach Team was honored to receive the 2021

Project WET Educator of the Year Award. Each of our team members are trained Project WET facilitators and have over thirty years of combined experience using Project WET materials to teach students in Aurora about local water issues including facilitating the annual Forests to Faucets Teacher workshops in which teachers learn how to use Project WET activities to enhance their lessons about water.

Aurora Water and the Statewide Water Education Action Plan







In 2019 our team was invited to participate as a Core Collaborator in the creation of the Statewide Water Education Action Plan. This plan is a Water Education Guide for Colorado that came out of the Colorado Water Plan. The Colorado Water Plan (CWP) was created in 2015 and sets forth strategies to meet Colorado's water needs by 2050. One of the eight major components of the CWP is water education and outreach and the success of the plan depends upon an educated community that is actively engaged in discussing, funding, and implementing balanced water solutions. This dynamic relies upon robust, sustainable water education that focuses on and delivers the following education objective identified in the CWP:

Significant improvement of public awareness and engagement regarding water issues statewide by 2020*, as determined by water awareness surveys.

**SWEAP implementation began in January 2020; as a result, SWEAP’s target for this objective has been extended to the end of 2025*

In addition, the Education chapter of the CWP called for expanded outreach and education efforts that engage the public to promote well-informed community discourse and decision making regarding balanced water solutions.

A coalition of educators, including staff from Aurora Water Environmental Education & Outreach who created SWEAP, also recognized the need to empower Coloradans to take an active role in their communities and make informed decisions about critical water issues. Aurora Water has endorsed the plan and our EE&O team continued to support the plan in 2021 & 2022 by working on committees to assist with implementation and evaluation including a committee working to correlate the statewide water education plan to Colorado academic standards by grade level. The team will continue to contribute to the SWEAP program through our Education and Outreach programs through 2025. The SWEAP plan categorizes outcomes according to awareness, knowledge and skills, behavior change and systems change. The table below shows these outcomes and the disciplines and strategies best used for each type of outcome.

TYPE OF OUTCOME			
<p>AWARENESS Awareness is the first step toward engagement.</p> 	<p>KNOWLEDGE & SKILLS Knowledge is required for well-informed decisions. Skills are required for effective discourse.</p> 	<p>BEHAVIOR CHANGE Behavior changes are required for increased engagement.</p> 	<p>SYSTEMS CHANGE Systems change is required for balanced solutions and empowered communities.</p> 
<p>Water educators use public relations strategies to raise awareness. PUBLIC RELATIONS</p>	<p>Water educators use education strategies to increase knowledge and teach skills. EDUCATION</p>	<p>Water educators use social marketing strategies to encourage behavior changes. SOCIAL MARKETING</p>	<p>Water educators use systems thinking strategies to ensure citizens help shape systems change. SYSTEMS THINKING</p>
DISCIPLINES AND STRATEGIES			

The following table shows where our current and future Aurora Water EE&O programs align with these outcomes and strategies.

Aurora Water Environmental Education & Outreach Programs and SWEAP Outcomes

Aurora Water Environmental Education & Outreach (EE&O)	Statewide Water Education Action Plan Outcomes Alignment									
	Awareness	Critical Water Concepts	Knowledge	Skills	Participation	Water access to information	Sustainable Water Behaviors	Water literacy policy and practice	Policies considers water	Representation
Driving Excellence in Water Education	1	2	3	4	5	6	7	8	9	10
Aurora Public Schools 5 th Grade Water Unit Classroom Presentations, School Assemblies & Field Trips MSU Theatre Project H2O Outdoors Trumbull Experimental Forest- Outdoor Watershed Classroom	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ 	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ 	✓ ✓ ✓ ✓ 	✓ ✓ ✓ ✓ 	✓ ✓ ✓ ✓ 	✓ ✓ ✓ ✓ ✓
Creating and Informed Community - Collaborating to Create Behavior Change										
Outreach & Events In person and Online Conservation Courses Pipeline: Careers in Water Program Forest to Faucets Teacher Workshops Aurora Water Course (Coming Soon!)	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓

Youth Education

Aurora Water has one of the region’s most comprehensive youth education programs. Recognized throughout Colorado as a leader in youth education, these programs have won numerous awards. Programs are conducted for public schools, private schools, youth groups such as boy scouts and girl scouts, summer camp programs and environmental clubs. In addition, programs are grade-specific with choices for preschool, elementary, middle and high school grade levels that meet Colorado’s State Academic Standards as well as correlate to school district curriculum.

The 2021-2022 school year continued to be challenging with the Covid-19 pandemic. The EE&O team continued to adapt all of our our school programming to virtual platforms as students returned to learn in school but visitors were not allowed. Even though programming was completely virtual from August 2021-April of 2022 during this time, the team provided programming for 10,304 Aurora students during the 2021-2022 school year.

Youth Water Education Programs: 2021-2022 School Year

Presentation	Number of Presentations <u>Classroom Presentations</u>	Students in Attendance
Sunny Takes a Walk on the Water Side (Preschool-K)	16	432
Storytime with Aurora Water (Preschool-2 nd Grade)	11	288
If I Were a Fish (Preschool-1 st Grade)	26	872
Incredible Journey (Preschool-5th Grade)	12	300
Water Heroes (Grades 1-3)	21	806
Water & Weather (Grade 2)	37	1,226
Conservation Capers (Grades 3-8)	19	462
Water: Keep it Clean (Grades 3-8)	23	678
Aurora’s Water History (Grade 4)	0	0

We All Live Downstream (Grades 5-8)	5	125
Water Pen Pals (Grade 5)	1	203
Water Around the World (Grade 5-6)	31	654
Conservation Challenge (Grades 6-8)	5	300
Careers in Water & Water Supply (Grades 9-12)1	16	390
Climate Change & Water (Grades 9-12)	21	940
Muck Up, Clean Up (Grades 9-12)	4	100

Virtual Assemblies

Water in the Ol' West (Grades 1-5)	4	335
Facts Behind the Faucet (Grades 6-8)	17	1,080

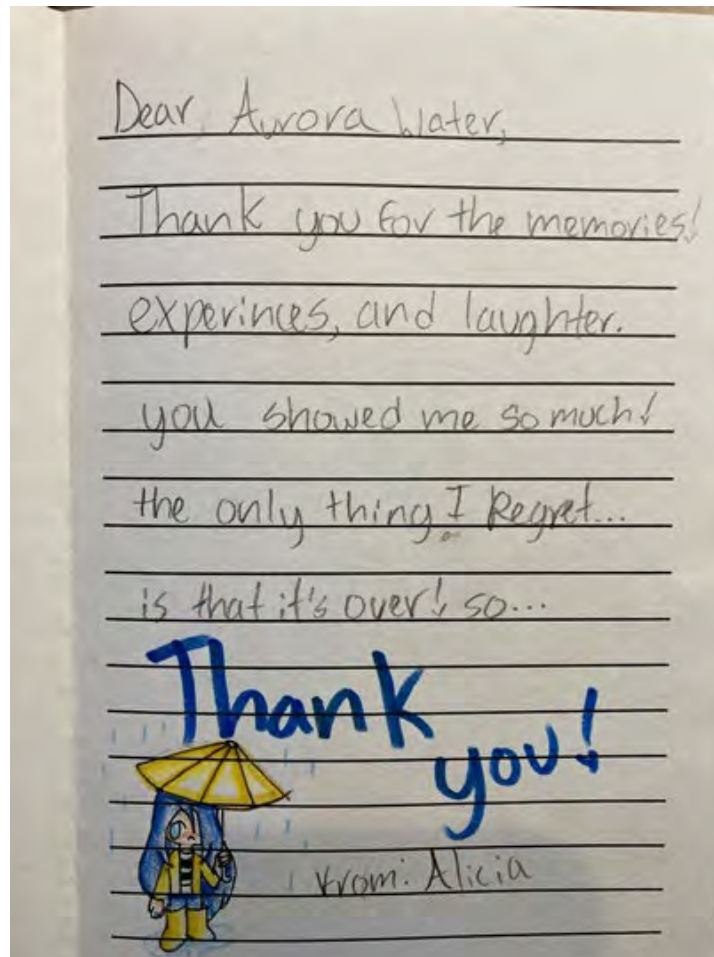
In Person Assemblies

Sunny & Friends Puppet Show (Preschool)	1	30
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Virtual Field Trip

Water Festival (Grade 5)	10	251
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	In Person Field Trips	
Water Festival (Grade 5)	10	350
Water Quality @ Aurora Reservoir (Grade 2-6)	32	452
H2O Outdoors (High School)	7	30
Total:	Number of Presentations 330	Students in Attendance 10,304



Classroom Presentations

Presenters bring creative, fun, water related models, games and activities into classrooms in Aurora that are correlated to Colorado state standards and school district curriculum. In each presentation, students learn where their water comes from, how to prevent water pollution and the importance of water conservation. Presentations are offered for every grade from preschool to high school and are free of charge to schools in Aurora. For the majority of the 2021-2022 school year presentations were conducted virtually and in person presentations were resumed in April and May.

New Presentations

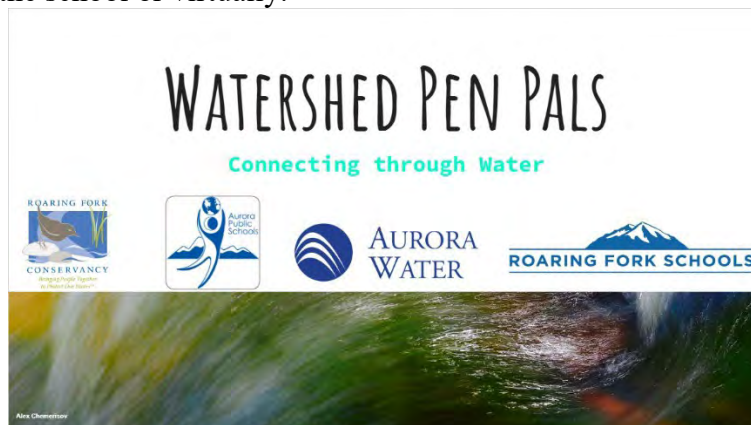
Sunny and Friends– Assembly Puppet Show (Preschool-Kindergarten)

With the acquisition of a larger, free standing puppet theatre, additional puppets and props the “Sunny Takes a Walk on the Water Side” classroom puppet presentation was expanded for use with larger assembly style performances. The assembly performance, Sunny & Friends was piloted at Tallyn’s Reach Library in June of 2022 and many schools have already requested the presentation for the 2022-2023 school year.



Watershed Pen Pal Program

This year, EE&O collaborated with the director of the Roaring Fork Conservancy to develop a Pen Pal Program for students to compare the water and the ecosystems in their area including the headwaters/mountains vs. the plains. Fifth grade teachers from Vista Peak Elementary worked with the teachers at Basalt Middle School. Approximately 203 students participated in the program and were matched with one or two other students. The program was aligned to the 5th grade ELA, Science, Social Studies and Writing state standards. A Google Slide Show was developed to help the students learn about the watershed and each other. Writing prompts were sent to the teachers 4 times throughout the winter and spring to help the students structure their letters. The students were also taught how to write a friendly letter through this program. Staff from the Roaring Fork Conservancy and Aurora EE&O also visited each of the respective schools and provided programming at the school or virtually.

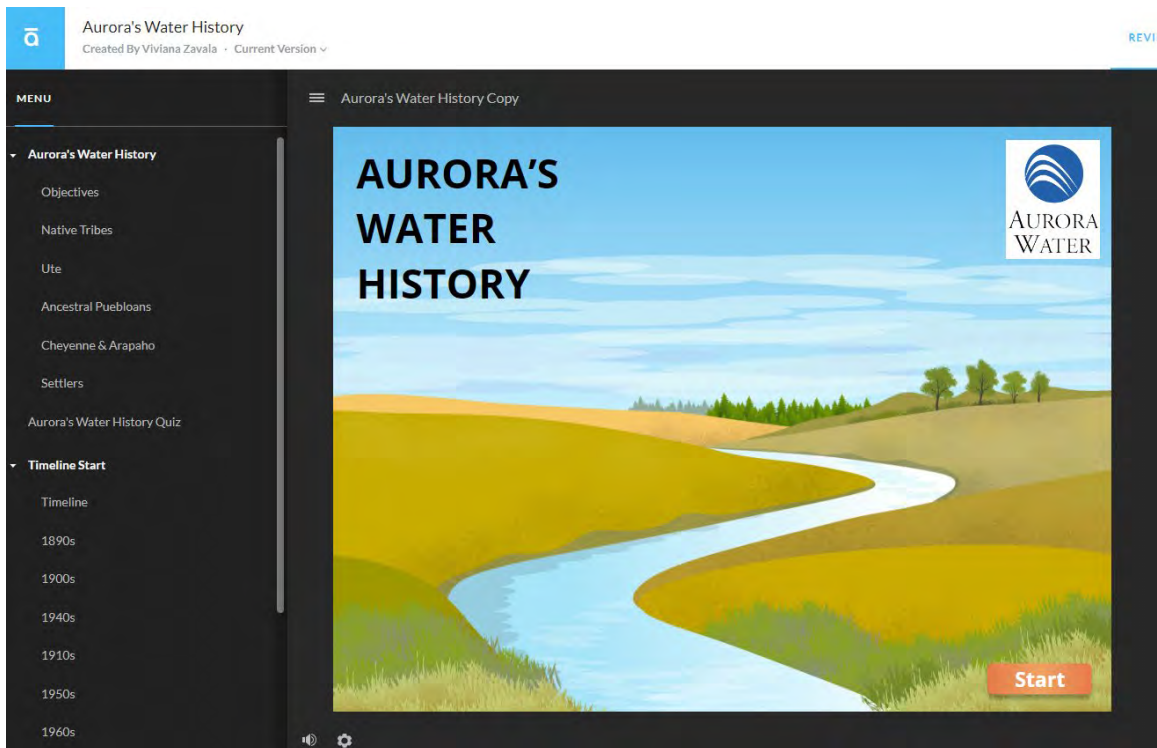


Live Virtual Presentations

Due to the Covid-19 pandemic guests were not allowed into the schools for most of the school year. The EE&O team transformed all classroom presentations into virtual presentations. Video production software and tools such as “Doodley” were used to incorporate video and audio into the presentations. Online surveys were also created in place of our evaluation worksheets. In addition, the Aurora’s Water History presentation was turned into an online course using Articulate software.



Sherry Meschko teaching “Water: Keep it Clean” and Mary Dawson and Natalie Brower-Kirton presenting “Water in the Ol’ West” from the virtual studio




“Aurora’s Water History” Online Course created by Viviana Zavala


Ms. Griep's 5th Grade Class Reflections after "Water Around the World" presentations:

1. I learned that some people don't have running and that's sad
 2. I will save water by taking shorter showers
 3. It is important to save water so we help grow the world


ANGIE
 I learned that water is dirty.
 I can take less time in the show.
 It is important because we can't make water.


I learn that water is time
 I can safe water at home by taking a fast shawre

Kingsten

 I can be more careful with the water and do not wast water




1. I learned that some people don't have running and that's sad
 2. I will save water by taking shorter showers
 3. It is important to save water so we help grow the world



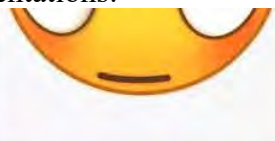
Audrina


I learned to be more grateful of water.
 What i can do to save water is to not take long showers.

Saed reflection

 1. thing I learn is that some people need to walk a mile just to get water.


Owen's reflection
 Something I learned is maybe we should not act like we can always have water because there is people that do not even have clean water to drink. I can take showers that are not as long to save water and not have water on when I am brushing my teeth. It is important to save water because when you use water after a while we may not have a lot of clean water if people keep wasting it.

Ms. Griep's Reflection
 1. What did you learn from these two days?
 2. What specifically can you do to save more water in your life?
 3. Why is it important to save water?




1. I learned that to be more greatful for water because people don't have a lot of water in the world.
 2. I can save more water by taking shower for a little bit and to not use it alot.
 3. It is important to save water cause people and animals need it to survive.


julian
 I learned that I could be more great full water water because some people dont have watter.


1. what i learnd is that they have to the girls have to get water every time for there hole intityer resese2. i acan time my self3. because we need to drink and save


1. I learned that some people don't have running and that's sad
 2. I will save water by taking shorter showers
 3. It is important to save water so we help grow the world

Aleeyah's reflection
 I learned that nature need a lot more water then we think.
 What i can do to save water is to not use as much water and not to take long showers.
 It is important to save water because it helps our planet earth.

Joseph Reflection.

 I learned that you use a lot of water in the united states. is to not use that much in a day. because if we had no water we will die.

Kalsoom's Reflection

 1. What i learned from these two days was that not a lot of country's have water like we do.
 2. I can clean the water to make it safe for people.
 3. It is important to save water in the world because water is important for people.

Abdiel

 I will save water by not using the water and and use it when needed to be used

Ms. Griep's 5th Grade Class Reflections after "Water Around the World" presentations (continued):

padlet


SIGN UP LOG IN SHARE ?

Elleen Griep + 15 5d

Thank you Aurora Water - Koala

10:30 class's reflection on the lessons :)

Jerron Collins



1. I learned that they had to carry the water.
2. I wonder what the other people had to do
3. so the people need it everyone needs it.

Milhann

I'll stop wasting water.
Saving water is important because human beings need water in order to survive.

Lili

to not waste water no more water because we need to be hydrated. and so we live. and to stop wasting water so we can give it to the people with no water. saving water is important because we need it or else we wont survive.

we should stop wasting water we need to save water because people need to live if we dont save water then people will die. you could die in tree days if you dont save water

deondre

gavin

gavin i will take three minute showers why saving water is important is because you can die without water

Angelina

I will be careful of how much water I use. Saving water is important because people need it.

Bentley

I learned that we use the plate and the cup and the bucket and we put them in other buckets
I will save more water at home for using less water and saving it from sink, showers and toilets
Its important to save water because it saves more water for people.

Emily

I learned that we only have 12 inches of water and we need to save more water. Something I will do differently is not to leave the water on when I am brushing my teeth.
Saving water is important because if we don't we can run out and we need water to survive we can't live without water for 3 days.

Delilah

i learned that some girls have to get out of school just to get water. I will try to stop wasting water .because people can die .

Naomi Vela

What will I do differently is char not wasting water.We need to save water to cook.water is important because we need water we will die in 3 day with out it.

Damian

I would stop wasting water and think about the people who needs it.
Because people need it more then us and some of us have are ungrateful.


What did you learn?

What will you do differently with your water usage?
Why is saving water important?

Allen E. Coates 4.27

I will stop running the water when i'm brushing my teeth and have a time when i'm showering.
Why because we wasted 15 inches of water and if we don't have water how will we drink water.


Eleni's review



I learned that people use contains with cured-shaped tops to reduce water spilling.
What I'm going to do differently with water is that I'm going to use the shower timer.
It's important to save water because if we waste it we will run out of it, and we would be wasteful.

-Eleni

Kalypso- 4.27 .p



I will brush my teeth while turning off the water when brushing and also taking 5 minute showers to save the water.
Saving water is important because the water can run out easily and we will be dehydrated easily

Michael

Stop wasting water.
We need to save water because you need to live,if you don't got water you could die in 3 days.

The following handout for teachers lists all of the available classroom and assembly presentations for the 2021-2022 school year.



School Presentations Aurora Water is offering classroom presentations virtually. Presentations can be done synchronously or asynchronously and are correlated to state standards. Pre-presentation activities are also available upon request. To schedule a presentation, please submit a [PRESENTATION REQUEST FORM](#) or contact us at WATEREDUCATION@AURORAGOV.ORG.

Early Childhood and Elementary

Sunny Takes a Walk on the Water Side – Puppet Show (Preschool – Kindergarten)

Take a walk with Sunny as he explores the Aurora Reservoir while learning to conserve water and prevent water pollution. Sunny will meet many friends along the way who will teach him, and your students, about the water that we drink and use. *30-minute program, can be presented to 1-4 classes at a time*

If I Was a Fish (Preschool – Grade 1)

What would you need if you were a fish? Clean water! Explore the importance of this natural resource through movement and songs like "H₂O" and "If I Was a Fish." Learn about the water cycle and the role people play in it, as well as how we use water and how kids can help protect it. *30-minute program, can be presented to 1-4 classes at a time*

Storytime with Aurora Water (Preschool-Grade 2)

An Environmental Education and Outreach team member reads stories about water, relates the stories to Aurora's water and answer questions. *30-minute program, can be presented to 1-4 classes at a time*

Water Heroes (Grade 1-3)

It takes a lot of interesting people with cool jobs to provide water to Aurora. Learn about the people in our community who bring water from the water cycle to your faucet. *40-minute program, can be presented to 1-4 classes at a time*

Water & Weather (Grade 2)

What does our weather have to do with our water? Everything! Learn fun facts about the water cycle, where you get your drinking water and how we measure snow. *30-minute program, can be presented to 2 classes at a time*

Conservation Capers (Grade 3-4)

Students learn about the source of their water, water conservation techniques and how to do a home water assessment. *40-minute program, can be presented to 1 class at a time*

Water- Keep it Clean! (Grade 3-5)

How much water is on Earth? What is a watershed? Take a look at a watershed model to understand how kids can help protect our water from non-point and point-source Pollution. *50-minute program, can be presented to 1 class at a time*



WATER is a precious resource in Aurora. We teach kids to make the most of every drop.

Aurora's Water History (Grade 4)

Students learn how water has played an important role in the history of Aurora.

40-minute program, can be presented to 1 class at a time

Water in the Ol' West Assembly Presentation (Grade 4)

Take a journey back in time to the cattle drives. Calamity Jane and Barb Wire share a chuck-wagon full of antiques and treasures and tell the tale of water use in the Ol' West.

40-minute program, can be presented to a minimum of 3 classes at a time

We All Live Downstream (Grade 5-6)

We all live in a watershed. Learn about the watersheds where your water comes from and how to protect it from pollution.

50-minute program, can be presented to 1-2 classes at a time

Water Around the World (Grade 5)

Aurora has a complex system that brings clean water to our homes. Experience what moving your own water is like by playing the "Long Haul" game and learn how people around the world use water from a variety of sources to survive.

60-minute program, can be presented to 1 class at a time

Middle School

Water Around the World (Grade 6-8)

Aurora has a complex system that brings clean water to our homes. Experience what moving your own water is like by playing the "Long Haul" game and learn how people around the world use water from a variety of sources to survive.

60-minute program, can be presented to 1 class at a time

Conservation Challenge – Rebate Game (Grade 6-8)

Learn about the source of your water and form teams of "families" who compete to save the most water.

45-minute program, can be presented to 1-2 classes at a time

The Facts Behind the Faucet (Grade 6-8)

We turn on the tap, drink it, bathe in it, flush it. Students learn about global water issues, our water system from source to tap and how they can be the most efficient water users.

50-minute program, can be presented to 1-6 classes at a time

High School

Aurora's Water Supply + Careers in Water (Grade 9-12)

Learn about Aurora's water system and the types of careers involved in the water industry.

