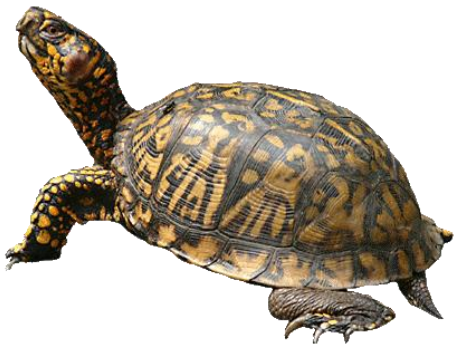
The Watershed Ecology Center

UPSTATE
University of South Carolina

School Program Guide

2024-2025



Programs listed are available for the 2024-2025 School Year.

Our programs are designed to reinforce the following components of the **Profile of a South Carolina Graduate Competency Framework**:

Table of Contents:

Program Overview -

The Watershed Ecology Center (WEC) is excited to offer these programs to your students. Each presentation, which includes hands-on learning activities, is correlated to the SC College and Career Readiness Standards.

Thanks to our generous donors, students in Spartanburg County, Blue Ridge, and Greer area public, private, charter, or home schools can receive 2 free programs per class per school year. Additional programs can be booked at a cost of $1.00 per student.

For more information or to schedule a program, contact us at 864-503-5728 or email wec@uscupstate.edu. You can also view more program information and access our online registration form at https://uscupstate.edu/about/community/watershed-ecology-center/

Our programs are designed to be held in individual classrooms rather than an auditorium. Some programs require access to water or electricity, but all can be done without the need for a laboratory setting.

We also offer program material kits for check out for teachers who want to teach lessons on their own.

Program List & South Carolina College and Career Readiness Standards Correlations

- Programs marked with **** include live animals.
- Programs marked with **&&** have a materials kit available for checkout by teachers that prefer to do the lesson themselves. (Animals are NOT available for checkout)
  - Science Standards are in Blue.
  - Social Studies Standards are in Green.
  - Math Standards are in Red.

Kindergarten: 30 minutes

Program	Topics	Standards
All Around the World **	Animals and Habitats	K-LS1-1
Motion Commotion	Forces	K-PS2-1
Reasons for Seasons **	4 Seasons, Animal Behavior, Animal Life Cycles, Importance of Clean Water	K-ESS2-1
Sorting Stuff	Classification Based on Physical Properties, Comparing Materials Based on Properties	K.NS.1, K.MDA.1, K.MDA.2, K.MDA.3
Water Sense &&	5 Senses as a Scientific Tool	K-ESS3-3
Weather Works &&	Weather Safety & Terminology	K-ESS3-2

First Grade: 30 Minutes

Program	Topics	Standards
All Around the World **	Nocturnal & Diurnal Animals	1-LS1-1
Good Vibrations	Vibration & Sound	1PS4-1
Making Day & Night	Sun's Energy, Day & Night Rotation & Revolution	1-ESS1-1, 1-ESS1-2
Shadow Show	Properties of Light How Shadows Form	1-PS4-2, 1-PS4-3
That's My Baby **	Animal Offspring, Habitats	1-LS1-2, 1-LS3-1

Second Grade: 35 Minutes

Program	Topics	Standards
All Around the World **	Animal Needs Classification & Habitats	2-LS4-1
Bug Tracks	Operations & Algebraic Thinking Numbers & Operations-Base 10 Measurement	2.ATO.1, 2.ATO.4, 2.NSBT.1, 2.MDA.1, 2.MDA.3
Change It Up	Properties of Matter, Changes in Matter	2-PS1-4
Drip, Drop, Plop **	Location of Water on Earth, Importance of Clean Water	2ESS2-3
Habitats for Sale **	SC Regions, State Animals and Their Habitats	2-LS4-1
How Does Your Garden Grow? ** &&	Plants, Clean Water, The Water Cycle	2-LS2-1
Hurray for Habitats **	Water in Animal Habitats Water Pollution	2.G.2
Classifying Critters	Classification of Objects by Observable Properties, Compare and Contrast Properties of Different Substances	2-PS1-1
Water Matters	3 States of Matter in Water Water Pollution	2-ESS2-3, 2-ESS3-1