45-minute program, can be presented to 1-2 classes at a time

Muck Up – Clean Up (Grade 9-12)

Students use critical thinking to predict how water runoff from different land uses within a watershed can pollute our water systems. Common household items represent pollutants and hazardous chemicals that are commonly found at hazardous waste sites. By simulating the contamination of water by various kinds of chemicals and how they react within the chemistry of the water molecule itself, students are introduced to current cleanup techniques being employed.

50-minute program, can be presented to 1 class at a time

Climate Change and Water (Grade 10-12)

Discover climate change science and the social, economic and environmental effects it has on our water.

45-minute program, can be presented to 3 classes at a time



**AURORA
WATER**

Asynchronous Virtual Presentations

In addition to live virtual presentations the following presentations were offered to teachers who were looking for asynchronous learning opportunities for students to view any time. Presentations were sent as links that teachers can share with their students.

Presentation	Grade Level	Virtual Format
If I Was a Fish	P-1	PowerPoint w/ Voice & Video of PowerPoint
Sunny Takes a Walk on the Water Side	P-K	Video of puppet show at Aurora and Quincy Reservoir
Storytime with Aurora Water	P-2	Video
Water & Weather	2	PowerPoint w/ Voice
		Evaluation Quiz-Survey Monkey
		Video of PowerPoint
		Cloud in a Bottle Demonstration Video
		Aurora Water Snow Reads Video
Aurora's Water History	4	Articulate Online Class
Facts Behind the Faucet	6-8	ESRI GIS Virtual Water Supply Tour- Interactive Story map Where Does our Water Come From?
		Evaluation Worksheet Word
		Evaluation Worksheet pdf
		Evaluations Quiz-Survey Monkey
Conservation Capers	3	Articulate Online Class
		Evaluation Quiz-Survey Monkey
Water: Keep it Clean	3-5	Water Pollution Prevention Lesson Plan
		Pollution Prevention PowerPoint/Video
		Enviroscape in a jar video
		Clean up the Water Activity
		Evaluation Quiz-Survey Monkey
Chemistry of Hand Washing	K-8	Doodley Video- 5 Minutes
Water Heroes	1-3	Water Heroes PowerPoint Video
		Water Heroes Student Survey
Facts Behind the Faucet (For Careers)	9-12	PowerPoint w/ Voice
		Video of PowerPoint- Part 1

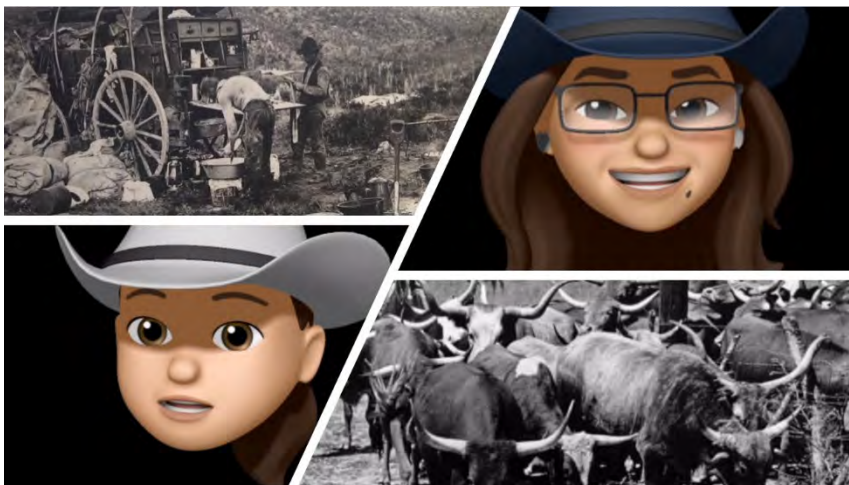
		Video of PowerPoint- Part 2
Careers in Water	9-12	PowerPoint w/ Voice
		Video of PowerPoint- Part 3
		Evaluation Quiz-Google Form
Muck Up Clean Up	9-12	Protecting our Watershed from Non-Point Source Pollution Presentation Part 1
		Protecting our Watershed from Non-Point Source Pollution Presentation Part 2
		Clean Up the Water Activity
Water in the Ol' West	4	Emoji Video
		Evaluation Quiz-Survey

Assembly Presentations

Water in the Ol' West - (Grade 4)

Fitting nicely into the fourth-grade unit on Colorado history, the *Water in the Ol' West* assembly presentation not only provides a narrative into the necessity of creative water conservation along the long, dusty route of historic cattle drives, but it also provides a glimpse into life along the local Colorado cattle trails of the 1880s. Using historical props from the time period, presenters act as Calamity Jane and Barb Wire and share the story of cow hands and cooks out on the range.

Continued restrictions on in-person learning necessitated the *Water in the Ol' West* assembly remain as either the animated version of the live play or was presented live from our studio through meeting platforms for the 2021-22 school year.



Mary Dawson as Calamity Jane and Natalie Brower-Kirton as Barb Wire

Feedback from the approximately 400 students who viewed the presentation virtually live from our studio or in the animated version, has been overwhelmingly positive. Discussions about the water-conserving advantage of washing the dishes, then oneself, and then washing personal undergarments (in that order) tend to spark spirited debate.

Teacher Comments

"I wanted to let you know what a great job Natalie did today with the children. She has a wonderful gift that allows her to work with children. I wanted to recognize how well she represented the city today. I am working from home and I listen in to her interaction with her children. I was a very wonderful experience!"

"I appreciate the Outreach programs that help educate our young learners."

"Thank you to @AuroraWaterCO for presenting to our 5th graders today! We all loved learning more about the history of water in our community. "

"Thank you so much for taking the time to share about Aurora's water history with my classes today. I know that the kids learned a lot, and I did, too! I really appreciate your enthusiasm for what you are teaching. I think you show students an excitement for learning and for applying knowledge in ways that really make a difference. I know that can be challenging in the remote setting, but you did a wonderful job."

"Thank you! Aurora Water always provides excellent professional development and student programs."

"My class really enjoyed your presentations! They learned so much and they were so excited to share their new learning! I look forward to working with you again in the future."

Humorously, the students also want to know if the cow pie fire prop is authentic (it is), and if Calamity Jane "really talks like that" with a heavy Southern accent (she does).

The Facts behind the Faucet- (Grade 6)

The science curriculum for sixth-grade students in Aurora includes a comprehensive study of water. By the end of their sixth-grade year, students need to know about the source of their drinking water, local water issues and information for their community as well as where water goes after it goes down the drain. In order to accommodate as many sixth-grade students as possible and provide information about Aurora Water specifically the "Facts behind the Faucet" assembly was created. In this interactive assembly, students not only learn the facts about the planet's water availability, but also specifically about Aurora's water supply system, water treatment, stormwater and wastewater services. During the 2021-2022 school year and remote learning, no in-person assemblies were conducted. However, over 1,000 students were given access to the virtual water supply tour for further learning.

Classroom/Assembly Presentation Evaluation

The Aurora Water Youth Education Evaluation Plan lays out the goals, themes and objectives for each presentation and identifies key messages that students should remember after participating in a classroom presentation, assembly or field trip.

Student Assessment

During the 2021-2022 school year online surveys were used to collect evaluation data from students and assess learning. 151 students returned evaluation information. Data was received for the "Conservation Capers", "Water Around the World" and "Water & Weather" programs.

Overall, data collected has been positive with educational objectives being reached although the number of students participating in an online survey post-presentation decreased sharply this school year. This may be due to presentations being conducted virtually and the challenge for teachers to have students fill out surveys. In past years more students filled out evaluations when they were handed out at the end of the presentation by the presenters.

The challenge moving forward will continue to be receiving enough data back from teachers. It's often quite difficult for teachers to work in an additional worksheet assessment or computer assessment of the presentation due to time

constraints. The team will also continue to evaluate assessment strategies and the questions asked on the worksheets.

Although student assessments were received from a very small sample group this year overall student assessment of our youth education programs shows that objectives are being met and students are learning the main ideas and can convey those ideas after the presentation. Detailed information on data received by presentation can be found in *Appendix A*.

Assembly/Classroom Presentation Teacher Feedback:

Teachers were invited to provide feedback on our presentations via an online survey. Twenty four teachers who contacted us to set up presentations for their school and saw a presentation submitted a survey.

Teachers were asked to rate the presentation from 1 (poor) to 5 (excellent). Teachers rated the presentations as “excellent” or “good” in all categories. 100% of teachers would invite us back. For more details please see *Appendix B*.

Promotion:

In addition to the Aurora Water website, our school presentation program was promoted to Aurora teachers via email. Extensive information was also shared with all the teachers who attended our Forests to Faucets workshops in July 2021. A large majority of teachers contacting us for presentations have had presentations in past years.

Careers in Water

Career Information Fair

Due to COVID19 restrictions, the annual Aurora Public Schools career fair was postponed. Aurora Water provided virtual and online access to career information.

Science Fair

Due to COVID19 restrictions, the 2021 annual science and engineering fair was a virtual event. Aurora Water provided expert technical support for those students participating.

Pipeline/Careers in Water

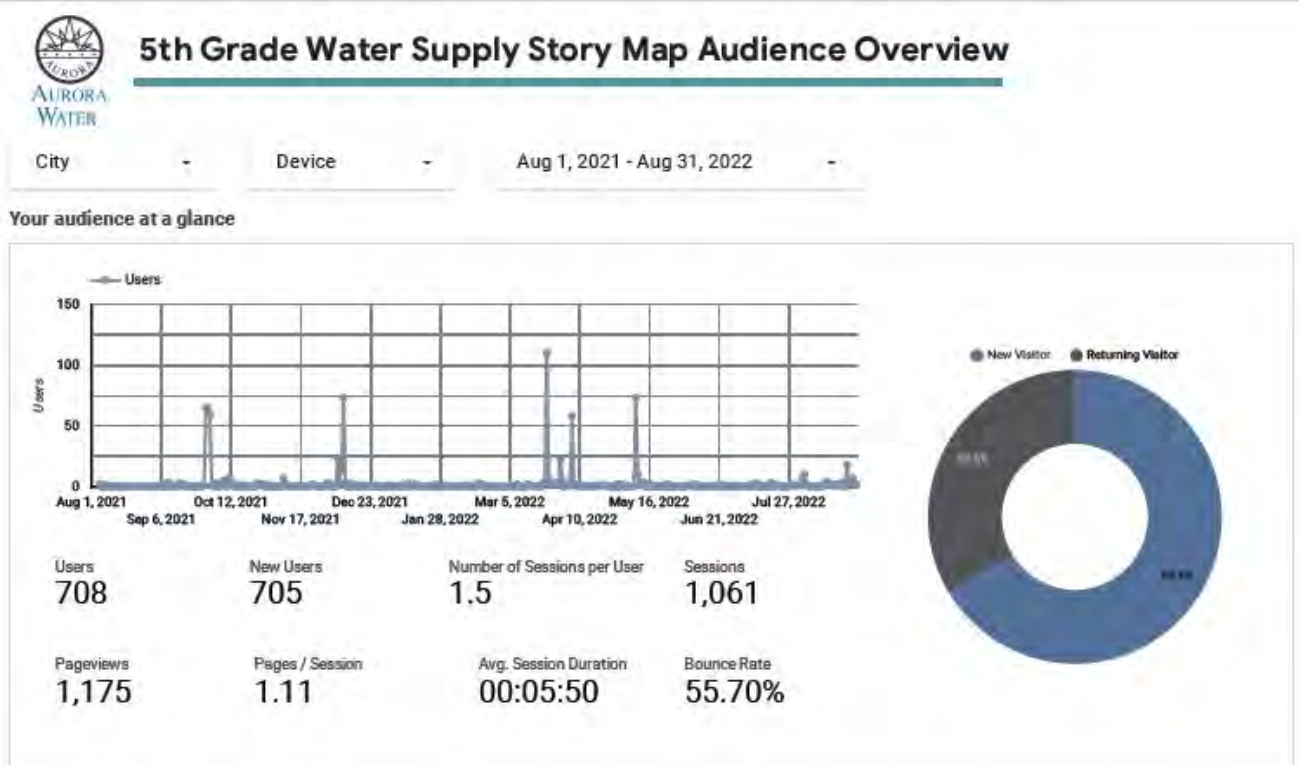
Due to COVID19 restrictions, internships and job shadowing opportunities were postponed to a later date. Aurora Water continues to offer advice in career water fields and virtual career presentations were attended by over 350 high school students.

Field Trips and Tours

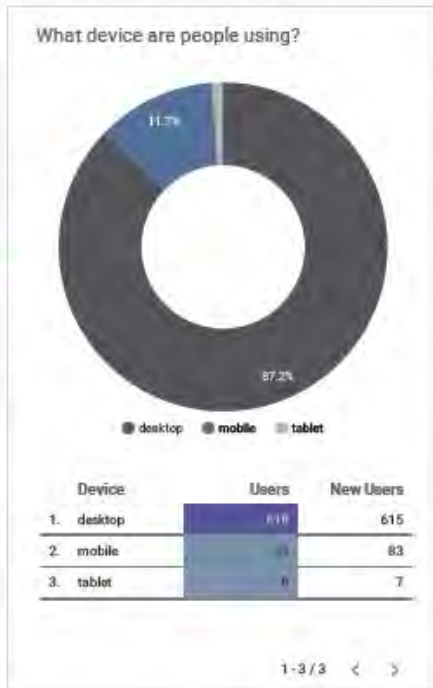
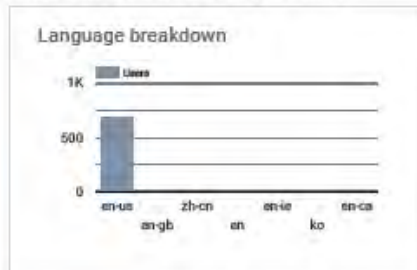
Virtual Water Tour

The virtual water tour, [Aurora's Water Supply](#) is an online ESRI Story Map originally created for 5th graders. Links to this tour are shared with teachers by request and it is also accessible from the Aurora Water website. During this school year 708 students from 5th

grade through high school have used the virtual tour. The following graphic shows more details related to the virtual water tour audience:



Let's learn a bit more about your users!



Time of Day breakdown

Hour	Count of Sessions
12 AM	3
1 AM	2
2 AM	1
5 AM	1
6 AM	4
7 AM	6
8 AM	10
9 AM	7

H2O Outdoors

For over ten years the Aurora Water Education Team has been a partner in the facilitation of H2O Outdoors, a standards-based, educational program hosted at Keystone Science School. H2O Outdoors is available to all high school students within the Aurora Water resources footprint. Over the course of three days, students participate in a stream survey, expert panel and town hall meeting. Advocating in the role of a water stakeholder, students gain broad understanding of the human and environmental complexities of water management in Colorado and the West. Thirty students participated in the fall 2021 session.



H2O Outdoors Student Comments

“It is important to understand the issues surrounding water policy and management.”

“The history of water policy is important in understanding current water issues in Colorado.”

“*Stakeholders impact decision making for water policy and management in Colorado.*”

“I have the desire to get involved in water use issues.”

“This was a really great experience. Thank you!”



High School students attending H2O Outdoors

Water Quality/Macroinvertebrate Field Trips at Aurora Reservoir

During the 2021-2022 school year the team was able to conduct two in person outdoor field trips at Aurora Reservoir.

Date	School	# of Students
Oct. 15, 2021	Aspen Crossing Elementary School	100
April 15, 2022	Aurora Quest K-8	60

Youth Water Festival

2022 marks the 28th year of the Aurora Youth Water Festival. This year school district transportation availability limited the number of students who could participate in person so a virtual event was also held. This successful environmental education opportunity for Aurora’s 5th graders was one of the first of it’s kind in Colorado. The event is a one-day festival full of fun, hands-on learning about our watershed, water pollution prevention and water conservation. On May 19, 350 students and their teachers attended the in-person, mostly outdoors festival. The event, held each year at the Community College of Aurora, features presentations and exhibits that cover a wide variety of water related topics. Students experience activities such as *The Wall of Water, The Great Water Relay, Water Magic, Water Wizard Trivia and Gold Panning.*

Program Goals:

- Expand Aurora fifth graders’ understanding and knowledge of their water and watershed
- Provide fifth grade students in Aurora with a memorable, “hands-on” field trip experience in which they learn directly from experts in the water field.
- Provide teachers with quality water curriculum to use with their students before and after the water festival
- Increase appreciation for water and encourage water conservation and pollution prevention.



The Wall of Water at the Youth Water Festival

- Students will be able to list concrete actions that they will take to conserve or protect water.
- Provide students with an opportunity to visit a college campus.

Summary:

- Attendance: twelve classes from 6 elementary schools or 350 fifth graders. Due to school district transportation challenges this was the maximum number of students that could get to the festival in person this year.

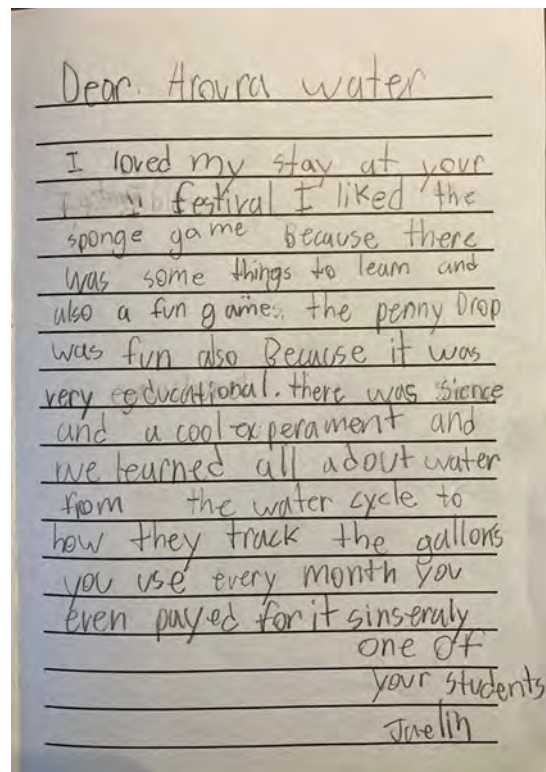


- 65 people volunteered their time as presenters, exhibitors or for general festival logistics. 34 of those people were Aurora Water employees.

- Evaluation forms from teachers, presenters, exhibitors, volunteers and students were very positive. Everyone enjoyed the day and felt that it was well organized and educational.

Presenter & Exhibitor Feedback:

100% of the Presenters who completed the survey agreed that the festival was well organized and that their experience at the water festival was great. 100% felt they received the information they needed prior to the festival. They were happy with their room accommodations and 94% are interested in participating next year. Most really enjoyed the smaller in person festival. When asked to rate the overall festival on the following scale: Wonderful, Really Good, Ok, Needs Work, Give it Up, 100 % gave the highest rating of “Wonderful.”



Volunteer Feedback:

100% of volunteers who returned their evaluations felt that their time was well spent and that their “job duties” were well organized and needed. They also stated that the Volunteer Orientation meeting was very helpful and the time spent the day before the festival was just what they needed. 100% of those that returned a survey are interested in participating next year. When asked to rate the overall festival on the following scale: Wonderful, Really Good, Ok, Needs Work, Give it Up. 83% of volunteers rated the festival as “Wonderful” and 17% rated it as “Really Good.”

Youth Water Festival Teacher Feedback:

Teachers' comments were overwhelmingly positive. Overall all of the teachers who answered the survey about the festival gave a rating of excellent or very good for every category.



Festival Presenters and Exhibitors:

Private and Non-Profit groups Represented:

- Apprentice of Peace
- Cherry Creek Stewardship Partners
- Colorado Watershed Assembly
- CSU Spur
- Excel Energy
- Gold Prospectors of the Rockies
- High Line Canal Conservancy
- History Colorado Center
- Magical Comic
- The Bubble Tower

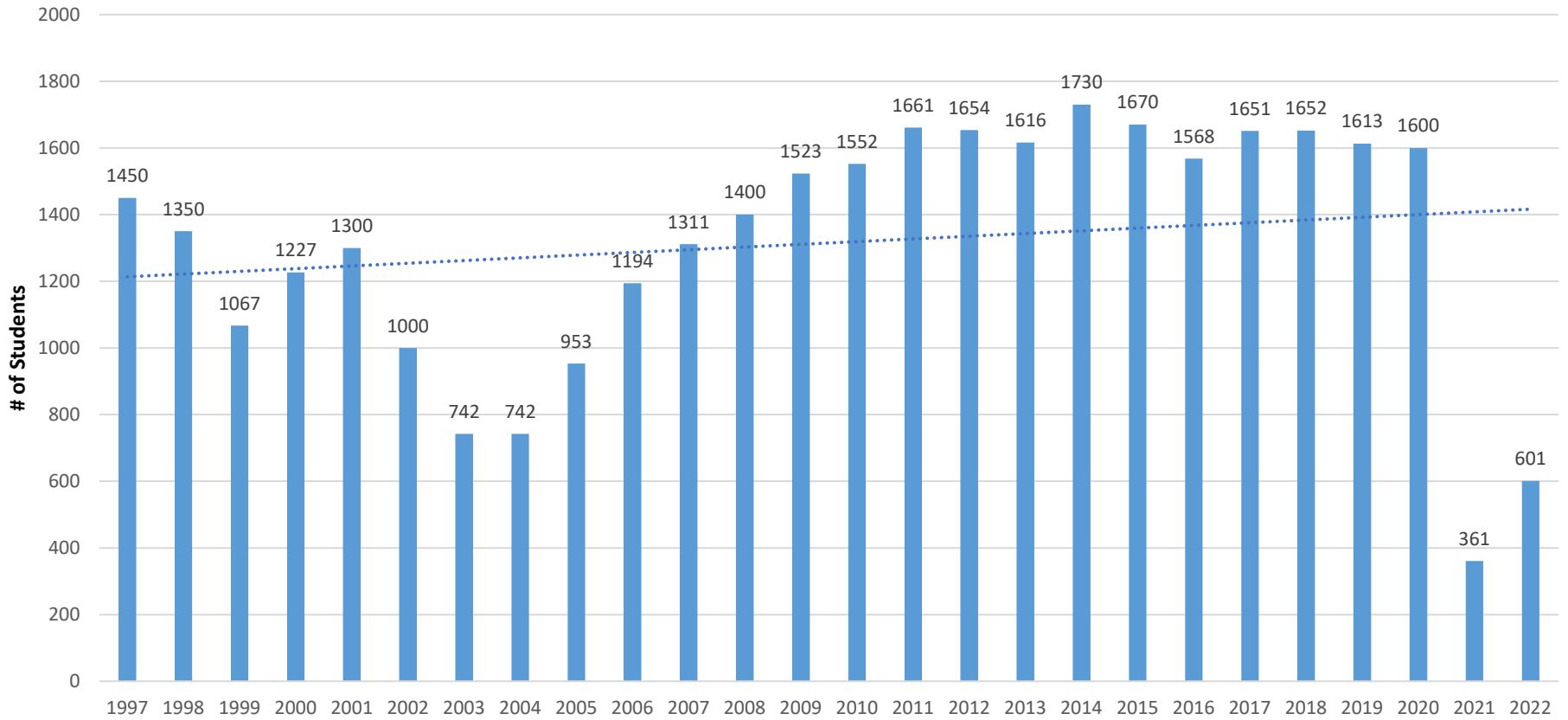


Public Entities Represented:

- Aurora Open Space and Natural Resources
- Aurora Water
- City of Aurora Aquatics



Aurora Youth Water Festival



28 Years
37,238 Total Students
2021-Virtual
2022-Virtual & In Person

Virtual Aurora Youth Water Festival

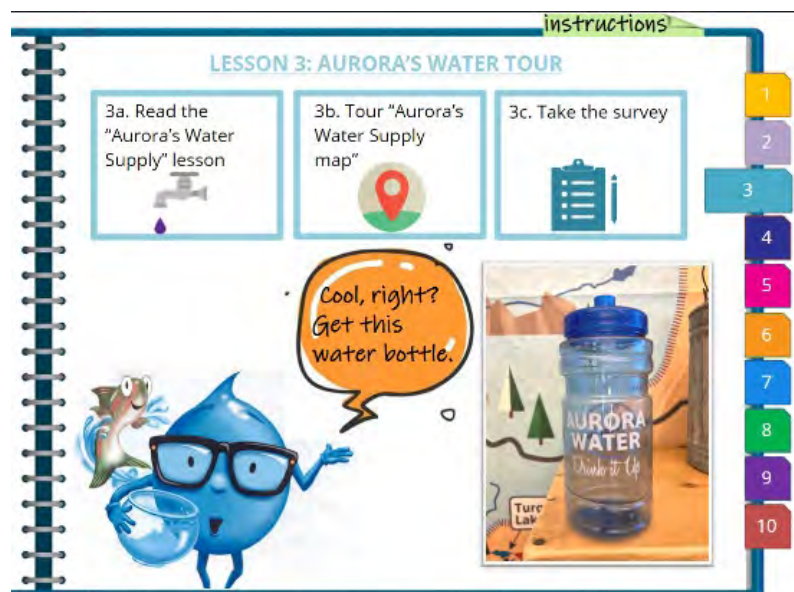
Due to the pandemic a virtual version of the Aurora Youth Water Festival was developed and that replaced the in-person Youth Water Festival for 2020 & 2021. An online, interactive notebook was created for all fifth-grade students. This virtual notebook consisted of 10 lessons the students could participate in. Each student that completed a lesson was rewarded with a prize. Presentations were shared virtually through videos and activities that students could conduct at home or in their classroom. Luckily, as pandemic guidelines slowly lifted, we were able to hold an in-person Youth Water Festival in May of 2022 but attendance was limited due to school district transportation challenges. The team continued to promote the online version for schools that were unable to attend our live festival.