Third Grade: 45 Minutes

Program	Topics	Standards
All Around the World **	Adaptations, Habitats, & Food Chains	2.G.1
Magnetic Personalities	Magnetism	3-PS2-3, 3-PS2-4
Marsh Munchers ** &&	Food Chains, Salt Marsh Ecosystems, & Watershed Pollution	3-LS4-3
Need for Speed	Forces: Push Pull, Friction	3-PS2-1, 3-PS2-2
Stream Ecology	Stream Ecology, Macro-Invertebrates, Water Quality, & Data Analysis	3-LS4-3 4.ATO.2
The Mystery Jar 3rd	Operations & Algebraic Thinking, Number Operations in Base 10 Measurement	3.ATO.1, 3.ATO.8 3.NSBT.1 3.MDA.2, 3.MDA.3

Third Grade: 45 Minutes (continued)

Them Bones 3rd	Fossils, Paleontology, & Geologic History	3-LS4-1
Wetlands, Then & Now	Wetlands, Land Development, Pollution, & Human Impact	3-LS4-4

Fourth Grade: 45 Minutes

Program	Topics	Standards
All Around the World **	Classifying Animals	4-LS1-1
Bug Tracks 4th	Fractions, Measurement, & Data Collection	4.NS.1, 4.NS.2, 4.MDA.1 4.G.1
Color Me with Light	Colors, Light, & Reflection/Refraction	4-PS4-2
Our Natural Homes **	Biomes, Water Ecosystems, & Impact of Water Pollution	4-ESS2-2
Sound of Music **	Vibration, Sound, Pitch, & Music	4-PS3-2, 4-PS3-4
What on Earth **	Rocks & Minerals, Rock Cycle, Soil Formation, Erosion, & Soil as a pollutant	4-ESS1-1

Fifth Grade: 50 Minutes

Program	Topics	Standards
All Around the Word **	Food Webs & Ecosystems	5-LS2-1
As a Matter of Fact	Properties of Matter & Mixtures	5-PS1-1, 5-PS1-2, 5-PS1-3, 5-PS1-4
Barrier Island ** &&	Barrier Islands, Watersheds, & Pollution	5-LS2-1

** Live Animals && Material Kits Available

Science Standards are Blue, Social Studies Green, Math Red

Fifth Grade: 50 Minutes (continued)

Far Out Space	Astronomical Distances & Seasonal location of space objects	5-ESS1-1, 5-ESS1-2
Incredible Journey	Water Cycle	5-ESS2-1, 5-ESS2-2, 5-LS2-1
The Mystery Jar 5th	Measurement, Data Analysis, & Coordinate Systems	5.G.1, 5.G.2, 5.NSBT.1, 5.NSBT.7 5.MDA.2, 5.MDA.3
Where's the Water? **	Location of Water on Earth & Importance of Clean Water	5-ESS2-2
Wild Wetlands	Wetland Ecology & Pollution	5-PS3-1
Wise Up About Watersheds 5th	Point/Nonpoint Water Pollution & Erosion	5-ESS3-1

Sixth Grade: 50 Minutes

Program	Topics	Standards
Barrier Islands ** &&	Storms & Erosion Shape Landforms, & Watersheds	6-ESS2-2
Cells	Cell Types, Cell Function, & Cells as Building Blocks	6-LS1-1, 6-LS1-2, 6-LS1-3
Rocks Speak	Rock Cycles, Buffers, pH^+, & Acid Rain	6-ESS1-4, 6-ESS2-1
The Heat is On	Kinetic Theory of Matter, Insulation, Conduction, & Design	6-PS1-4, 6-PS3-3, 6-PS3-4
Meteorology Madness &&	Weather Data, Convection Currents, Natural Disasters	6-ESS2-5, 6-ESS2-6, 6-ESS3-2
Where Does the Water Go?	Water Cycle, Pollution, & Water Treatment	6-ESS2-4, 6-ESS2-5, 6-ESS2-6, 6-ESS3-2

Seventh Grade: 50 Minutes

Program	Topics	Standards
All Around the World **	Ecosystems & Food Chains	7.1…6.1PR
Elements, Compounds & Mixtures – Oh My!	Chemical Symbols, Chemical Formulas, Elements, Compounds, & Mixtures	7-PS1-5
Even Soap Is Science	Chemistry of Soap & STEM Careers	7-PS1-2, 7-PS1-5
H to OH!	Acids, Bases, pH, Indicators, Acid Rain, & Water Quality	7-PS1-2

Seventh Grade: 50 Minutes (continued)

River Run **	Aquatic Ecosystems & Food Chains	7-ESS2-5
Super Sleuths	Bacteria, Viruses, Disease, & Water	7-LS2-4
Talking Trash	Recycling, Pollution, Water Quality, & Landfills	7-ESS3-4
Water on Zork	Identifying Substances Based on Physical & Chemical Properties	7-PS1-2
Wise Up About Watersheds 7th	Watersheds, Mapping, Pollution, Biotic vs Abiotic Factors, & Renewable vs Nonrenewable Resources	7-LS2-3

Eighth Grade: 50 Minutes

Program	Topics	Standards
All Around the World **	Animal Variability & Environmental Pressures	8-LS4-2, 8-LS4-4
Them Bones 8th	Fossils: Molds, Casts, Petrification, & Preserved Remains	8-LS4-1
The Universe & Beyond!	Gravity, The Vastness of Space	8-PS2-4

** Live Animals && Material Kits Available

Science Standards are Blue, Social Studies Green, Math Red

Program Descriptions

These grade levels are based on current *SC College and Career Readiness Standards*. Teachers are welcome to request an off-grade program if it meets their instructional needs.

Kindergarten

All our Kindergarten programs are designed to last around **30 minutes** and feature a strong hands-on component.

All Around the World – K

Students interact with live animals from the Watershed Ecology Center to learn what organisms need to stay alive and to compare differences in individuals within a species.

Motion Commotion

Pushes and pulls are explored as each student drives a truck up, down, right, left, straight, in a curve, and in a zigzag. Does it make a difference with a load of gravel? Further observations are made as they drive their trucks on smooth and rough roads.

Reasons for Seasons

Using skills such as sorting and classifying, students learn about the four seasons and their importance. Students will also define which seasons have the most rainfall and the least, and when the different life stages of the spring peeper occur. One of our live animals will also visit to help them understand how seasons impact different animals.

Sorting Stuff

Through observations of physical properties such as color, texture, material, magnetism, and floating; students get to try their hand at sorting various objects. They discover that different materials are suited for different purposes. A great hands-on chemistry lesson!

Kindergarten (continued)

Water Sense

After learning about their five senses, students will use them to explore water and items that contain water. Each student will test their sense of smell, explore touch boxes, and experience a Braille book.

Weather Works

During this fun, hands-on lesson, students learn weather terminology and severe weather safety. They actively participate by producing a thunderstorm play.

First Grade

Designed to take about **30 minutes**, our First-Grade programs make learning fun through a variety of hands-on activities.

All Around the World – 1st

Animals and artifacts pay a visit as students learn about how the sun and moon affect animal behavior, their interaction with their habitats and special adaptations for nocturnal and diurnal animals.

Good Vibrations

Students use tuning forks and common objects to make sound vibrations. They will connect the vibrations they feel in their own throat to what they see in other objects.

Making Day and Night

Why is the Sun so important? Using a globe and flashlight, students explore how to make day and night. As the students act out a song and pretend to be Earth, they rotate to make day and night. Students will also learn the difference between rotation and revolution.

First Grade (continued)

Shadow Show

Using flashlights, students observe and compare how light behaves while shining on different materials. Is it refracted or reflected? What is the difference between transparent, translucent, and opaque? Students experiment with how light travels and shadows are formed.

That's My Baby

This hands-on program uses one of our live animals to introduce habitats, teach what organisms need to stay alive, and the importance of clean water. A fun hands-on matching game teaches the children that baby animals often look like their parents.

Second Grade

Lasting about **35 minutes**, our Second Grade programs explore a variety of standards-based concepts.

All Around the World – 2nd

Classification is easy when you can look at the characteristics of live animals and artifacts. Students also explore what animals need to survive and how different types of animals interact with their habitats.

Bug Tracks

In this **math** program teams of students use Base-10 "Bug Tracks" in this fast-paced program where they will measure and estimate length using addition and subtraction. They will also gather and record their data on a sheet and problem solve through guided reasoning.