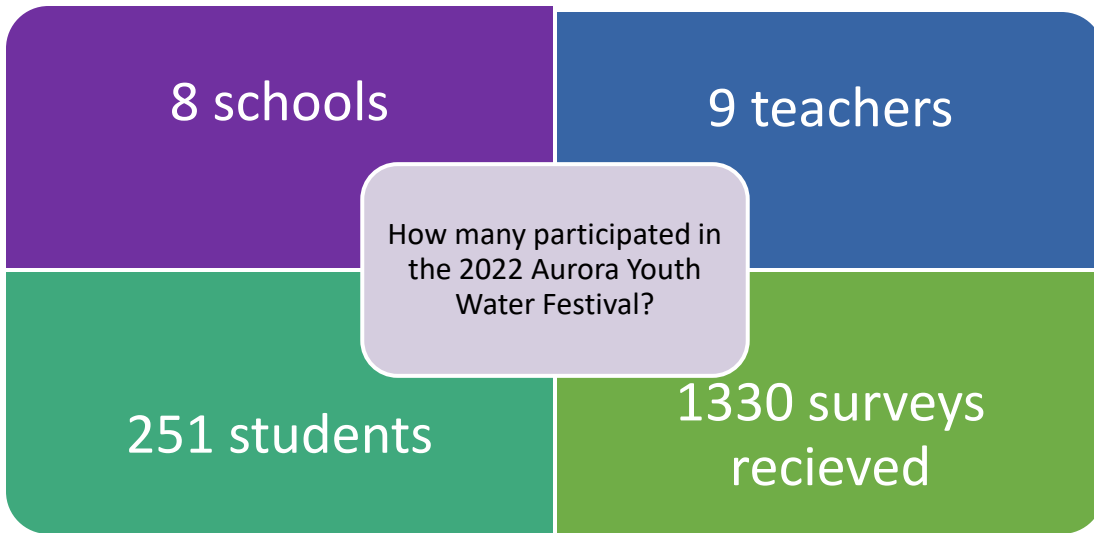
"Love this program!!."

-Terri Simonich / Canyon Creek Elementary



Youth Water Festival Virtual Notebook





“The lessons were very good and easy to use. They were set up in an engaging and relevant way for the students!.”

-Phillip Raskin / Peoria Elementary

Teacher Resource Library:

The following water education tools are available for Aurora teachers to check out from the EE&O program:

Resource	Number of Teachers Checking out Resource	Total Number of Students using Resource
Watershed Model	0	0
Water Monitoring Kits	2	400
Incredible Journey Kit	3	100
	Total: 5	Total: 500






Aurora Public Schools Partnership- New Fifth Grade Water Science Unit

During the summer of 2021, Aurora Water EE&O was invited to partner with Aurora Public Schools on a new water science unit for all 5th graders to be implemented in the fall of 2021. Aurora Water provided guidance, supplemental curriculum and facts about Aurora Water to enhance the 24-lesson unit and provide the local background and Aurora Water connections. All of our programming for fifth grade students was aligned with the curriculum including classroom presentations, videos, supplemental activities and field trips. During the 2021-2022 school year the team worked with 5th grade teachers to provide expert speakers, curriculum support and materials.

Water Unit

Where does our clean water come from and where does it go once we make it dirty?

Three types of Lessons in our framework - [Eliciting Lesson](#) - [Student Sense Making](#) - [Pressing for Explanations](#)

This unit was developed at Northwestern University through the NGSS Storylines Project. To familiarize yourself with the Storyline structure, please review the Storylines Teacher handbook .					
 In order to support students with a local context for the 5th grade water unit we have partnered with Aurora Water. They have provided extensions, videos and opportunities to do field trips or classroom visits. We have aligned their programming to each lesson throughout this unit.					
Lesson & Routine	Guiding Question	What we are doing now	What we Figure out	Teacher/ Student Pages	Aurora Water Connection
Lesson 1 Cleaning dirty stuff 1-3 days   	How do we Clean Dirty Stuff? SEP Develop Models Asking questions CCC Systems	Students develop initial models showing where water and anything that is "dirty" goes once it enters a drain in their house and where the water coming out of the faucet comes from. After a consensus building discussion, the class develops a consensus model of this system that led them to realize that there is still much that is unknown about where water goes, suggesting possible investigations to determine water's path once in the drain.	There are many things we use water for in our house, and this dirty water is dumped down the sink and goes into pipes. We have lots of questions and ideas for investigations we could pursue that might help answer them.	How do we clean dirty stuff?	Aurora Water Connections
Lesson 2 Wastewater pipes 2-3 days 	Where does all the waste that goes down the drain go? SEP Obtaining and communicating Information Developing and using Models	Students will watch a video of a plumber trying to retrieve an item lost down the drain as a safe and accessible alternative to putting a camera down the drain or knocking down a wall behind a sink/ toilet. Using three ideas seen from the video (water traveling downwards, pipes getting bigger as water goes down, and water entering a large pipe already flowing with water), students develop a model to explain where water goes after entering the drain. Comparing their models to actual photographs and diagrams, students	The pipes that leave our house and school go under the street and all go to this one big building. At that building, all of the water and waste gets combined and mixed together in one giant pool.	Home Learning sheet Pipes Picture for students Appendix - Diagrams and EPA ArcGIS QuickGuide	

Excerpt from Aurora Public Schools fifth grade water unit.



Leaders as Readers Program

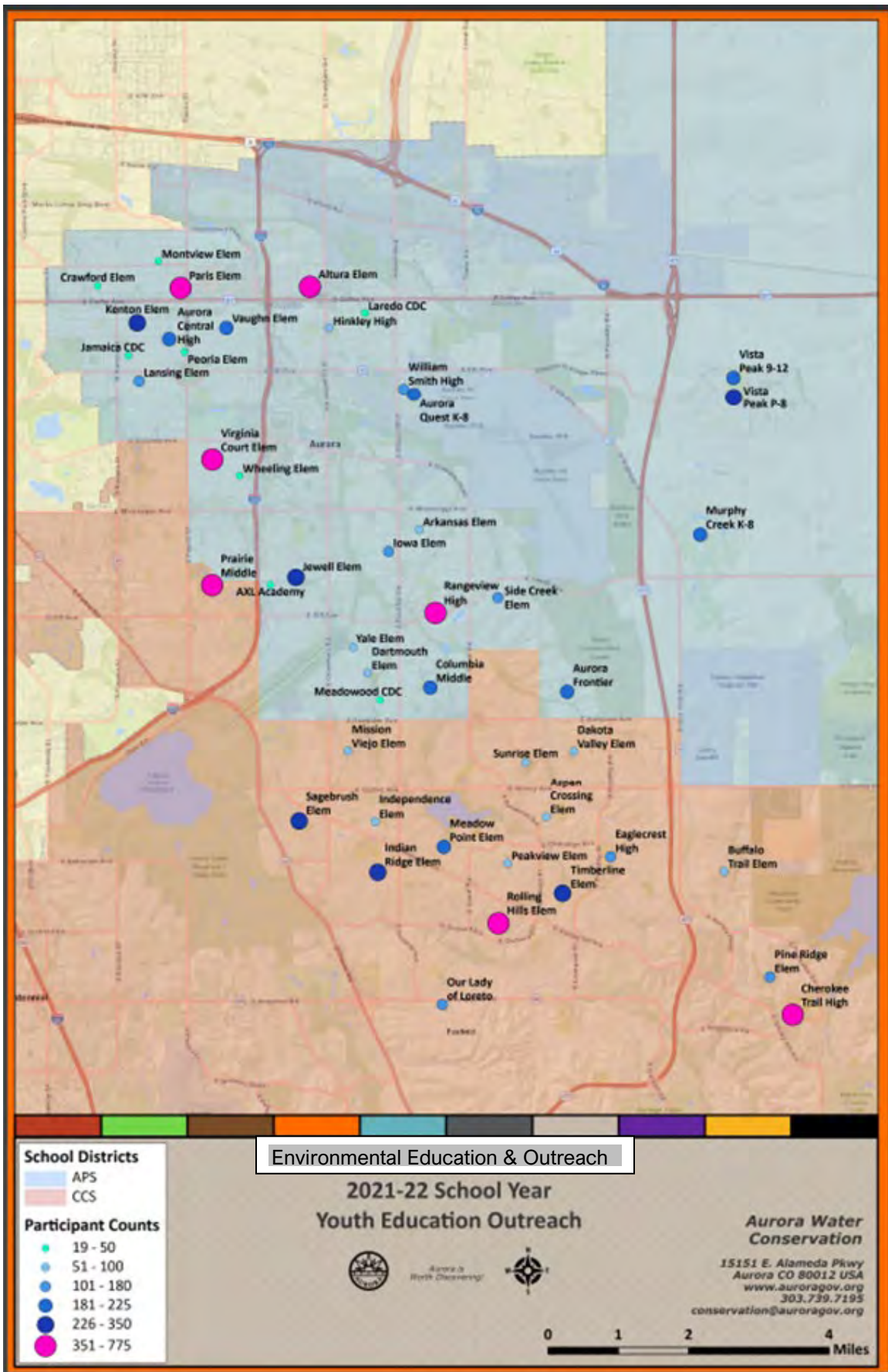
Leaders as Readers is an Aurora Public Schools (APS) program where community members are invited into the classrooms to read stories to the students. With limited access for guests to schools this school year, APS asked community members to create short videos of them reading a story that could be shared with students. Aurora Water participated providing a story about water in both English and Spanish. A total of 40 stories were read by local celebrities, law enforcement officials, firefighters and principals. Links to the stories were available to all the APS teachers through a newsletter.



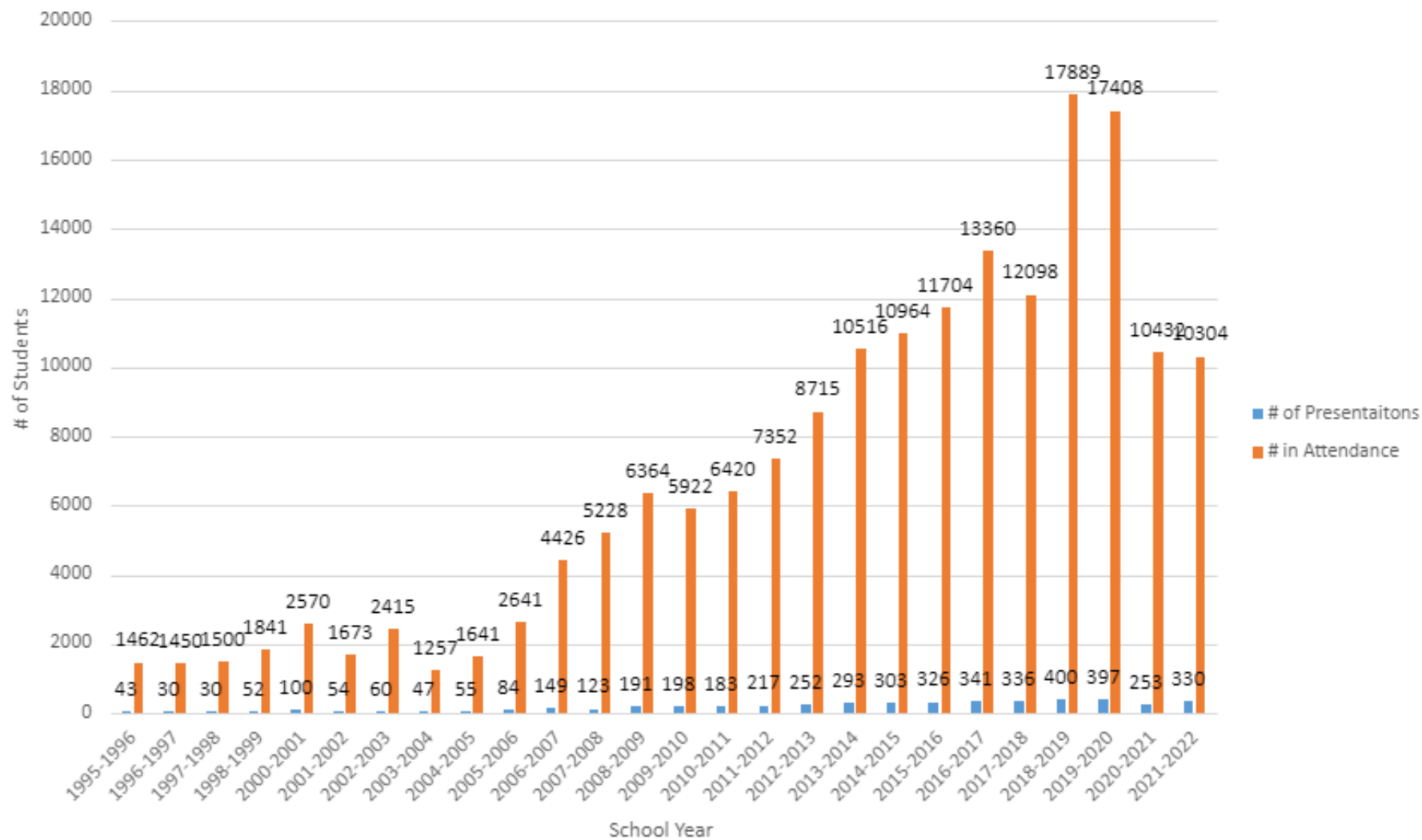
Youth Education Program Summary:

The number of students reached with our youth education program has grown exponentially over the last 28 years from 500 students reached in 1994 to 17,408 in 2020 and remained steady from the previous year at 10,109 in 2022. The 2021-2022 school year was unlike any other with students returning to school after a year of learning online from home. Students had a lot of catching up to do and teachers shared that the year was extremely difficult. Although students were back in schools, guests were not allowed to visit schools for the majority of the year. The EE&O team worked with these challenges and continued to conduct programs virtually engaging students in learning about water.

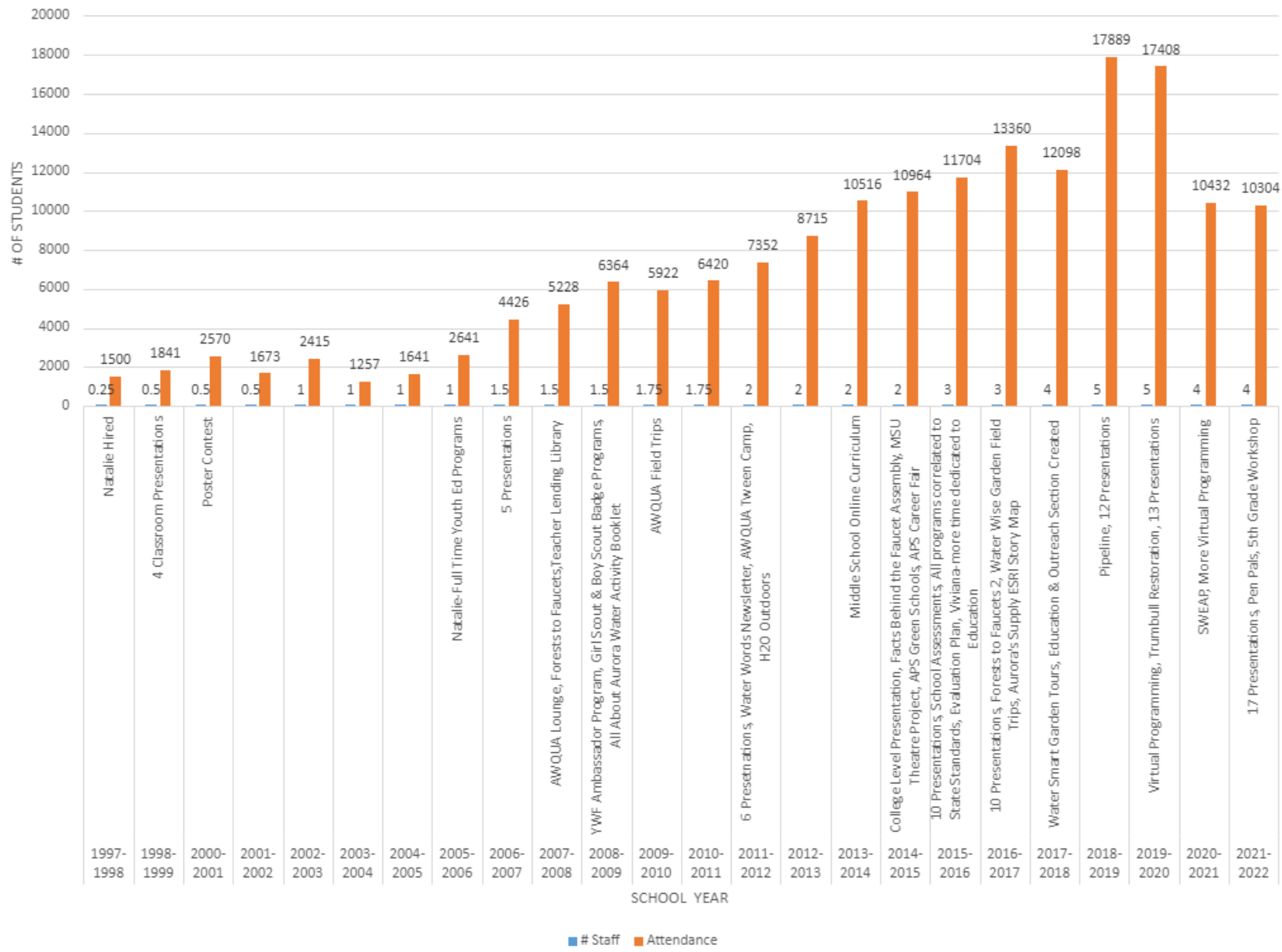
The following Aurora Water Youth Education Program Map and History Charts show the growth of programs over time. From creating and implementing programs that are brought into schools such as classroom and assembly presentations that meet Colorado Academic Standards, providing opportunities for students to explore the topic of water through interesting and memorable field-trip experiences, to new virtual programming for remote learning, Aurora Water is a leader in Youth Water Education and continues to inspire students creating a more “water literate” community for the future.



Youth Education Programs 1994-2022



Aurora Water Education Program History



Professional Development Workshops for Teachers

Forests to Faucets I & II

The Forests to Faucets Continuing Education Workshops are designed to provide Aurora teachers with an in-depth education about water and water-related issues. This year marks the 17th year for Forests to Faucets and year six for Forests to Faucets II. This very successful program for teachers is conducted by Aurora Water and Aurora Parks, Recreation and Open Space.



2022 Forests to Faucets teachers learning “Watershed in Your Hand” at Pine Valley Ranch Park in the South Platte Watershed

In Forests to Faucets: Aurora’s Water Resources teachers explore topics such as where our water comes from, how our water is treated and the importance of a healthy watershed. The program also includes educating teachers about the importance of conservation and making the connection between clean water and a healthy watershed.

Forests to Faucets II is designed to provide Aurora teachers with an in-depth education about water conservation and climate change related topics. 2022 was the sixth year of the program. In this workshop, teachers explore topics such history of area and why people settled here, the natural vegetation of the plains, our current and future water availability, projections on population and its’ impact on water, the effects of climate change on Colorado water and the various programs offered by our water conservation department.

Over the past 17 years, the Forests to Faucets teacher workshops have allowed us to create relationships with Aurora teachers greatly increasing participation in our other youth education outreach programs. We particularly saw an increase in our classroom presentations, assemblies and field trip programs at the Aurora Reservoir. Since the beginning of our teacher workshops, our youth education programs have steadily increased each year. Teachers who attended these workshops this year will teach water concepts to over 1,000 students in Aurora during the next school year. Forests to Faucets teachers have also invited us into their classrooms and spread the word amongst their colleagues about our programs. We have reached thousands of Aurora students each year with our overall youth education programs thanks in great part to our connections with teachers who have attended Forests to Faucets.

Forests to Faucets Summary (July 19-21, 2022)

The three-day professional development training program is free for Aurora educators and provides interactive curriculum for participants to bring water concepts back to the

classroom. Aurora teachers who complete the program receive 1.5 hours of graduate level re-certification credit through the Colorado School of Mines. They also receive “Project Learning Tree” and “Water Education for Teachers” curriculum guides and materials.

The workshop was held at the Morrison Nature Center at Star K Ranch, a perfect facility for gathering with access to additional outdoor settings for workshop activities. This year’s program was facilitated by Joy Thompson with PROS and Natalie Brower-Kirton, Viviana Zavala, and Mary Dawson with Aurora Water. Shawna Crocker, retired Colorado Project Learning Tree Coordinator, was our guest facilitator and speaker on day one.



2022 Forests to Faucets: Teachers at the Aurora Municipal Center Water Wise Garden

Participants

13 teachers attended the workshop. In addition, one Aurora Parks, Recreation & Open Space Naturalists who joined the workshop.

Teachers who attend the workshop with others from their school are more likely to implement what they have learned from the workshop. In order to encourage more than one teacher from a school to attend, a free Water Quality Monitoring Test Kit was provided to the school if two or more teachers attended.