Change It Up

This lesson explores the solid and liquid states of matter. Students will discover a non-Newtonian fluid and turn ice into liquid water and water into ice. Using models, students explore the different ways various types of matter can be mixed together and then develop an experiment to separate them again

Second Grade (continued)

Drip, Drop, Plop

Students search to find "Drop" and learn how little water is available for human use. Discover where water is found, discuss how we use it, and formulate ideas to conserve it through fun hands-on activities.

Habitats For Sale

This presentation focuses on the consequences of habitat destruction, paying special attention to South Carolina habitats. Through building a variety of habitats, students investigate how different environments meet the habitat needs of a variety of South Carolina organisms.

How Does Your Garden Grow?

Students become parts of a plant and review their basic needs. Then they will explore the importance of water and how different environments support interesting plants by comparing adaptations.

Hurray for Habitats

Students visit with one of our live animals to learn the important elements every habitat must have. Using different animals from all over the world students see how distinct environments support different types of life.

Classifying Critters

Using live animals, artifacts, and everyday materials, students will learn how scientists classify and identify things in the natural world.

Water Matters

In this interactive program, students are introduced to the different states of matter as they pretend to be molecules in water, water vapor, and an ice cube. The lesson ends with a short discussion regarding water pollution and oil spills; touching on the fact that some materials will not mix with water.

Third Grade

Our Third-Grade programs run about **45 minutes** giving students time to delve deeply into the concepts.

All Around the World – 3rd

Critters from the Watershed Ecology Center visit your classroom to help students better understand the physical and behavioral adaptations they need to survive in their habitats. Habitat components and the impact of changes to the habitat are also explored.

Magnetic Personalities

In this very hands-on program students use magnets to make an object move, make a temporary magnet, explore the concepts of poles and sort items based on magnetism…be careful, some of them are tricky!

Marsh Munchers

This program uses a salt marsh as an example of the interconnectedness of aquatic ecosystems. A hands-on WEC activity allows students to create a salt marsh food chain that reinforces important concepts such as producers, consumers, carnivores, herbivores, omnivores, and food webs.

Need for Speed

Driving toy cars on the Raceway to Science, students learn how Isaac Newton's Laws of Motion explain the forces used to satisfy their need for speed.

Stream Ecology

Learn what macro-invertebrates are, their roles in the environment, and how they are indictors of water quality. Using qualitative methods, students will complete a mock investigation to learn how physical characteristics of the environment affect an organism's behavior.

Third Grade (continued)

The Mystery Jar – 3rd

Hands-on math at its best! Students work in teams to solve a story problem using count and measure, then reinforce their understanding with a base ten counting device. They will also read a linear scale, collect data, and make a graph…all while having a great time!

Them Bones – 3rd

Students get a chance to become paleontologists in this program. First, different types of fossils and how they are formed are discussed. Then each student sifts fossil soil to find and identify their own fossils. From fossils, we can tell what Earth was like during their formation.

Wetlands, Then and Now

Students use the Enviroscape Wetland Model to see how pollution and flooding can occur after unplanned development. They also explore the functions and values of ecological restoration and reconstruction of wetlands. Students brainstorm ideas and experiment with different ways to prevent conditions that negatively impact the wetlands.

Fourth Grade

With a lesson time of **45 minutes**, 4th Grade programs have multiple activities to reinforce learning.

All Around the World – 4th

How do you tell vertebrates from invertebrates? What is the difference between a reptile and an amphibian? This program allows the students to work their way through some classifications of real animals and artifacts from the center.

Bug Tracks 4th

Hands-on **math**! Teams of students will estimate and then measure the length of a curve. They will utilize a base ten paddle to visualize that curve in a linear fashion and then calculate the actual length!

Color Me with Light

Through several experiments, students will explore various aspects of light including reflection, refraction, and absorption as well as transmission through transparent, translucent, and opaque objects. An optional chromatography experiment with leaves showing the hidden colors in nature may be performed if time allows.

Our Natural Homes

Covering biomes and regions, this program focuses on the role of rainfall in different environments and covers the special adaptations animals and plants use to cope with excess or lack of water. To reinforce the learning, students create their own biomes in teams.

Sound of Music

Students investigate vibration to discover how different variables affect the pitch and volume of sound. Each student will get a musical instrument and the whole class works together to produce a drumming session. Can we make music, not noise?

Fourth Grade (continued)

What On Earth?