Participants in the 2022 workshop will work with more than 1,000 students during the 2021-2022 school year. The following schools and organizations were represented at the training:

Elementary School	Middle School	High School
AXL Academy	Horizon Community	Academy
	Laredo	Smoky Hill
Buffalo Trail	Newton	Vista Ridge
Dakota		
Slavens K-8		



2022 Forests to Faucets: Teachers learning “Every Tree for Itself” and “Pass the Jug”

Promotion

The training was advertised in a variety of ways. The most effective method was an email sent to all teachers who have participated in other programs with Aurora Water. The second was a personal invitation to teachers who participated in our 2020-2021 school programs. Third was notification through the school districts’ Science Curriculum Coordinators and Professional Development Office to all teachers in Aurora Public Schools and Cherry Creek Schools. Past participants were asked to help us spread the word and five participants applied based on their recommendations. A flier was sent to all Youth Water Festival teachers and the training was also listed in the Colorado School of Mines catalog.

Workshop Schedule

Training on the curriculum guides was mixed with field trips and hands-on activities. Please see *Appendix C* for a detailed agenda and evaluation data for the workshop.

Forests to Faucets II Summary (July 26, 2022)

This one-day workshop is free for Aurora educators and provides interactive curriculum for participants to take concepts back to their classrooms. Aurora teachers who complete the program receive .5 hours of graduate level re-certification credit through the Colorado School of Mines. They also receive “Water Education for Teachers” (if not previously attended a WET workshop) and the “Project WET Climate Resilience Workbook”. The workshop was held at the Aurora Reservoir in the Senac Nature Center.



2022 Forests to Faucets II participants – Bike Ride at Aurora Reservoir.

Participation and Promotion

A total of 10 teachers attended the training. All the teachers work in the city of Aurora in either Aurora Public Schools or Cherry Creek Schools. The workshop was promoted to past Forests to Faucets attendees.

Participants in the 2022 workshop will work with more than 1,000 students during the upcoming school year. The following schools and organizations were represented at the training:

Elementary School	Middle School	High School
Buffalo Trail	Horizon Community	Academy
Dakota		Cherokee Trail
Slavens K-8		Grandview
		Eaglecrest
		Smoky Hill

This year’s program was facilitated by Joy Thompson with Aurora Parks, Recreation and Open Space, and Natalie Brower-Kirton, Viviana Zavala, Mary Dawson and Sherry Meschko with Aurora Water. In addition, powerful and informative speakers and presentations rounded out the program including:

- James DeHerrera, Aurora Water Project Engineer, presented on Water Master Planning.
- Brandi Honeycutt, Colorado Department of Public Health & Environment, presented on reclaimed and graywater.

Please see *Appendix D* for workshop agenda and evaluation information.

Aurora Public Schools 5th Grade Teacher Water Workshop (August 1-2, 2022)

The team put together a new workshop this summer specifically for Aurora Public Schools (APS) 5th Grade Teachers. The workshop was designed to provide Aurora Water specific background information for teachers to enhance their new science unit on water. Since the unit begins with the question, “What happens to the dirty water when it goes down the drain?” the workshop began with a tour of Metro Water Recovery on day one. On day two, teachers explored part of the Aurora Water Supply System visiting Strontia Springs Reservoir and Dam and Aurora Rampart Reservoir. The workshop concluded with a tour of the Wemlinger Water Treatment Facility and the Aurora Water Quality Lab. Throughout the workshop, teachers learned Project WET curriculum activities that align with their water unit along with resources available from the EE&O team.



APS 5th Grade Teachers at Strontia Springs Dam & Reservoir

Participation & Promotion

While only four teachers attended the new workshop, the small group was conducive for individual questions, lesson planning and sharing. Participants in the workshop will work with over 200 5th grade students each year. Moving forward the workshop will be moved to late July to avoid being so close to the start of school. This will also allow for new teachers to the district to take the workshop.

In addition to contacting teachers via email the workshop was advertised by the APS Science Coordinator within the district.

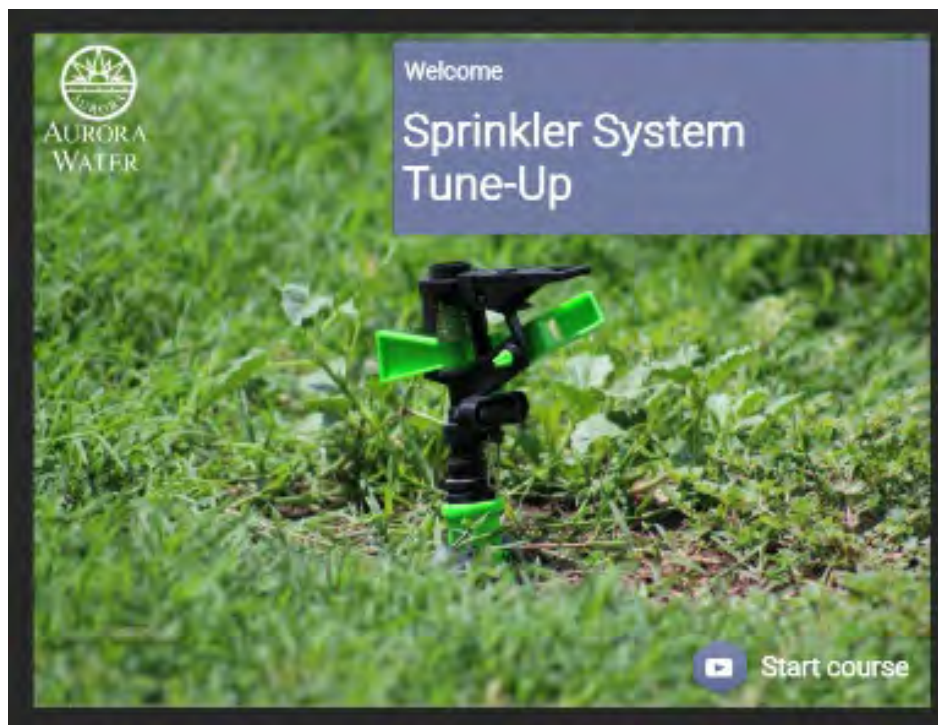
Please see **Appendix E** for workshop agenda and evaluation information

Elementary Schools Represented
<i>APS 5th Grade Teacher Workshop</i>
Dalton
Laredo
Murphy Creek
Vista Peak

Community Education and Outreach

Online Water Conservation Classes

This year the EE&O team partnered with our water conservation team to re-create some of their pdf formatted conservation classes into online courses. These courses are more interactive and have the ability to test course takers with intermittent quizzes. The goal of our water conservation classes for residents is to help our community members understand the importance of water in our semi-arid state by using educational tools to demonstrate tangible ways to conserve water. In 2020 the EE&O team created an online course using Articulate 360 software. The first course to be offered was “Introduction to Water-wise Landscaping.” For 2021 “Sprinkler System Tune-Up” was created using the Articulate 360 software.



Second Conservation Online Course built with Articulate 360 Software.

Community Outreach Events and Projects

Events

Due to the uncertainty of the pandemic, many city events were canceled or offered virtually in 2021-2022. The EE&O team supported smaller events while adhering to COVID protocols. We participated in Earth Day at Aurora Reservoir and had the opportunity to communicate with over 350 attendees. Over 150 people learned about Aurora Water at the team's booth at the Trick or Treat Nature Trail event in October. The team also participated in Teacher Appreciation Night at the Aurora History Museum which was attended by 20 Aurora educators. In addition, team members assisted with Aurora pop up events throughout 2021-2022 including the Forth of July event and Global Fest and provided attendees with water bottles and information about their water.



Dog Waste Bag Distribution

As part of our stormwater pollution prevention outreach the EE&O team distributed over 450 dog waste bag dispensers to the Aurora Animal Shelter who in turn handed them out at animal adoption events throughout the city as well as at the shelter during the pandemic.

Trumbull Experimental Forest

For more than 15 years, Aurora Water's Education and Outreach staff have utilized Trumbull Forest as an outdoor classroom to inform teachers participating in Forests to Faucets the importance of protecting our source water and restoring the threatened areas of the Upper South Platte Watershed.



Future Projects

The Aurora Water Environmental Education and Outreach Team continues to evaluate and improve water education programming in the City of Aurora. The following projects are an example of potential future programming that the team is developing.

Aurora Water Course

Designed as an opportunity for Aurora residents to learn more in-depth information about Aurora Water and Colorado water issues, Aurora Water Course will provide a series of educational opportunities for interested community members. Classes, online courses and tours will round out the experience. Aurora's Water Course will align with all ten of the Statewide Water Education Action Plan's Outcome Goals.

Careers in Water Program

The EE&O team plans to continue to expand the career program between Aurora Water and Aurora's school districts to include other high schools in the service area. Work will begin on exploring how Aurora Water can support apprenticeship opportunities through local trade schools and community colleges creating a clearer path for Aurora students to join the water field.

Urban Water Cycle – An urban bicycle tour demonstrating the importance of our stormwater system. Partnering with the Barr Milton Watershed Association and Water Education Colorado, the future outreach opportunity will include education curriculum regarding non-point source pollution, run-off control measures/best practices, and how our every-day activities contribute to water quality issues downstream.

Additional Virtual Classroom Presentations

For the 2022-2023 school year the team is working on rounding out our virtual water presentation offering by adding a virtual version of "Water Around the World" for 6-8 graders.

Activity Booklet for Preschool-1st Grade Learners

For the next school year the team plans to put together a new activity booklet specifically for preschool through 1st grade students to compliment our presentations for younger learners.

Expanded Aurora Water Supply Tours (in town)

The team plans to incorporate more in-town water supply and facilities tours for the community into upcoming programs for high school students and adults.

Appendices

Appendix A: Youth Education Program Assessment/Evaluation Data

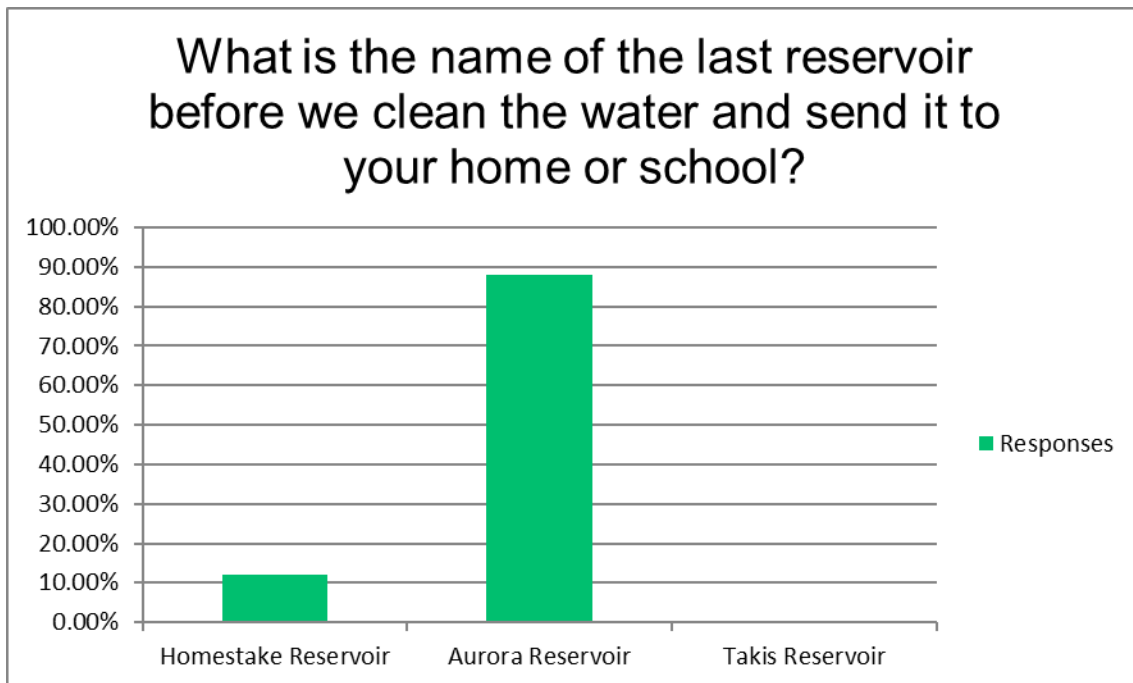
Conservation Capers

Students who took the online course answered the survey. 100% of students who responded to the survey could list at least two new things they will do to conserve water at home.

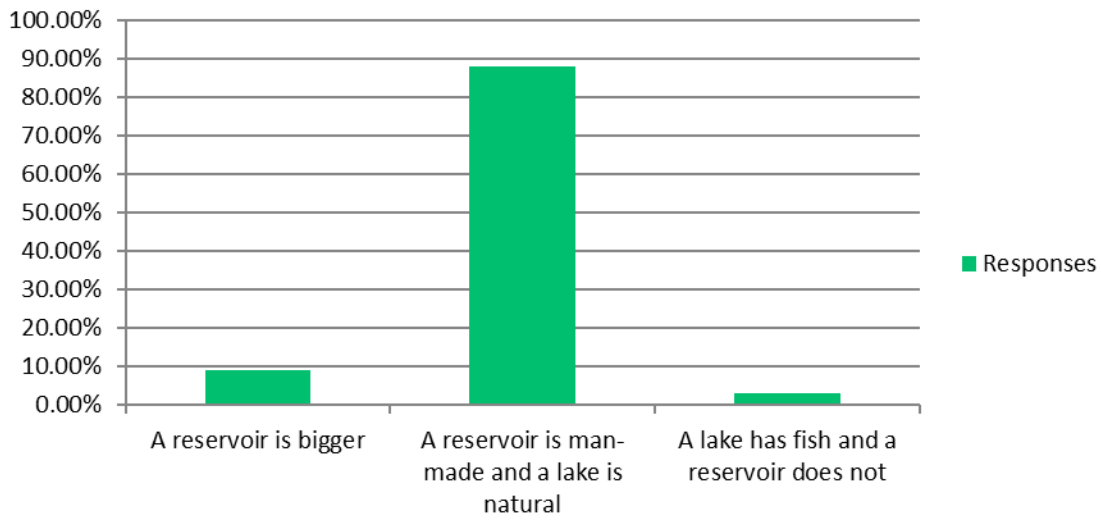
Students were asked to write about where their water comes from. This word cloud summarized their answers:

Q4 Where does our water come from?

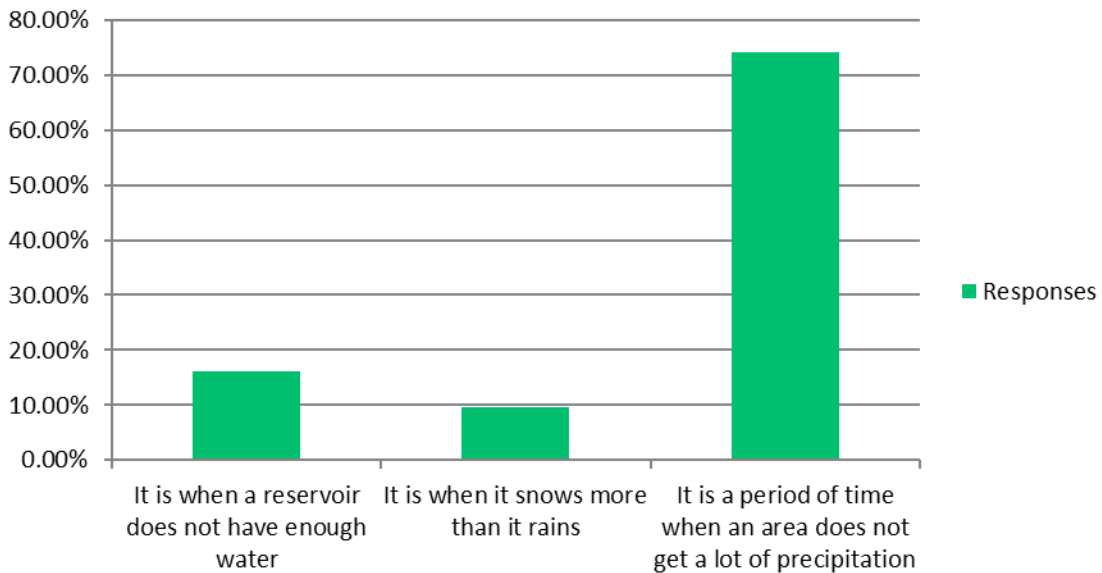
snow River Basin mountains lakes rivers



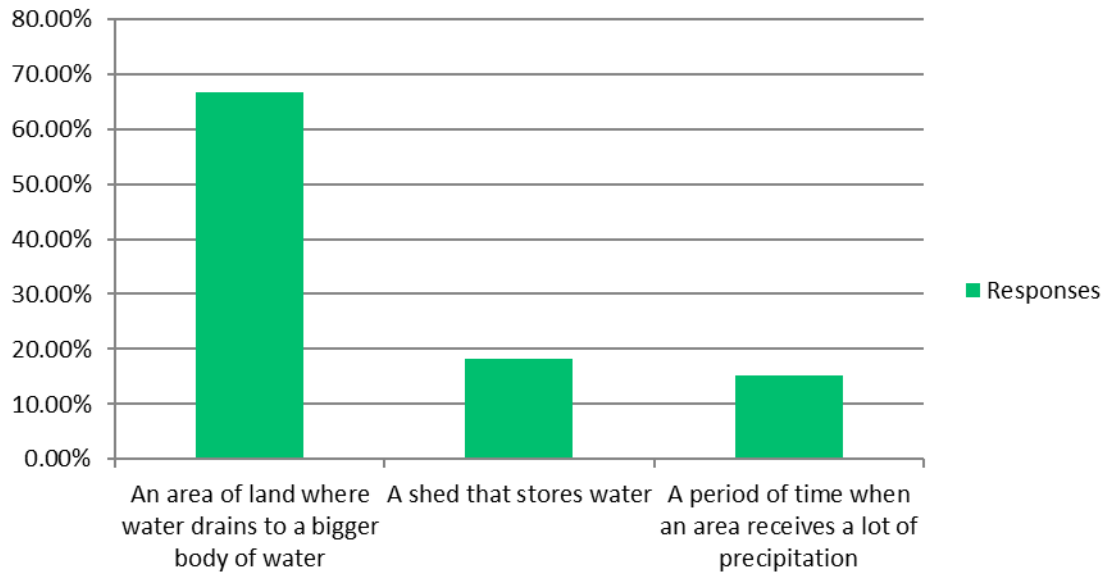
What is the difference between a reservoir and a lake?



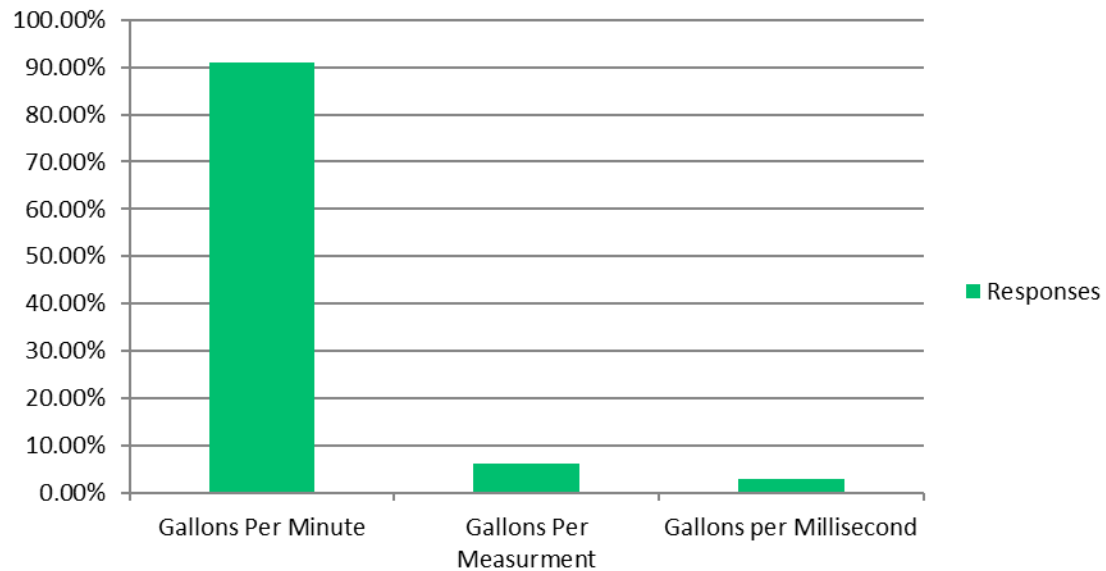
What is a drought?

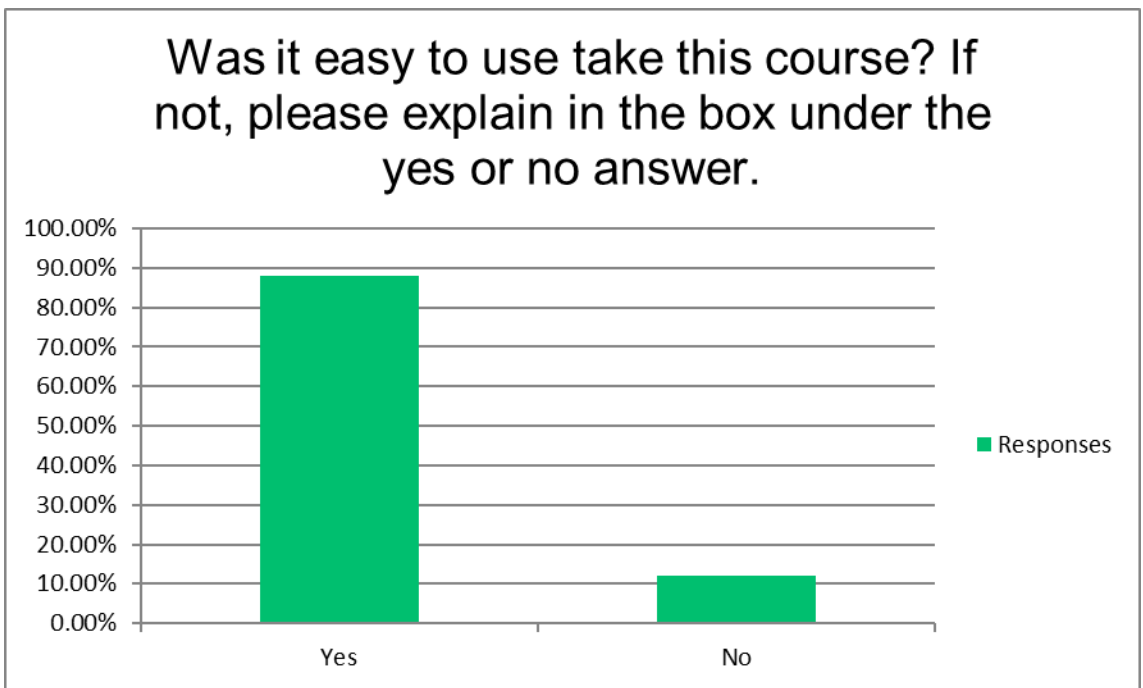
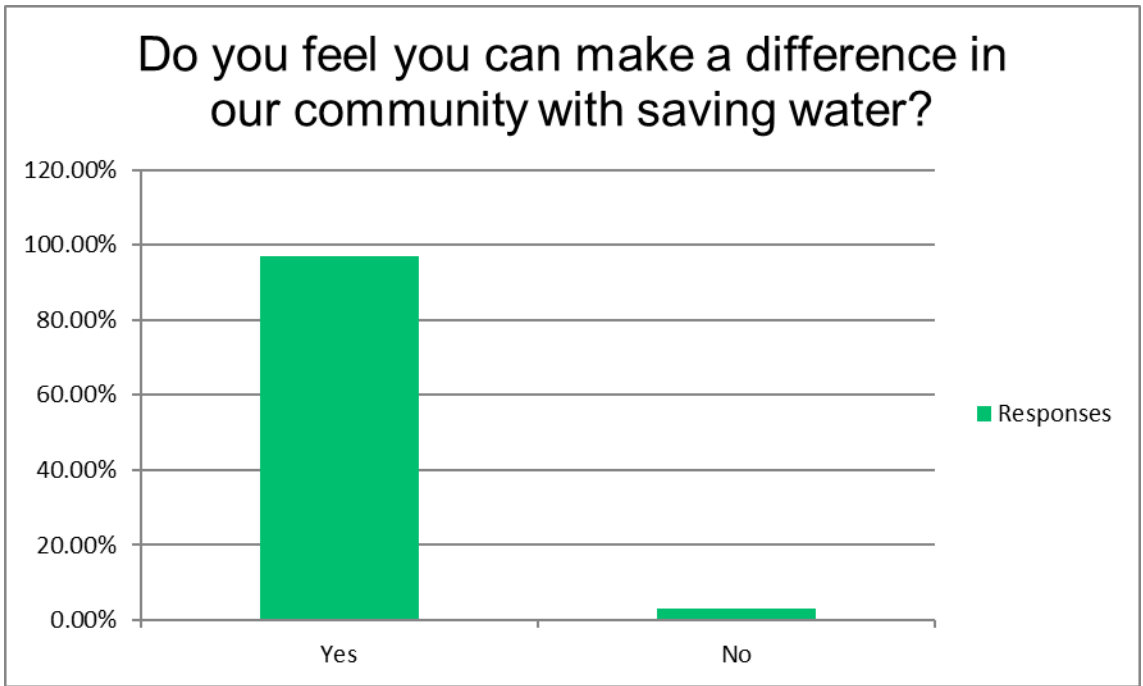


What is a watershed?



What does GPM stand for?

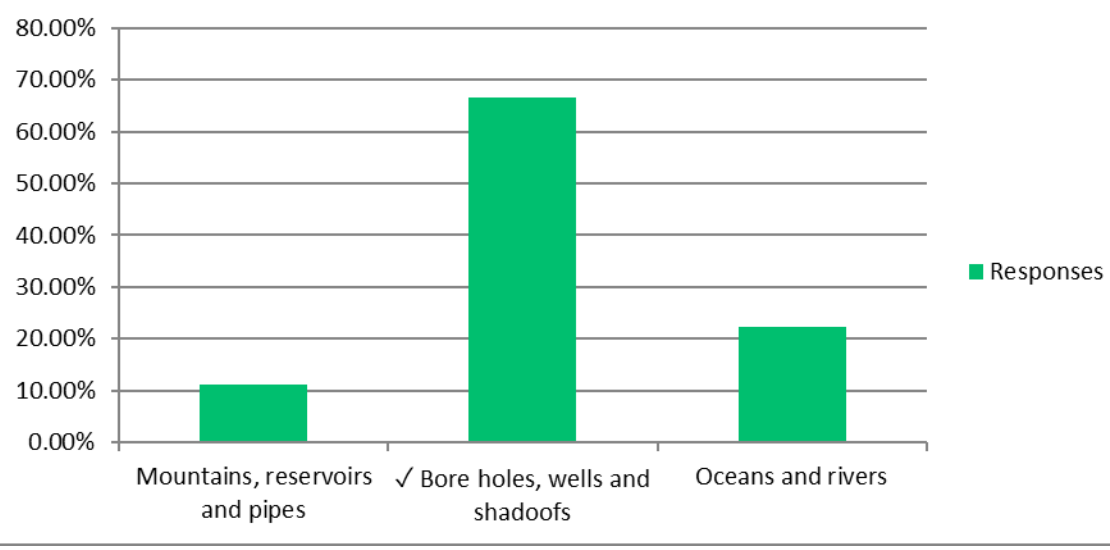




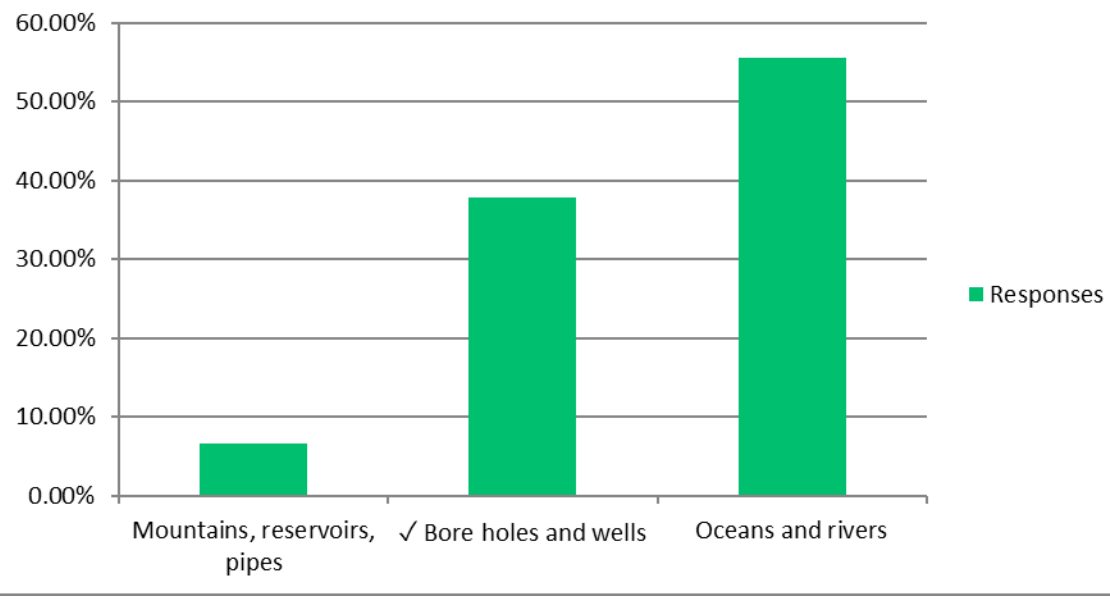
Water Around the World

100% of students were able to list three places where people around the world can get access to water. 100% of students could also list five ways they can conserve water.

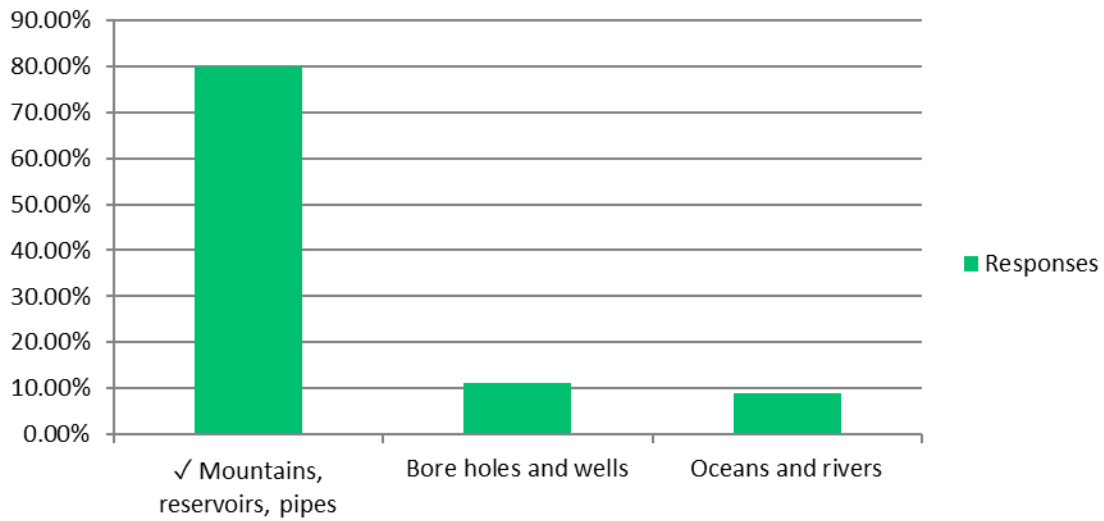
Where do people in Uganda get their water?



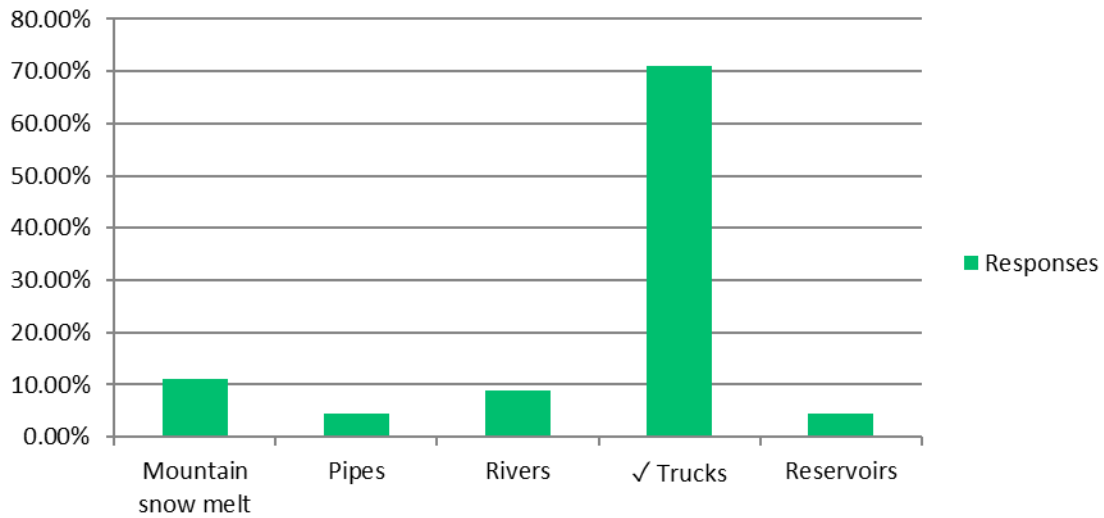
Where do people in India get their water?



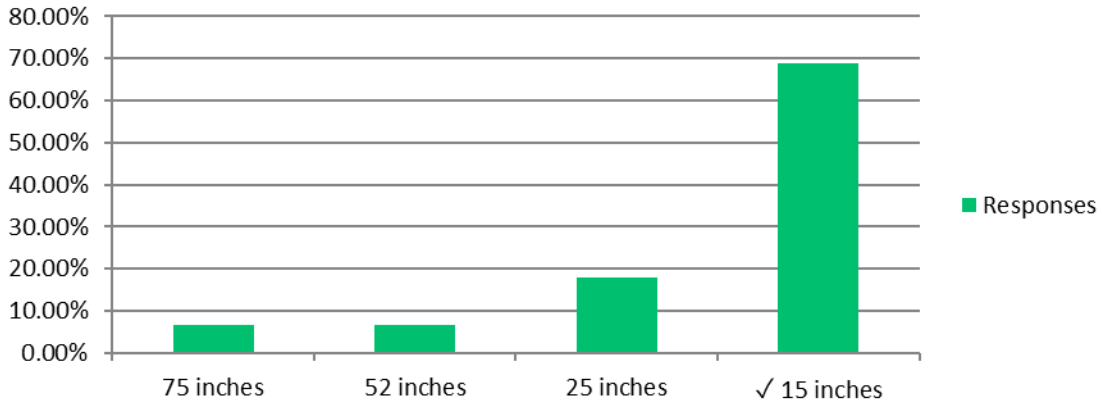
Where do people in Aurora get their water?



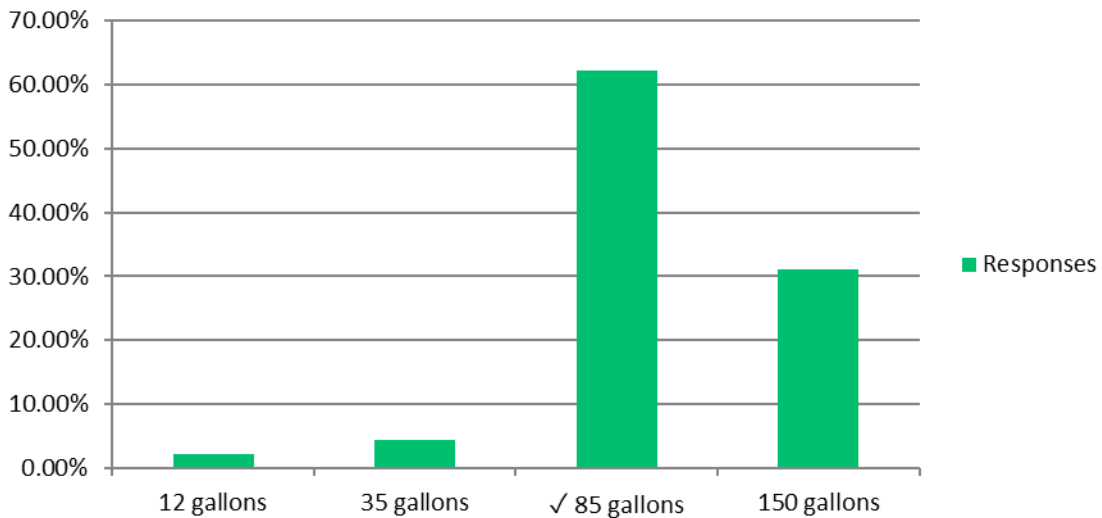
Which is not part of the process in Aurora to get water to homes and schools?



Uganda gets 52 inches of precipitation in a year and India gets 25 inches in a year. How much water does Aurora get in a year?

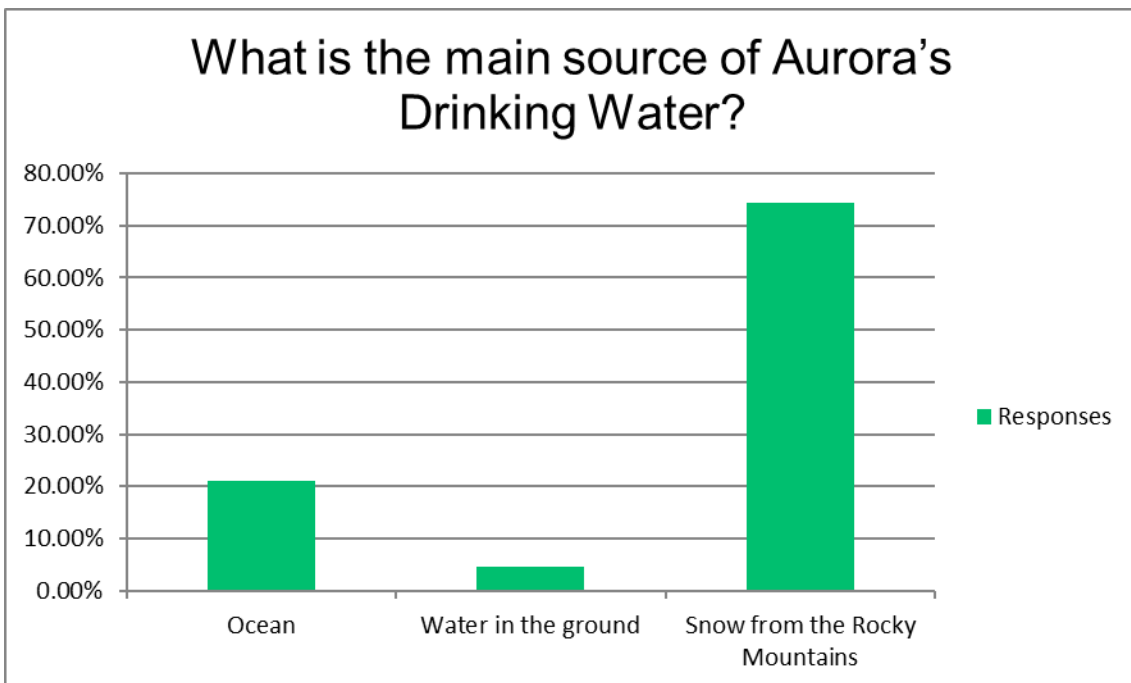
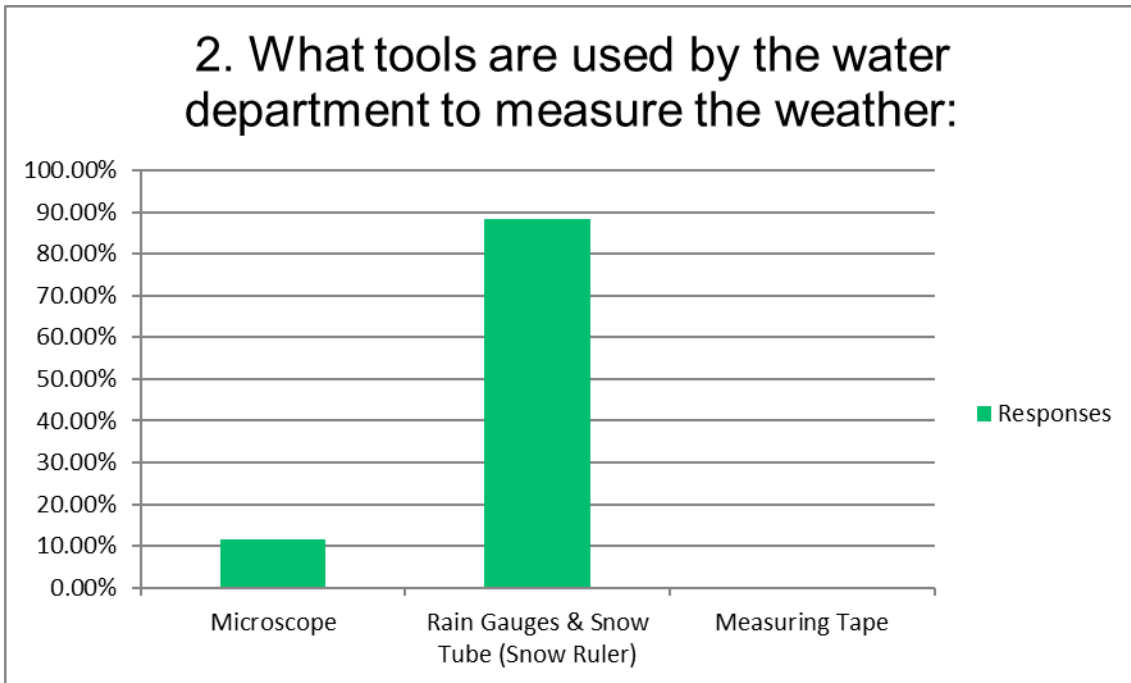


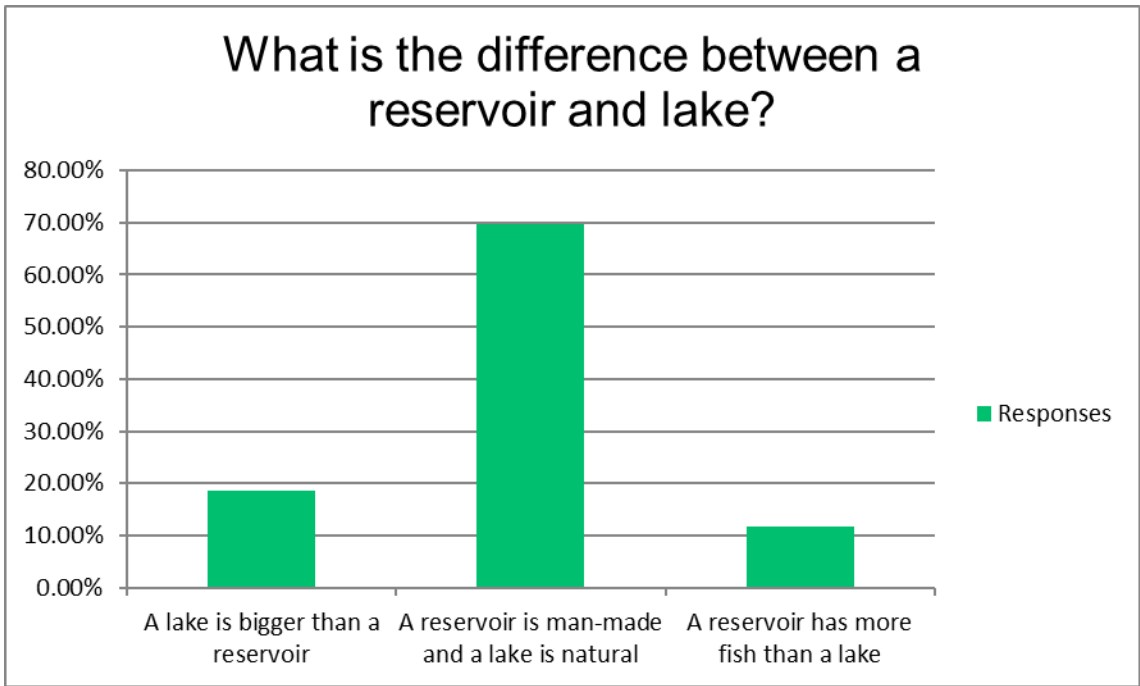
How much water do people in Aurora use on average in a day?



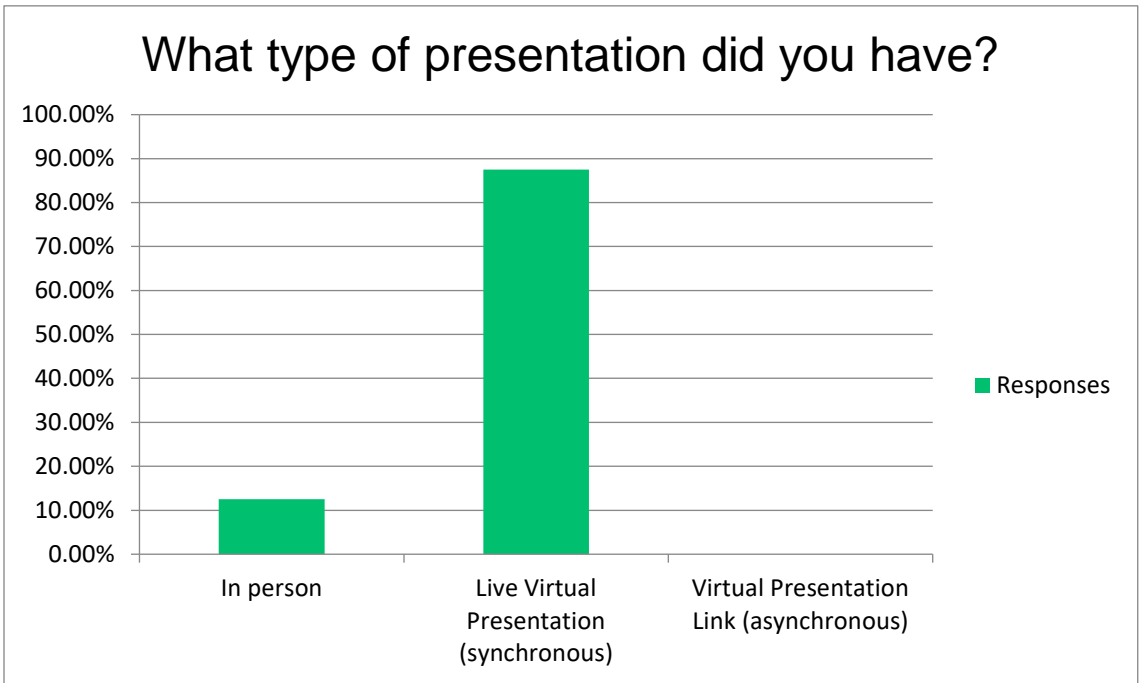
Water & Weather

100% of students could list something new they learned from the presentation and at least two ways to conserve water.