Rocks, minerals, soil…oh, my! In this program, students learn about the rock cycle, different types of rocks, and the composition of soil layers. Then they will conduct an experiment to determine soil types. We also discuss Earth's features and both slow and rapid changes to the surface.

Fifth Grade

50-minute lessons allow our educators to go indepth with the 5th Grade programs to thoroughly address the standards.

All Around the World – 5th

Food chains and habitats are the focus of this program full of animals and artifacts. Students will get up close and personal with plants, animals, decomposers, and the environment.

As a Matter of Fact

Students will work together to create and separate several mixtures including solutions. They will use water, markers, cinnamon, sugar, salt, and iron filings to explore the physical properties of chromatography, filtration, sifting, evaporation, and magnetic attraction. This program is very exciting, a little messy, and full of hands-on science.

Barrier Islands – 5th

Taking your trip to Barrier Island this year? This presentation serves as a good introduction to barrier island formation and the importance of resulting wetlands that are associated with them. Students study salt marsh artifacts and play "Barrier Island Bingo."

Far Out Space

Using simulations and real examples, students learn about the vastness of space.

Fifth Grade (continued)

Incredible Journey

Students go on a journey through the water cycle as a water molecule. Moving among stations around the classroom, they will experience water cycling through air, plants, animals, glaciers, groundwater and soil. This allows them to explore fresh and saltwater reservoirs and demonstrates that most of the Earth's water is in the oceans.

The Mystery Jar – 5th

Hope you like math, marbles and water! Students work in teams to solve a multi-question story problem involving counting, measurement, decimal multiplication and graphing. Using the collected data, students produce a graph to estimate the unknown volume of "The Mystery Jar". Then the volume of air remaining in the jar when it is filled with marbles is calculated.

Where's the Water?

Students search to find "Drop" and learn how little water is available for human use. Discover where water is found, discuss how we use it, and formulate ideas to conserve it through fun hands-on activities.

Wild Wetlands

The different types of wetlands are introduced as unique ecosystems containing organisms that fill specific niches. The Enviroscape Wetland Model demonstrates their importance as a filter for our watershed. (The Enviroscape model is also used in Wise Up About Watersheds, but the program is different.)

Wise Up About Watersheds

In this hands-on program, students learn about the watershed we live in and are introduced to the concept of non-point source water pollution. Using the Enviroscape Watershed Model, students see how a watershed becomes polluted as students add various pollutants to the model. Afterwards, students then brainstorm solutions to clean up the pollution and restore the watershed. (The Enviroscape model is also used in Wild Wetlands, but the program is different.)

Sixth Grade

Our educators provide **50-minute** lessons going in-depth with the 6th Grade standards.

Barrier Islands – 6th

Taking your trip to Barrier Island this year? This presentation serves as a good introduction to barrier island formation and the importance of resulting wetlands that are associated with them. Students study salt marsh artifacts and play "Barrier Island Bingo."

Cells

Students use models and drawings to explore the basic building blocks of all living things.

Rocks Speak

A hands-on review of the rock cycle utilizing modeling clay prepares the students to become a rock and travel through the cycle in a fun and active game.

The Heat Is On

Through experimentation, students discover that heat moves from one object to another through direct contact in some materials (conductors) and not so easily through others (insulators). Students will continue to identify sources of heat and different ways that heat can be produced.

Meteorology Madness

Students build on their previous weather knowledge and learn new concepts and terminology while focusing on severe weather, reviewing safety precautions and the water cycle. They will enjoy using maps and symbols to create their very own weather report.

Where Does the Water Go?

During this presentation, students go on an Incredible Journey, following the path of a water drop while learning that water treatment and water use are parts of the water cycle. Great review of the water cycle, surface-water flow, and groundwater flow.

Seventh Grade

Over the course of these **50-minute** lessons the appropriate 7th Grade standards are explored.

All Around the World – 7th

Using the live animals and artifacts from WEC, students acquire an understanding of how each animal interacts with and responds to the biotic and abiotic elements in their environment.

Elements, Compounds, & Mixtures – Oh My!

Students work together to analyze and interpret data to classify matter as elements, compounds, or mixtures. They use the periodic table to identify the basic organization of elements and groups of elements.

Even Soap Is Science!

Students simulate the creation of a cleaning product to learn about the chemistry that goes into its design. This activity will help students to understand that a soap product is the result of combining particular ingredients in a certain amount to create a product that works in a specific way. Great activity to inspire careers in STEM fields.