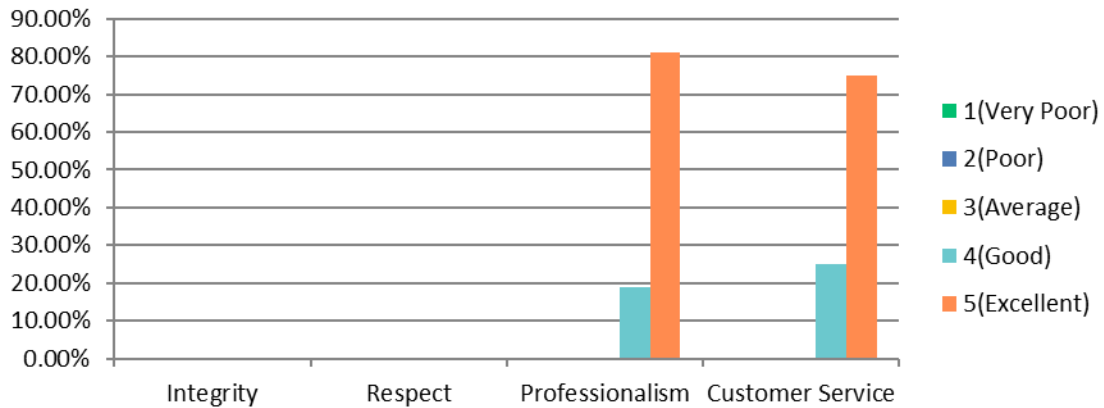




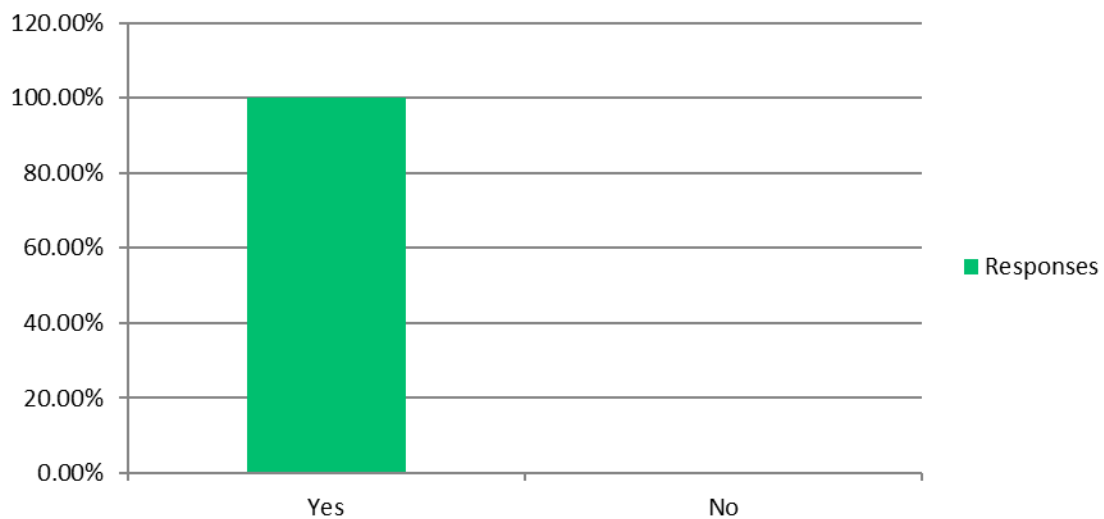
Appendix B: Teacher Survey Data- Youth Education Programs



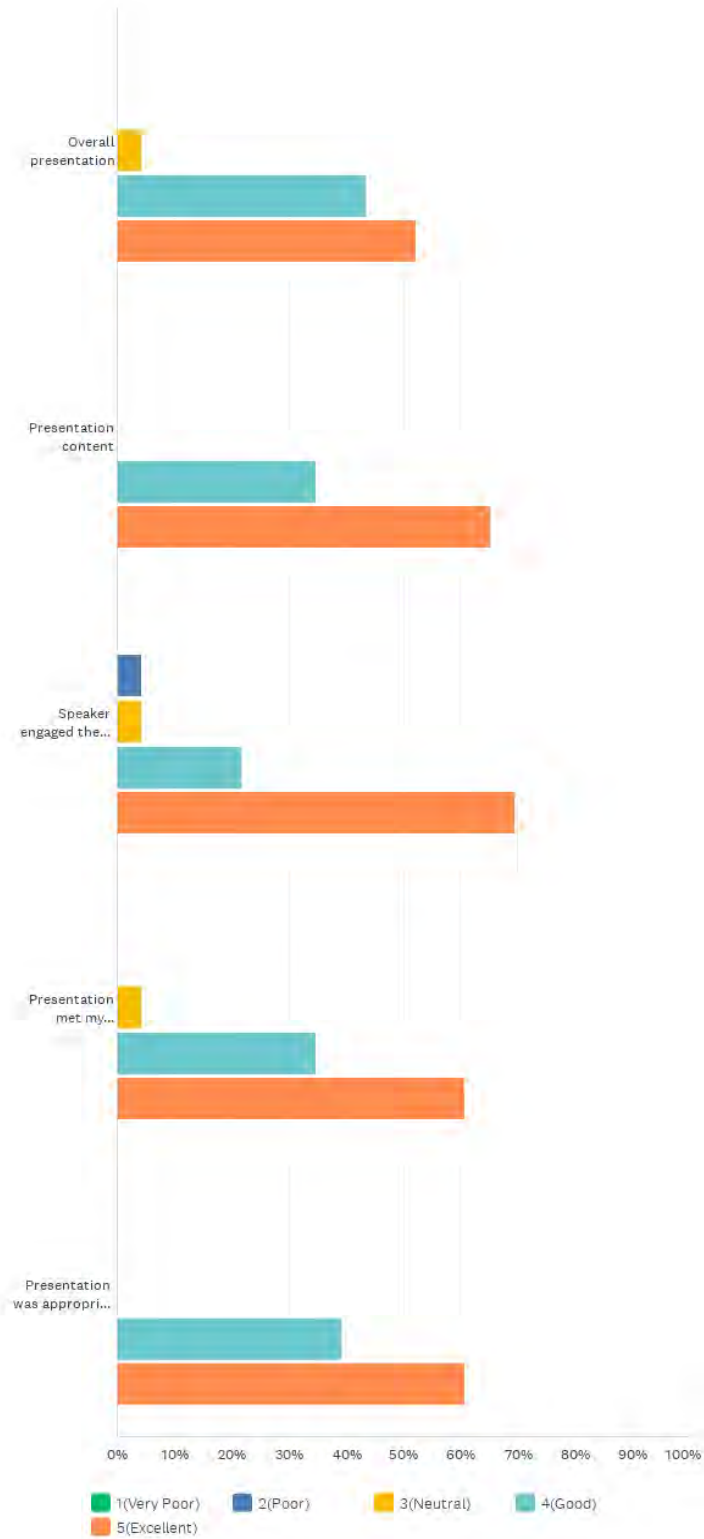
Please rate the Education representative on their professionalism and customer service on a scale of 1 to 5, with 1 being very poor and 5 being excellent.



Would you invite us to present in your classroom/school again?



Q6 Please rate the following on a scale of 1 to 5, with 1 being very poor and 5 being excellent.



Appendix C: Forests to Faucets 2022 Agenda and Evaluation

Forests to Faucets: Aurora's Water Resources

July 19-21, 2022

Morrison Nature Center at Star K Ranch
16002 E. Smith Rd., Aurora, CO 80011

Tuesday, July 19: Forested Headwaters *8:00-5:30 p.m.

8:00 am Meet at Morrison Nature Center - Registration
Aurora's Water Supply

Drive to mountains, Guest Speakers: Forest Fire History and Impacts on the Watershed. Hike, watershed activities and water quality monitoring

12:00 pm Lunch- Pine Valley Ranch Park

2:00 pm Hike in Trumbull Experimental Forest, water quality monitoring

5:30 pm Return to Morrison Nature Center at Star K Ranch

Wednesday, July 20: The Urban Watershed *8:00-5:00 p.m.

8:00 am Meet at Morrison Nature Center

Project WET/PLT - watershed and water pollution prevention activities

10:30 Tour – Binney Water Purification Facility

12:00 pm Picnic at Aurora Reservoir

Introduction to water quality monitoring and biological/physical/chemical assessments of Aurora Reservoir
Visit the Senac Nature Center at Aurora Reservoir

5:00 pm Return to Morrison Nature Center at Star K Ranch

Thursday, July 21: Aurora Water *8:00-5:00 p.m.

8:00 am Meet at Aurora Municipal Building – Aspen Room – 2nd Floor
PLT/Project WET: Water Conservation

9:45 am Tour of Sand Creek Wastewater Treatment Plant

11:15 Tour of Aurora Municipal Center Xeriscape garden

1:00 Lunch

2:00-3:00 Project WET/PLT-activities

3:30-5:00 Aurora Water's Education Resources
Colorado School of Mines paperwork, evaluation and wrap up

Forests to Faucets Evaluation Data

Participant Comments:

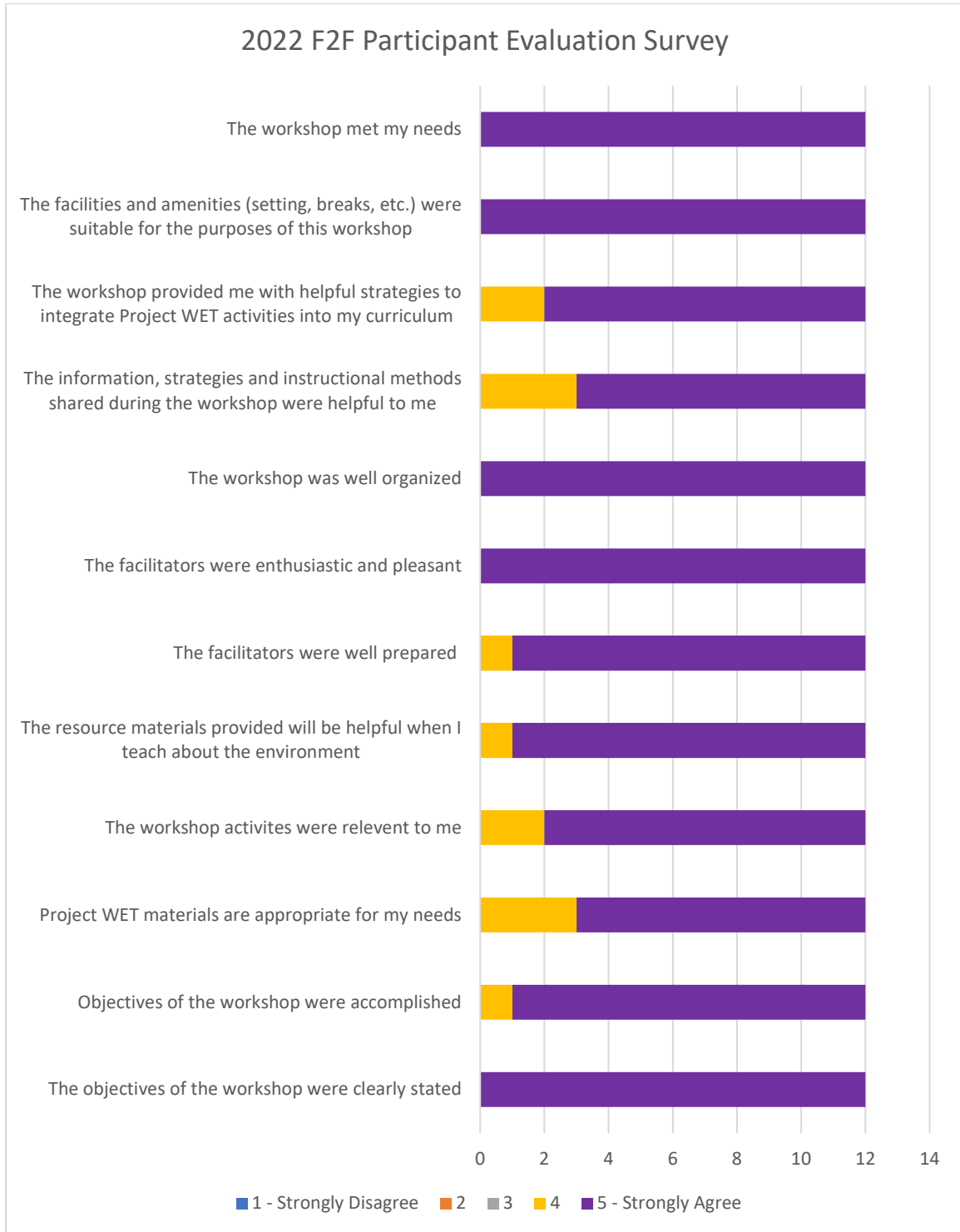
General Teacher Comments:

- "I loved learning about where the water I use at home comes from. In my 29 years of living I've never thought about this so I am excited to educate students."
- "Good resources and modeling by instructors."
- "Everything was fantastic."
- "This was wonderful ! So well organized and a great use of my time as a teacher and resident of Aurora!"
- "This workshop was very welcoming because the facilitators made sure of that. Answered all my questions."

The best features of this workshop were:

- "Hands-on!"
- "The games and competition."
- "The instructors."
- "The interactive activities, cheerful facilitators, and guides."
- "Great instructors!"
- "Engaging facilitators & enthusiastic participants."
- "Our trips to the mountains."
- "Hands-on experience, observation and instruction."
- "The diversity of the activities! I appreciated the book activity and the field trip opportunity."
- "The tours! It was so great to see first hand how our water is handled and just how far away it comes from!"
- "The games and how to facilitate them."
- "All of the fun activities and the food! The facilitators were hilarious!"
- "Hikes, activities, discussions"
- "Facilitators"
- "Hands-on activities"
- "Being outdoors, participating in the activities"

Forests to Faucets Participant Survey results:



Participant Pre/Post Test Results:

The following questions were asked prior to the workshop and at the completion:

1. In what watershed do you live?
2. Where does your drinking water come from?

3. How many inches of precipitation does Aurora receive annually?
4. What is non-point source pollution?
5. What percentage of water worldwide is available for human use?
6. How many inches of snow does it take to make one inch of water?
7. What percentage of Aurora's water comes from groundwater?
8. What percentage of our bodies is made up of water?
9. What percentage of Colorado's water goes toward agriculture?
10. What is one way you currently conserve water at home?

100% of the teachers improved their water knowledge from the pre-test to the post test.

Pre-Test Average Score: 76%

Post-Test Average Score: 99%

Appendix D: Forests to Faucets II 2022 Agenda and Evaluation

Forests to Faucets II Agenda

Introductions / Goals of workshop – VIVIANA 20 min	8-820
Transition to get bikes /Complete Waivers – JOY 10 min	820-830
Bike Ride/ Reservoir, History Talk & Picture Game JOY & VIVIANA - 50 min Alternative: Teachers will walk to and learn about Aurora Reservoir retention ponds/ History Talk- NATALIE	830-920
Break	920-930
James DeHerrera / Aurora Water/ Water resources & wastewater	930-1030
1. River Crossing / Project WET Pg. 487 / NATALIE	1030-11
2. 8-4-1, One for All / Project WET Pg. 299 – WET Guide Pg. 24 VIVIANA	11-1130
Adrienne Sedlak / CSU Spur / Campus info	1130-12
LUNCH	12-1230
3. Super Sleuths / WET Guide Pg.17 / JOY	1230-1
Brandi Honeycutt – Colorado Dept. of Public Health / Gray water & re-use	1-2
4. Climate Change Talk - MARY	2-230
BREAK	230-240
5. Hangin' Together / Project WET Pg. 19 MARY	240-3
6. Boreal Forest / WET Guide Pg. 34 - JOY	3-330
7. Watershed Snack / VIVIANA	330-4
Climate change – innovations, current projects, to do's - VIVIANA	4-430
Wrap up – CSW credit info, issue certificates, return checks, assign hw - VIVIANA	430-5

Forests to Faucets II Evaluation

Participant Comments:

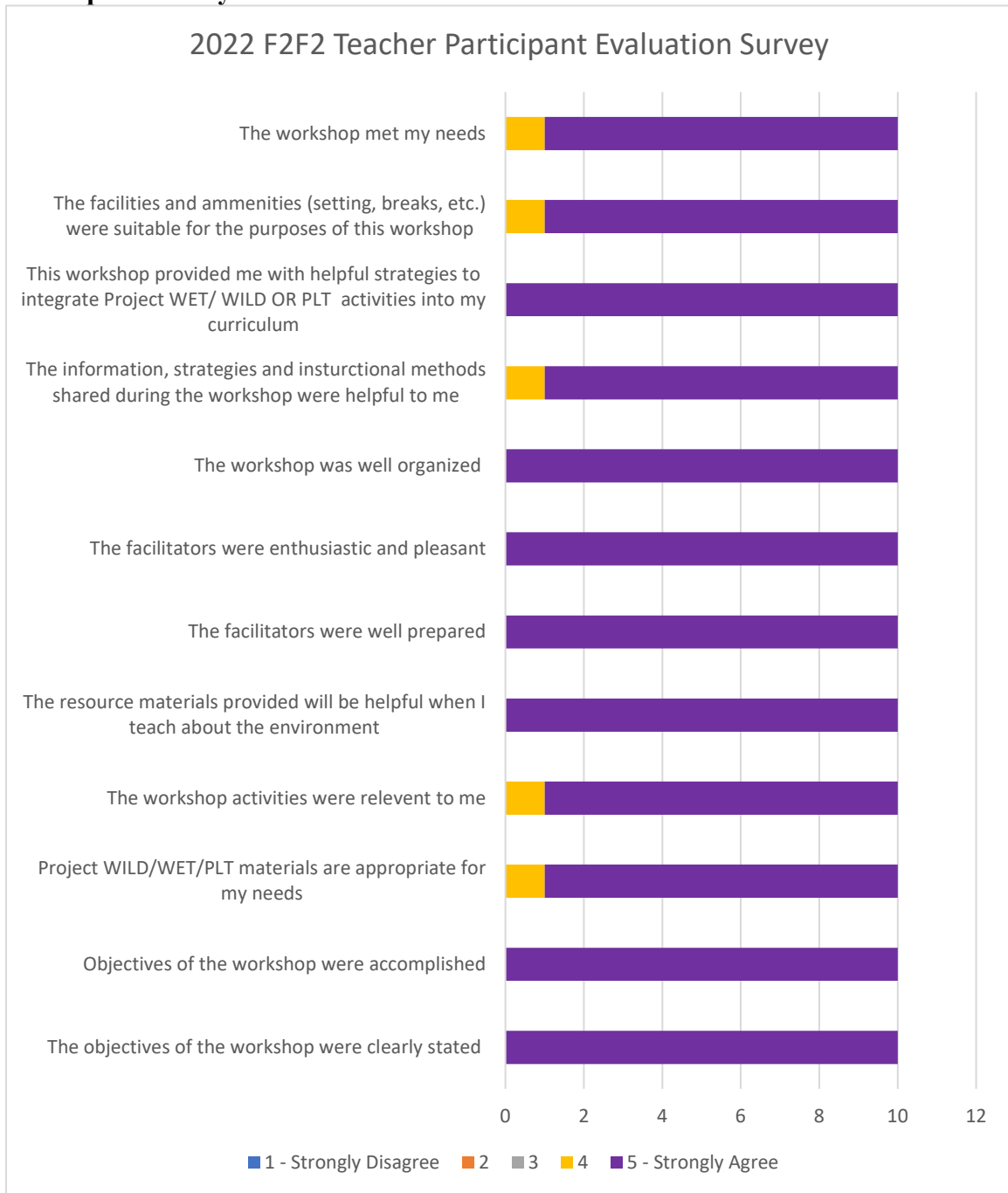
General Teacher Comments:

- “Material provided are great. “
- “It was a blast learning about our water resources.”
- “Overall very good!”
- “Engaging facilitators and relevant materials.”
- “Great resources.”
- “Well organized.”
- “Great workshop.”
- “All of the activities and professional speakers info will be used directly and indirectly with all content areas.
- “I loved the bike ride! I appreciated the range of activities – excellent breadth.”
- “Wonderful – well organized, easy to use.” ”

The best features of this workshop were:

- “Everything!”
- “Learning about the different programs offered to students”
- “Interactivity with activities.”
- “The instructors – great group.”
- “The facilitators and being outside.”
- “Great info from speakers/presenters.”
- “The flow between the professional speakers and applicable activities.”
- “Bike ride, participating in activities.”

Participant Survey results:



**Appendix E: Aurora Public Schools 5th Grade Teacher Workshop 2022
Agenda and Evaluation**

**APS 5th Grade Teacher Water Workshop
Where Do We Get Clean Water?**

August 1-2, 2022

Aurora Municipal Center
Aurora Room- 1st Floor
15151 E. Alameda Pkwy.
Aurora, CO 80012

**Monday, August 1: What Happens When Water Goes Down the Drain?
8:00-5:00 p.m.**

7:00-8:00:

- o Ice for drinks from AMC Ice machines
- o Ice Drinks and Lunch Food in Coolers
- o Set out breakfast snacks- granola bars etc.
- o Elani to deliver pastries & coffee- 7:30 a.m.
- o Tables set up
- o Check In/Registration list & Name tags
- o Tote Bags with: Pens/Sticky Notes/Gifts/Water Bottles/Orange Notebooks/Agenda
- o Pre-test (Sherry?)
- o Orange Aurora Water Notebooks-Water Journals
- o Set up Computer/Projector for Water Unit Storyline & Wipes in the Pipes video
- o Objectives on Flip Chart Paper
- o Sticky notes for books

8:00 am Meet at Aurora Municipal Building- Aurora Room- 1st Floor
-Breakfast Snacks & Coffee- From City Cafe
-Registration/Nametags/
Natalie-Introductions, Name Game Ice Breaker
-Water Unit Story Line
-Wipes in the Pipes Video

8:30-9:00 **All-** Load Van & Drive to Central

LESSON 1- How do we clean dirty stuff/water?

LESSON 2- Where does all the waste that goes down the drain go?

9:00-9:30 Tour- Aurora Water Central Facilities
-Tools of the Trade- Aurora's Wastewater Team Demo
Peter Gonzales & Kirk Skogen

9:30-10:00 -Meter Shop
Ben Sentanda & Jose Velazquez Barron

10:00 Load Van & Drive to Metro

Robert W. Hite Treatment Facility
6450 York Street, Denver, CO, 80229
303-286-3000

***LESSON 6- Does the wastewater treatment plant filter out the particles?
LESSON 7- Where does the water from the wastewater treatment plant go?***

10:30-12:00 Tour of Metro Water Recovery
(Please Bring ID & wear closed toe shoes)
Colleen Miller, Office: 303-286-3184, Cell: 720-215-0352
-Wastewater Treatment

12:00-12:30 Load Van & Drive to AMC

12:30-1:30 Lunch at Aurora Municipal Center - Qdoba

1:30-2:00 **Natalie-** Introduce Project WET Guide, History, Code for Portal
Project WET Hike the Guide Activity

LESSON 3-5- Dirty Mixtures, Dissolving Mixtures

2:00-3:00 **Mary-** H2O Olympics- Event 1, 2, 5?

Mary- Molecules in Motion p. 33

Mary- Hangin' Together p. 19- Part III Charades Game

3:00-3:15 Break

2:45-3:30 **Sherry-** Is there Water on Zork?

LESSON 10- How much of Earth's water is salty?

3:45-4:00 **Sherry-** Drop in the Bucket

LESSON 8- How does water flow and where does it go once it's in the river?

3:45-5:00 **Natalie-** Seeing Watersheds p. 187 with Coloring Sheets
Legend of the Divide Maps/Sticker Activity
Relate to AW Watershed maps

Other cool tools:

Project WET Interactives@ discoverwater.org

<https://www.discoverwater.org/explore-watersheds/>

How's My Waterway? <https://www.epa.gov/waterdata/hows-my-waterway>

**Tuesday, August 2: Where Do People Get Their Drinking Water From?
8:00-5:00 p.m.**

7:00-8:00:

- Ice for drinks from AMC Ice machines
- Set out breakfast snacks- granola bars etc.
- Elani to deliver burritos & coffee- 7:30 a.m.
- Check In/Registration list & Name tags
- Set up Computer/Projector for Aurora's Water Ed Resources Presentations
- Objectives on Flip Chart Paper
- Activity List

8:00 am Meet at Aurora Municipal Building- Aurora Room- 1st Floor
-Breakfast Snacks & Coffee- Burritos from City Cafe

8:10-8:20 **Natalie-** My Watershed wrap up w/ Large Supply Floor Map

LESSON 12- Where do people get their drinking water from?

8:20-8:45 **Natalie** -Facts Behind the Faucet- Aurora's Water Supply w/
Storymap

8:45-9:30 **All-** Load van and drive to Strontia

9:30-12:00 Tour – Strontia Springs Dam & Reservoir, Aurora Rampart
Reservoir

12:00-12:45 Picnic Lunch at Sharptail Ridge Open Space

12:45-1:30 Drive to Wemlinger

1:30-3:00 Tour- Wemlinger Water Treatment Facility & Lab

3:00-3:30 Drive to AMC

3:30-4:00 pm **Viviana-** Reaching Your Limits p. 371- Part II Limbo game

LESSON 22- What happens to water that becomes storm drain runoff?

4:00-4:30 pm **Natalie-**
Aurora Water Environmental Education & Outreach Resources for
5th grade-

***LESSON 23- What are some problems we've identified in answering our
driving questions?***

LESSON 24- How can we design solutions to water-related problems?

4:15-4:30 **Viviana-** Action Project Ideas Presentation

4:30-5:00 p.m. **Natalie-** Workshop Paperwork

Participant Comments:

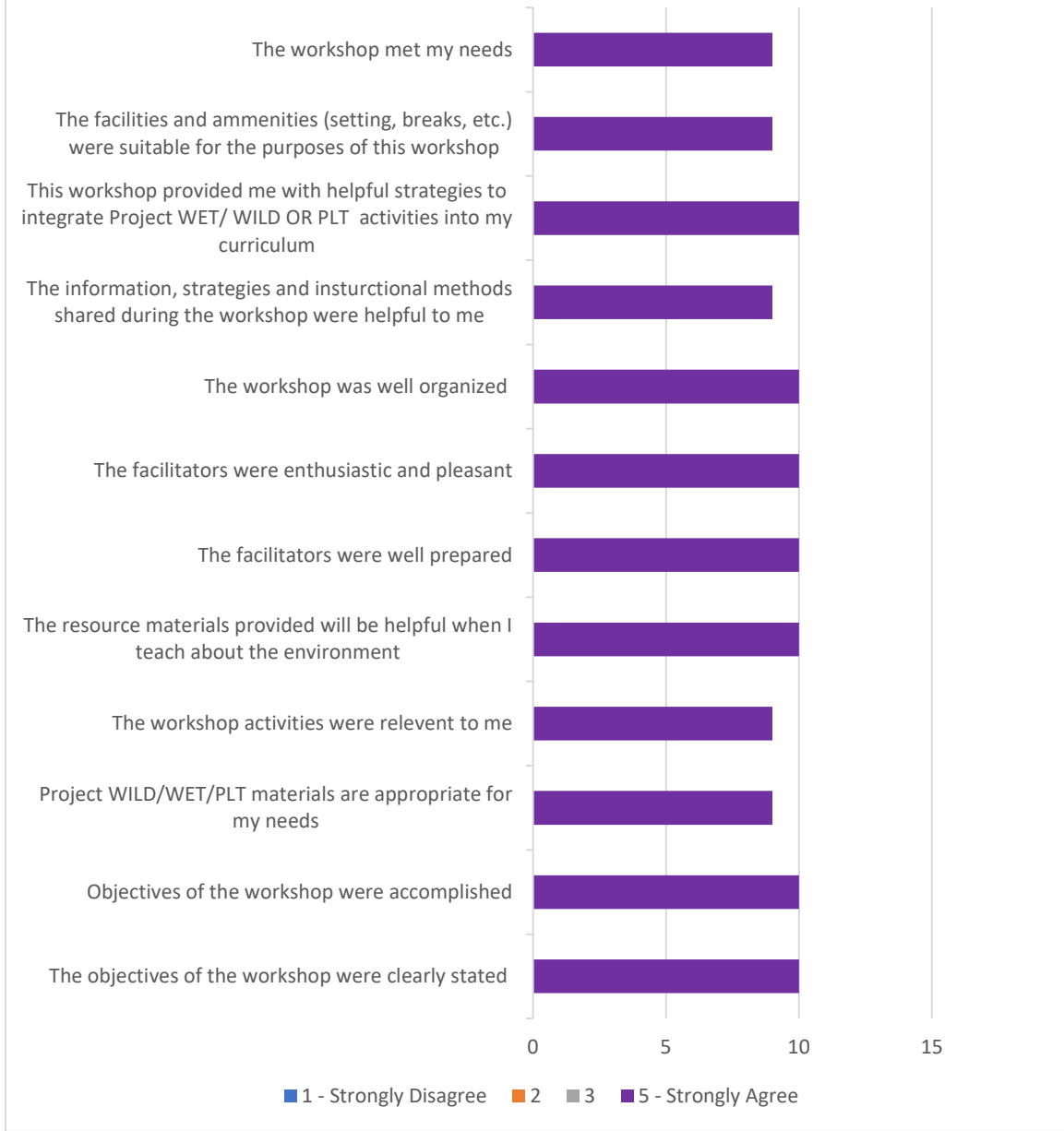
General Teacher Comments:

- “Facilitators were engaged and committed to their jobs.”
- “Thank you- this was great!”
- “The activity book is great and it seems to use everyday objects.”
- “Great ideas, good info, helped my content knowledge.”
- “Very hands-on, engaging and knowledgeable.”

The best features of this workshop were:

- “The experiments and the tours.”
- “On site visits- Waterton Canyon!”
- “Field trips and talking with other teachers.”

2022 APS 5th Grade Teacher Workshop Participant Evaluation Survey



Education & Outreach Program Update

2021-2022 School Year
CWAC 10.11.2022

Natalie Brower-Kirton

Environmental Education and Outreach Program Manager



1

Environmental Education and Outreach

Mission: *To provide consistent, creative and impactful education and outreach programs that promote water literacy, water conservation, water pollution prevention, careers in water and water stewardship in Aurora.*

Driving Excellence

- We drive the excellence of Environmental Education in Colorado creating programs that impact behavior change.

Fostering Collaboration

- We foster water education in Aurora through professional affiliations, partnerships and collaborative projects both internally, within other City of Aurora Departments and with external organizations

Educating the Community

- We educate the community on multiple aspects of water at all levels through programs that lead to the efficient use and protection of water.



2



The Aurora Water Environmental Education and Outreach Team was honored to receive the 2021 Project WET Educator of the Year Award.

- Each of our team members are trained Project WET facilitators
- Over thirty years of combined experience using Project WET materials
- Programs and presentations all contain Project WET lessons and activities
- Facilitate annual Forests to Faucets Teacher workshops in which teachers learn how to use Project WET activities



Project WET is dedicated to solving critical environmental challenges by teaching the world about water. They providing hands-on, science-based water education curriculum and resources to formal and non-formal educators around the world



3

STATEWIDE WATER EDUCATION ACTION PLAN (SWEAP)

"Colorado's first statewide education action plan designed to support the Water Plan's goal of sustainable water by 2050."



SCOTT WILLIAMSON Education Programs Manager
Water Education Colorado



4



WHY SWEAP?

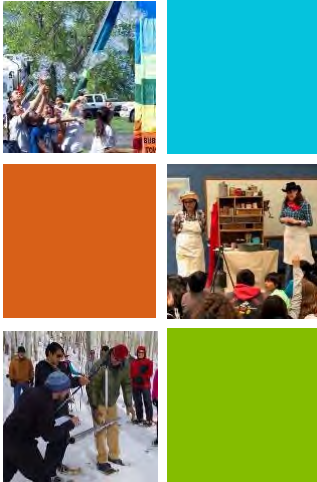
The Colorado Water Plan and the Water Educator Network called for a common vision for water education.

Colorado Water Plan

Chapter 9.5: Outreach, Education and Public Engagement

"To expand outreach and education efforts that engage the public to promote well-informed community discourse and decision making regarding balanced water solutions."

Empower Coloradans to take an active role in their communities and make informed decisions about critical water issues.



5



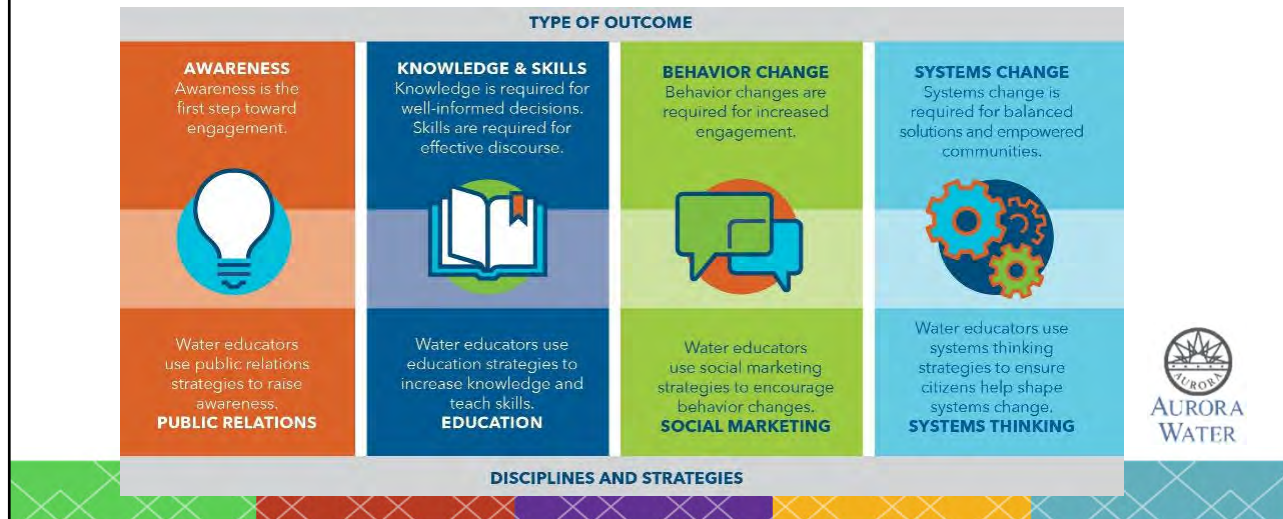
- A Water Education Guide for Colorado
- Plan for reaching the “Outreach, Education and Public Engagement” goals of the Colorado Water Plan – Sustainable Water 2050
- Aurora Water
 2019-Core Collaborator in the creation of the Plan
 2020-Endorsed
 2021-Committees to evaluate and implement
 2022-Comments on CO Water Plan Revisions related to Water Education
- Programming that supports the plan



6

EDUCATION CONTINUUM

Types of SWEAP outcomes and related disciplines...



7

SWEAP Outcomes



Statewide Water Education Action Plan Outcomes

1. The proportion of Coloradans in each river basin who can identify how water supports their quality of life, as well as the threats to and potential solutions for a sustainable water supply, increases.	2. The proportion of Coloradans in each river basin who can articulate at least three "Critical Water Concepts" increases.	3. The proportion of Coloradans in each river basin who report confidence in having the knowledge necessary to take an active role in water stewardship in their community increases.	4. The proportion of Coloradans in each river basin who report confidence in having the skills necessary to take an active role in water stewardship in their community increases.	5. Participation in community discourse and decision processes about water at the state, regional and local levels increases.	6. Voters have access to factual information that addresses potential impacts to sustainable water resources in relevant issue areas.	7. The proportion of Coloradans in each river basin that are demonstrating sustainable water behaviors increases.	8. Where relevant, local and state policies and practices are supportive of advancing statewide water literacy.	9. Where relevant, local and state policies, regulations, and practices demonstrate a consideration of impacts on sustainable water resources.	10. Water decision-making bodies are increasingly representative of the demographic make-up of the area they serve.
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More details on draft metrics for each outcome can be found on the SWEAP [website](#) under "Measuring Success".




8

Aurora Water EE&O Programs & SWEAP Outcomes



Aurora Water Environmental Education & Outreach (EE&O)	Statewide Water Education Action Plan Outcomes Alignment									
	Awareness	Critical Water Concepts	Knowledge	Skills	Participation	Water access to information	Sustainable Water Behaviors	Water literacy policy and practice	Policies considers water	Representation
	1	2	3	4	5	6	7	8	9	10
Driving Excellence in Water Education										
Aurora Public Schools 5 th Grade Water Unit	✓	✓	✓	✓	✓					
Classroom Presentations, School Assemblies & Field Trips	✓	✓	✓	✓	✓					
MSU Theatre Project	✓	✓								
H2O Outdoors	✓	✓	✓	✓	✓	✓	✓	✓		
Trumbull Experimental Forest- Outdoor Watershed Classroom	✓	✓			✓			✓	✓	✓
Creating and Informed Community - Collaborating to Create Behavior Change										
Outreach & Events	✓									
In person and Online Conservation Courses	✓	✓	✓	✓			✓			
Pipeline: Careers in Water Program	✓	✓	✓	✓	✓		✓			✓
Professional Development- Teacher Workshops	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
Aurora Water Course (Coming Soon!)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓


9



WATER22

It All Starts Here

It Connects Us
Celebrating the value of water and how it connects all Coloradans, upstream and downstream, past, present and future.



Aurora Water


Aurora Water APS 5th Grade Teacher Workshop
How Do We Get Clean Water?

This workshop is designed specifically to provide you with the background and knowledge to teach the APS 5th Grade Water Unit, "How Do We Get Clean Water?" Discover exciting information about water from the perspective of customers and what happens when it goes down the drain.

When: Monday, August 1, 2022 8:30 AM - 1:00 PM
By: Tuesday, August 2, 2022 at 1:00 PM MDT
Field Location:

Where: Aurora Municipal Center
10101 E. Ilwaco Place

It Connects Us
Celebrating the value of water and how it connects all Coloradans, upstream and downstream, past, present and future.




Aurora Water

Forests to Faucets Two
Teacher Workshop
July 26, 2022

A COMMUNITY EDUCATION PROJECT WITH OVERSIGHT FROM THE AURORA FORESTERS

When: Thursday, July 28, 2022 from 8:00 AM to 5:00 PM MDT
Field Location:

Where: Aurora Reserve - Sunset Creek Nature Center
2700 S. Yukon Blvd



AURORA WATER

10



EE&O Programs

Youth Education


Professional Development Workshops
for Teachers

Community Education & Outreach

Future Projects

AMPLIFY WATER EDUCATION

AuroraGov.org/H20Education
watereducation@auroragov.org



AURORA
WATER



11



Youth Education

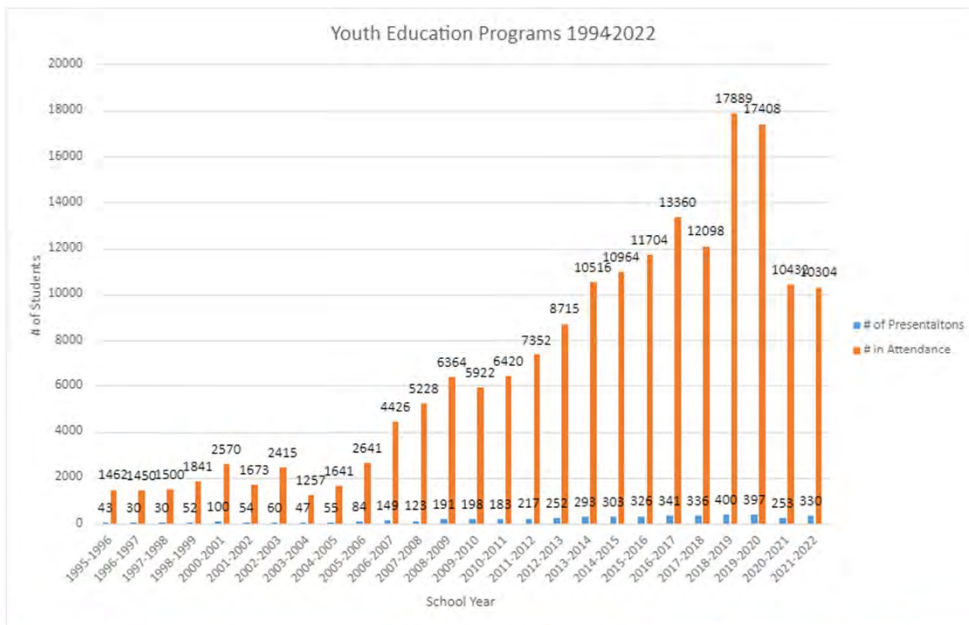
12

Youth Education Programs

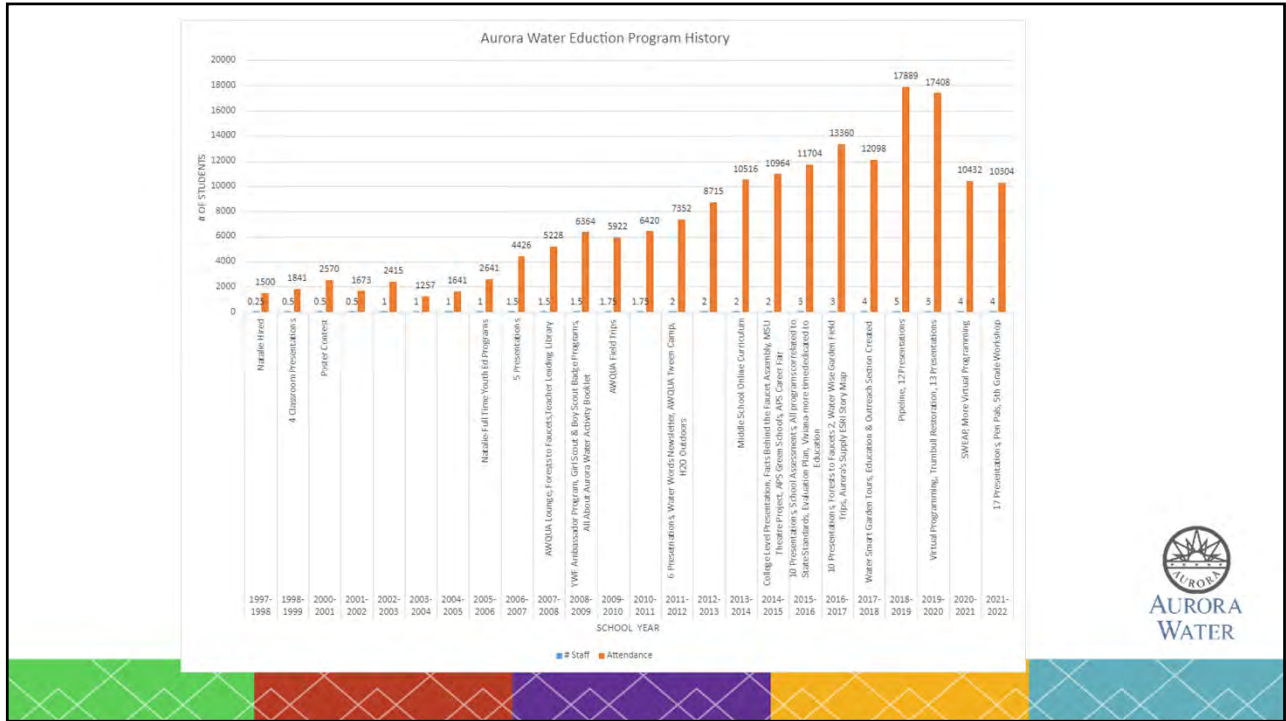
- Classroom Presentations
- Assembly Presentations
- Pipeline-Careers in Water
- Field Trips
- Teacher Resource Library
- APS 5th Grade Water Unit
- Leaders as Readers