From H^+ to OH^-

In this activity students simulate the creation of acids and bases; manipulate acidic and basic solutions and discuss how acid rain is formed. Students explore runoff pollution and how pH of water can affect weathering of Earth's surface and stream health.

River Run

A fun interactive game is used to reveal how organisms interact with and respond to the biotic and abiotic factors in water ecosystems. Using sample case studies, shifts in the diversity and abundance of organisms demonstrate real-world ways to protect water ecosystems.

Seventh Grade (continued)

Super Sleuths

In this program students become epidemiologists as they learn about waterborne illnesses and disease transmission. Students will discover how unicellular organisms can cause disease and their effect on major organs and body systems.

Talking Trash

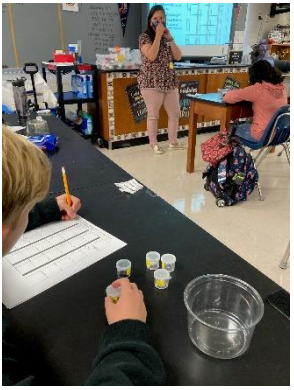
Using a model, students get an in-depth look at landfill design. Through a hands-on activity, they learn about different types of packaging, how packaging affects us as consumers, and the importance of reducing, reusing, and recycling solid waste as effective alternatives. They will also be introduced to the innovative process of converting waste to energy used by BMW and Waste Management.

Water on Zork

Students create their own experiment to determine if a water sample from another planet, "Zork" is suitable to use as drinking water.

Wise Up About Watersheds – 7th

Students work through a watershed model to see first-hand how water pollution occurs and brainstorm ways that it can be prevented. They will use topography and contour mapping skills to map a watershed.



Eighth Grade

These **50-minute** lessons address 8th Grade standards.

All Around the World – 8th

Let's look at some of the live animals and artifacts from the center to see how scientists classify organisms and how the animals' behaviors and adaptations allow them to survive.

The Universe and Beyond

The vast size of space is discussed, and the current theory of gravitation is explored in this far out program.

Them Bones 8th

Through sifting and examining different types of fossils, students explore the diversity of life over time. They analyze pictures of past and present-day life forms to determine if a relationship exists between the two. Through role playing they discover why most individual organisms that lived in the past were never fossilized. They also contemplate factors that can contribute to the extinction of species.

High School Field Trip Programs

Limited to groups of 24 or less, these programs are offered as field trips on the USC-Upstate campus.

Biology:

Macroinvertebrates and E. coli Bacteria as Indicators of Pollution in SC Streams (3 hours)

Chemistry:

Properties and Chemistry of Water (3 hours)

Environmental Science:

Adopt-A-Stream Water Monitoring (6 hours)

Teacher-Led Program Check Out Kits:

Want to do a program but don't have the materials?
You can check out one of our kits and you are ready to go.
Our animals **ARE NOT** available for checkout.

Barrier Island: 5th & 6th Grade

How Does Your Garden Grow: 2nd Grade

Incredible Journey: Multiple Grade Levels

Marsh Munchers: 3rd Grade

Water Sense: Kindergarten

Weather Works Kindergarten & 6th

Other Programs at WEC

Adopt A Stream Volunteer Training

Participants learn the skills necessary to become a certified Adopt-A-Stream volunteer waterway monitor. For more information visit https://www.clemson.edu/public/watershed/scaas/index.html

Rain Barrell Workshops

For a small charge to cover the cost of the connection kits, you can get a 55-gallon rain barrel to provide free fresh water to your garden.

Teacher Workshops

Programs on how to use the Project Learning Tree, Project WILD, and Project WET curricula are offered at WEC.

Community Outreach Programs

Civic groups, community organizations, and other appropriate groups can sign up for one of our 1-hour programs.

For more information about all of our programs visit https://uscupstate.edu/about/community/watershed-ecology-center/

Or reach out by email – wec@uscupstate.edu

A BIG THANKS TO OUR SPONSORS!

Our programs are made possible in large part through the generous financial support of our sponsors, including

- The City and County of Spartanburg
- Spartanburg Water
- Blue Ridge Rural Water Company
- SJWD
- Greer CPW
- And Several Private Donors

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Committed to Providing Clean, Safe Water for All Our Residents