13



14



15

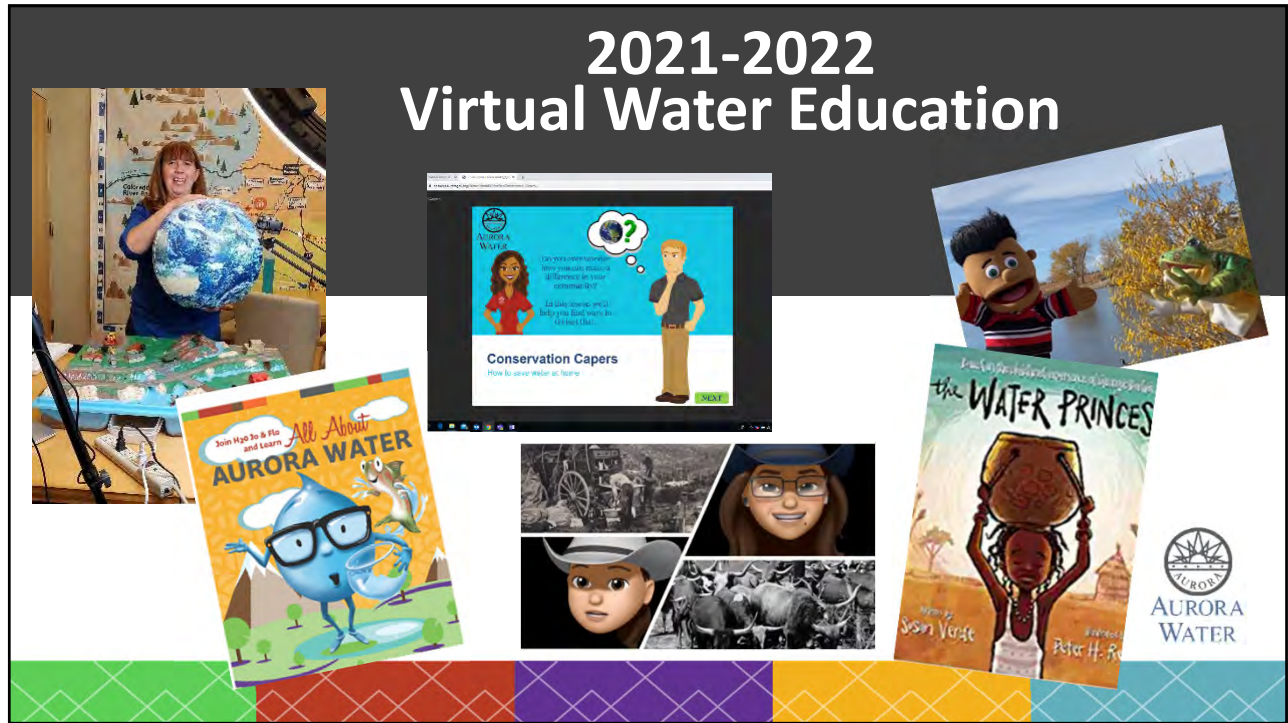


Classroom Presentations



16

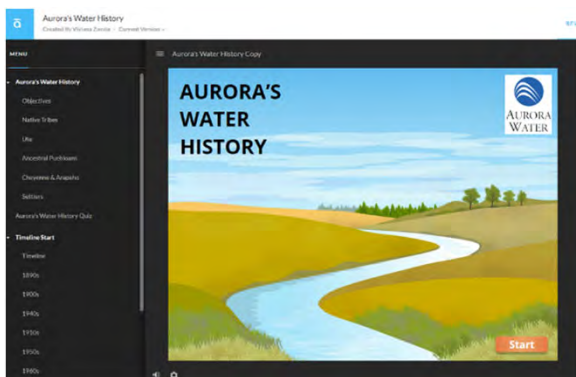
2021-2022 Virtual Water Education



17

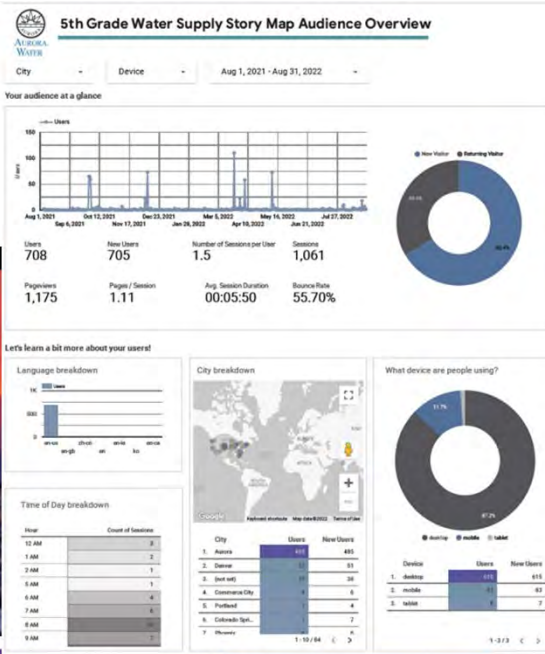
New Virtual Presentations

- Aurora's Water History Online Course
- Water Around the World Virtual Presentation



18

Virtual Water Supply Tour New Data



19

New!

WATERSHED PEN PALS

Connecting through Water



NOW, YOU WILL WRITE A LETTER TO A 5TH GRADER ACROSS THE STATE!

Theme: What is your favorite way to use water?



20

Classroom Presentations 2021-2022

Presentation/(Grade)	Total Number of Presentations	Students in Attendance
If I was a Fish (P-1 st)	26	872
Storytime with Aurora Water (P-2)	11	288
Sunny Takes a Walk on the Water Side (Pre-K)	16	432
Water Heroes (1-3)	21	806
Incredible Journey (1-5)	12	300
Water & Weather (2)	37	1,226
Conservation Capers (3-8)	19	462
Water: Keep it Clean (3-8)	23	678
We All Live Downstream (5-8)	5	125
Water Pen Pals (5)	1	203
Water Around the World (5-6)	31	654
Conservation Challenge (6-8)	5	300
Careers in Water (6-12)	16	390
Muck Up- Clean Up (9-12)	4	100
Climate Change & Water (9-12)	21	940
Total:	248	7,776



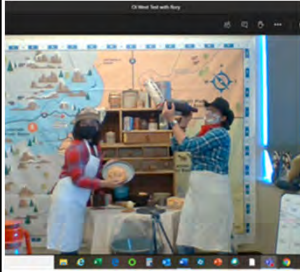
21



School Assemblies

22

Virtual & In Person School Assemblies 2021-2022



Assembly	Total Number of Assemblies	Students in Attendance
Water in the Ol' West	4	335
Sunny Takes a Walk on the Water Side Puppet Show Assembly NEW!	1	30
Facts Behind the Faucet	17	1,080
Total:	22	1,445



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Work for Water

Great Careers for a Great Cause

WorkforWater.org

Presented in collaboration with:
American Water Works Association
The Authoritative Resource on Safe Water®

Pipeline: Careers in Water

24



Field Trips

Aurora Reservoir



25



Aurora Youth Water Festival & Virtual Festival 2022

26

Virtual Youth Water Festival



8 schools

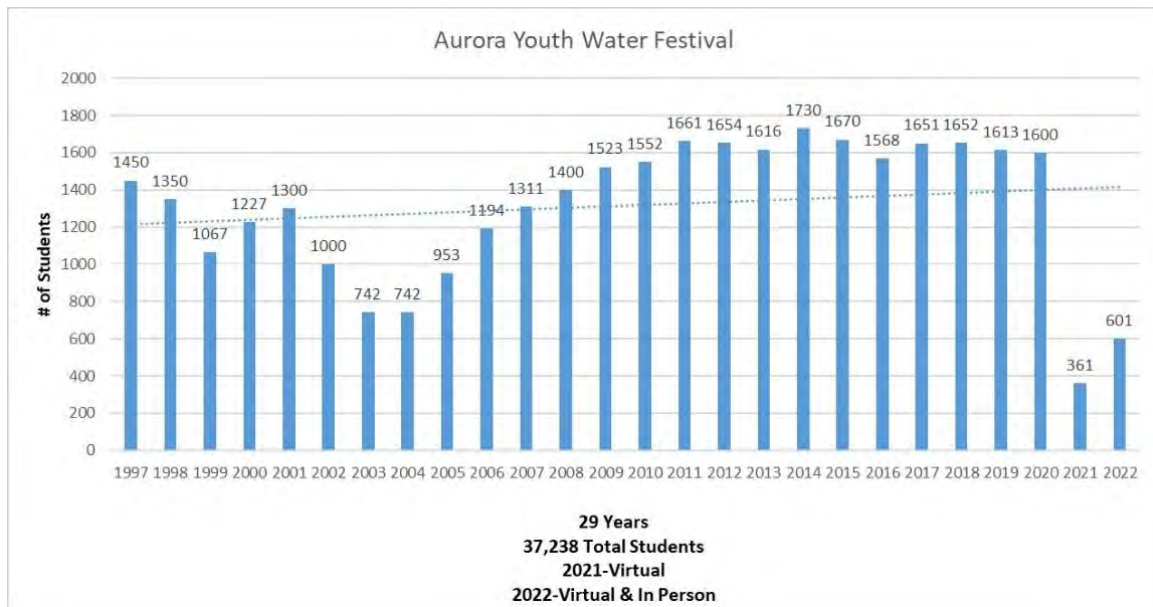
9 teachers

251 students

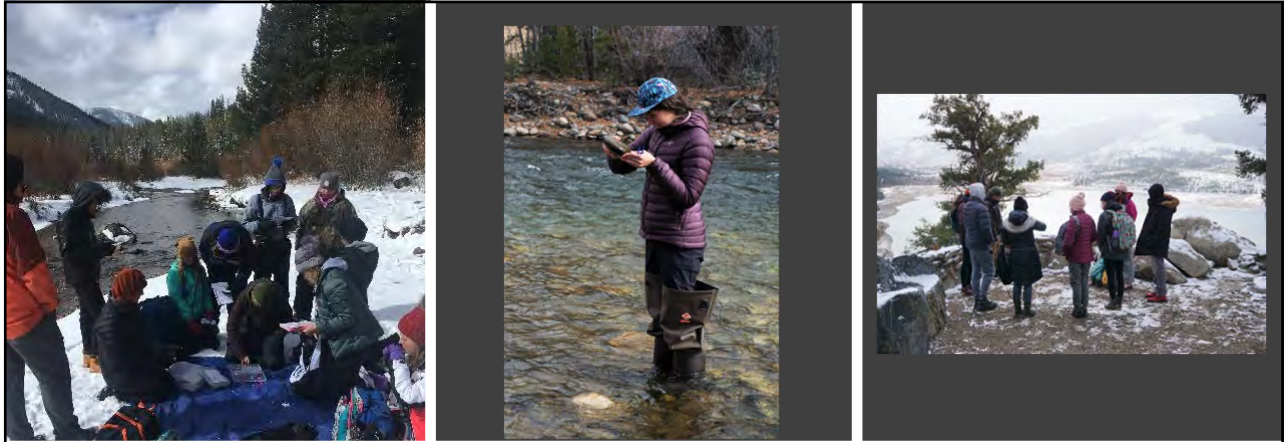
1330 surveys received



27



28



H2O Outdoors

29

Field Trips 2021-2022

Field Trip	# of Presentations	# of Students
H2O Outdoors Water Camp (High School)	7	119
Water Festival Virtual	10	251
Water Festival	10	350



30



Teacher Resources

- Teacher Resource Library
- APS 5th Grade Water Unit
- Leaders as Readers

Water Unit
Where does our clean water come from and where does it go once we make it dirty?

Three types of Lessons in our framework - [Exit Ticket Lesson](#) - [Student Sense Making](#) - [Preview for Examinations](#)

This unit was developed at Northwestern University through the [NGSS Storylines Project](#). To familiarize yourself with the Storyline structure, please review the [Storylines Teacher Handbook](#).

Lesson & Routine	Guiding Question	What we are doing now	What we Figure out	Teacher/ Student Pages	Aurora Water Connection
<p>Lesson 1 Cleaning dirty stuff 1-2 days</p> 	How do we Clean Dirty Stuff?	Students develop initial models showing where water and anything that is dirty goes once it enters a drain in their house and where the water coming out of the faucet comes from. After a consensus building discussion the class develops a consensus model of this system that led them to realize that there is still much that is unknown about where water goes, suggesting possible investigations to determine water's path once in the drain.	There are many things we see water for in our house and this dirty water is dumped down the sink and goes into pipes. We have lots of contact and ideas. An investigation we could pursue that might help answer them.	How do we clean dirty stuff?	Aurora Water Connection
<p>Lesson 2 Wastewater pipes 3-3 days</p> 	Where does all the waste that goes down the drain go?	Students will watch a video of a plumber trying to retrieve an item lost down the drain as a safe and accessible alternative to putting a camera down the drain or knocking down a wall and/or sink/floor. Long three steps seen from the video (water handling) demonstrate pipes getting bigger as water goes down, and water entering a large pipe already flowing with water. Students develop a model to explain where water goes after entering the drain. Comparing their models to actual photographs and diagrams students	The pipes that take our toilet and sink go under the street and all go to this one big building at that building all of the water and waste gets combined and mixed together in one giant pot.	Home Learning about Pipes Pipes Pictures for students Science, Engineering and Ecosystem Connections	



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Professional Development for Teachers


32

Forests to Faucets I & II

Teachers Exploring the South Platte Watershed & Aurora Water Wise Garden

33

<div style="background-color: #4CAF50; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">July 19-21</div> <div style="background-color: #8BC34A; padding: 10px; margin-top: 10px;"> <p style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; font-size: 1.2em;">Forests to Faucets</p> <ul style="list-style-type: none"> • 3 days • Different locations • PLT & Project WET curriculum • Watershed concentration </div>	<div style="background-color: #4CAF50; color: white; padding: 5px; text-align: center; font-weight: bold; font-size: 1.2em;">July 26</div> <div style="background-color: #9575CD; padding: 10px; margin-top: 10px;"> <p style="writing-mode: vertical-rl; transform: rotate(180deg); font-weight: bold; font-size: 1.2em;">Forests to Faucets 2</p> <ul style="list-style-type: none"> • 1 day • Aurora Reservoir • Project WET curriculum • Climate Change concentration </div>
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34

FORESTS TO FAUCETS

Great job adopting materials to social distancing and COVID-19.

The instructors were great. They all brought their expertise and made the 3 days fun and interactive.

The curriculum & activities were well presented. I loved "Seeing Watershed" & am excited to try it.

The information presented expanded my knowledge of water & water related activities through hands-on, excellent activities. Received wonderful resources. Excellent class!



35

FORESTS TO FAUCETS 2

Great activities to deepen students understanding of water conservation.

The instructors are fabulous and fun ladies.

Fabulous job – appreciate your knowledge & wealth of resources.

The engagement within activities is amazing. Hands-on experiences make this workshop 😊





36

Aug 1-2 **New!**

APS 5th Grade Teacher Workshop

- 2 days
- Different locations
- PLT & Project WET curriculum
- Watershed concentration

37

Community Education & Outreach



38



Creating an Informed Community

Outreach & Events
Classes

Events
Trick or Treat Nature Trail- October
Earth Day @ Aurora Reservoir- April
Citywide Events

39

Introduction to Water-wise Landscape
Created By Viviana Zavala - Current Version

Introduction to Water-wise Landscape

Welcome
Sprinkler System
Tune-Up

Start course

AURORA WATER

40



Trumbull Experimental Forest

Aurora's Outdoor Watershed Classroom

41

Annual Report - By the numbers 2021-2022 School Year

- 2 Youth Water Festivals- in person & virtual
- 3 Teacher Workshops
- 17 Presentations P-12 – virtual
- 100% of Teachers would have us back again
- 330 presentations
- 500+ Dog waste bags distributed
- 708 students worked with the Virtual Water Tour
- 10,304 students learned about water

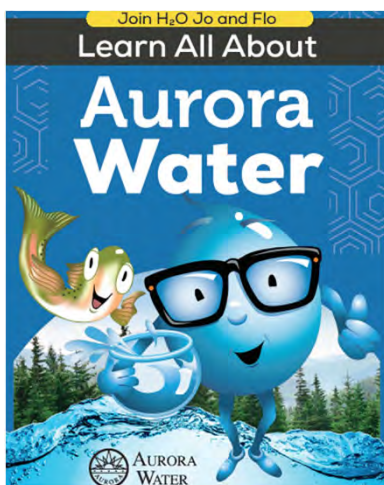


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Future Projects

43

Future Projects



- Aurora Water Course
- Careers in Water Program
- Urban Water Cycle Tour
- Activity Booklet for P-1st Grade
- Expand in town tours for additional audiences



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To: Citizen’s Water Advisory Committee

Through: Marshall P. Brown, General Manager, Aurora Water
Todd Brewer, Deputy Director of Water Quality & Treatment, Aurora Water

From: Sherry Scaggiari, Manager of Environmental Permitting

Date: October 11, 2022

Subject: Per- and Polyfluoroalkyl Substances (PFAS) Update

Summary:

An informational brief was provided to the committee during the June 2020 meeting to provide background surrounding the PFAS compounds and to describe federal and state efforts surrounding PFAS contamination on a national and state scale. Recent changes in the Health Advisory levels from the EPA and the Colorado Department for Public Health and Environment’s implementation of those levels will be discussed. Potential treatment options and the department’s communications strategy will also be discussed.

Question:

No action required. Informational item only.

PFAS

October 2022



1

PFAS

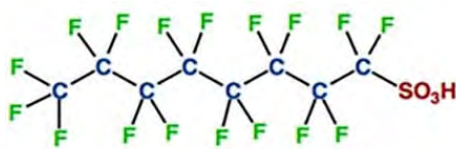
Per- and Polyfluoroalkyl substances (PFAS) or “forever chemicals” are a group of manufactured (manmade) chemicals that have been used in industrial and consumer products since 1940s



2

PFAS

- Most common PFAS compounds are Perfluorooctanoic Acid (PFOA) and Perfluorooctanoic Sulfonate (PFOS) – these are being phased out of production in the U.S. because of their risks
- PFAS compounds (including PFOA and PFOS) have a strong carbon-fluorine bond this allows them to build up and accumulate for decades instead of break down



PFOS - perfluorooctanesulfonic acid



PFOA - perfluorooctanoic acid



3

Where are PFAS Commonly Found?

SOME PRODUCTS THAT CONTAIN PFAS
PERFLUOROALKYL AND POLYFLUOROALKYL SUBSTANCES

The infographic displays ten categories of products that commonly contain PFAS, each with a representative image: Electronics (laptop), Non-stick cookware (pan), Microwave popcorn bags (bag), Fast food wrappers (burger), Paints, sealants and varnishes (can), Water resistant clothing (raincoat), Nail polish (bottle), and Shampoo and personal care items (bottles).



4

PFAS Regulations in Colorado

- House Bills 19-1279 and 20-1119
 - Creates laws on the use, storage, distribution, and certification of firefighting foam containing PFAS chemicals (PFAS contamination of drinking water sources in El Paso, Boulder, and Adams counties is likely from AFFF)
- Senate Bill 20-128
 - Collects fees from fuel transport to fund CDPHE’s study of PFAS
- HB22-1345 Perfluoroalkyl and Polyfluoroalkyl Chemicals
 - CDPHE Policy 20-1 – Cleanwater, PFAS in discharges



5

Health Effects of PFAS Exposure

The affects have not been completely studied but there is evidence there are health effects.

This is why the EPA has established Health Advisory Levels or HAL for Gen-X, PFBS, PFOA and PFOS.



6

EPA Health Based Guidelines

- 2016 EPA health advisory for PFOA and PFOS
 - Health advisory limit at 70 parts per trillion (ppt) for the two compounds

2022 EPA Health Advisory is:

- PFOA 0.004 ppt
- PFOS 0.02 ppt
- Gen-X 10 ppt
- PFBS 2000 ppt



These are not an MCL (maximum contaminant level) or enforceable drinking water standard. A draft proposal from the EPA is expected late 2022.

7

PPT – parts per what?

A number like 0.004 ppt is difficult to think about. Let's talk about parts per trillion.



1,000 = Thousand
1,000,000 = Million
1,000,000,000 = Billion
1,000,000,000,000 = Trillion
1,000,000,000,000,000 = Quadrillion

8

Measurement Limitations

- Instrumentation can only measure 2 ppt as a reporting limit.
- Reporting Limits are set to quantify the number.
- Another level is called the MDL or method detection limit. This value is 0.2 ppt currently.
- Between the MDL and the RL is considered an estimated number because there is uncertainty in the actual value. We do know the compound is there.



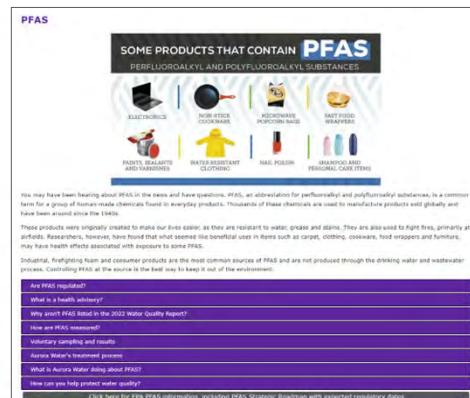
9

Aurora Data on PFAS

- Source water values for PFOA+PFOS from North Campus have been from 20-30ppt.
- Finished water values have been non-detectable to 7ppt (as a total of PFOA+PFOS). More information to come.
- Aurora's website has information on PFAS:



AuroraGov.org/pfas



10

Aurora Data on PFAS

We will update this slide before the meeting. We are expecting finished water results soon.



PFAS	Lifetime Health Advisory Level Prior to June 15, 2022	Voluntary sampling (2020)		Lifetime Health Advisory Level as of June 15, 2022	Voluntary sampling (2022)		
		Sample 1	Sample 2		Sample 1	Sample 2	Sample 3
PFAS	All results reported in ppt						
	70			0.004			
PFOA	(as a sum of PFOA + PFOS)	Not detected	3.2	(Interim)			
PFOS		Not detected	2.1	(Interim)			
GenX	None	Not detected	Not detected	10 (Final)			
PFBS	None	Not detected	3.4	2,000 (Final)			

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UCMR5

- The UCMR5 requires analysis of 29 PFAS compounds plus lithium.
- Aurora will be starting the required sampling and analysis in January of 2023 and take samples for four quarters.
- EPA says they will be publishing a rule for PFAS by the end of 2022 (before sampling occurs).



12

Unregulated Contaminant Monitoring Rule 5 (UCMR5)

- In evaluating contaminants for UCMR 5, EPA considered the fourth Contaminant Candidate List (CCL 4) as well as contaminants nominated by the public for potential inclusion on the fifth CCL5 and other priority contaminants.
- In addition, the National Defense Authorization Act for Fiscal Year 2020 (NDAA) specifies that EPA shall include all PFAS in UCMR 5, for which a drinking water method has been validated by the Administrator and that are not subject to an NPDWR. Accordingly, UCMR 5 includes all 29 PFAS that are within the scope of EPA Methods 533 and 537.1, as well as lithium.



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Treatment options

- Three technologies effective in removing/reducing PFAS
 - Granulated Activated Carbon (GAC)
 - Ion Exchange
 - Reverse Osmosis (RO)
- Binney Water Purification Facility uses GAC



14

Future Treatment Options

- Griswold & Wemlinger WPF - Currently Direct Filtration
 - Exploring treatment options based on source



- “Mini-Binney” pilot plant
 - a great tool for understanding how current media and alternative media can benefit Aurora Water



15

Communications

- Public notification
 - Engaged with Colorado Department of Public Health and Environment (CDPHE) regarding language for public notifications
 - Working with other utilities about their public notifications
- Coordinating with Denver Water
- Communications plan focused on education and outreach.



- Working with Community Engagement Coordinators from Housing and Community Services

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Communication plan goals

Informing our communities about PFAS

- Using common vernacular, highly visible, easily accessible locations or mediums
- Spanish translation
- Aurora Water uniquely positioned to handle many of the PFAS challenges
- One Water approach and emphasizing products that contain PFAS and how to avoid them



– PFASCentral.org/pfas-free-products

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Communication plan goals

Ongoing messaging about Aurora's water quality

- 87,000 tests system wide
- Numerous awards won by Aurora Water
 - RMSAWWA Outstanding Water Laboratory (won this honor eight times)
 - All three of our water purification facilities have achieved the Phase IV “Excellence in Treatment” designation, the highest level awarded by the Partnership for Safe Water (PSW). Only utility in the country to receive this designation at three facilities.



18

Questions?

Thanks!

Sherry Scaggiari

Environmental Services Manager

Sscaggia@auroragov.org

