

A young girl with dark hair, wearing a light blue shirt, stands in a lush green forest. She is looking up at a large, moss-covered tree trunk. The background is filled with dense green foliage and sunlight filtering through the leaves.

## Thematic Unit 6:

# Environmental Stewardship

We all have the power to affect positive environmental change! Through education, we can help students realize their potential for conserving and protecting New York City's shared water resources and the environment. By understanding that both the small individual actions we take at home and school and the larger service projects we initiate in our communities have an impact, students can become empowered as agents for change in their own neighborhood, city, and beyond.





# What you should know:

This thematic unit is about motivating active student participation in stewardship projects. To culminate their study of New York's water resources, students can think critically and creatively about how to engineer their own solutions to challenges and share what they have learned with their community. Students have discovered New York City's water story, from where our drinking water comes from to where our wastewater goes. They understand how water cycles through our environment, influenced by both the natural and built features of our landscape. They have acquired an awareness of the harmful impacts of stormwater pollution, and the even greater challenge of sea level rise on our waterways.

Youth, as well as adults, can participate in environmental **stewardship** through a broad range of activities, projects, and disciplines, including science, social studies, and the arts. There are many opportunities in the performing, visual, and language arts for students to express their appreciation for, and new understanding of, water. Students can also share their new knowledge by making what they are studying available to their school and community.

Engagement in real-world projects helps students become environmental stewards now and for the future. Through interactive project-based learning, students can research, plan, engineer, and assess solutions to individual and collective problems. By presenting their projects in creative ways, such as public service announcements (PSA), flyers, social media, video interviews, and blogs, students can educate their peers, families, and community members. Further, through place-based learning, students can engage in local learning experiences and explore the many unique environments and waterways, as well as historical and cultural

institutions in their own neighborhood. For example, **citizen science** projects, such as ongoing testing and monitoring of water quality, are direct ways to involve students in local data collection related to decision-making, regulations, and community planning.

By focusing projects on topics that students have become experts in, they will also be able to make deeper connections to larger environmental issues. Students will not only understand how changing what we put down our drains helps the sewer system function now, but they will also recognize how their actions help optimize our system for the future as the frequency and intensity of wet weather increases due to climate change. Or that educating others on the importance of water conservation now as we embark on major repairs of the Delaware Aqueduct will also help our city maintain a sustainable water supply over time.

A variety of opportunities for stewardship, citizen science, and community engagement can be found in the suggested activities in earlier units. What follows are additional ideas and resources for what we think are the best projects and programs to get you started. Keep in mind, the impact of your project along with the work of others can and will "move the needle." Students and citizen partners, along with public and private agencies and organizations, can impact the future quality of the environment for all New Yorkers, young and old, from New York City's watersheds to New York Harbor.

## ESSENTIAL QUESTION

Can my actions make a difference in protecting the environment?

## VOCABULARY

### **Citizen Science** (*noun*)

Opportunities for citizen volunteers to support scientists on science research and data collection projects in their community.

### **Service Learning** (*noun*)

Activities that both support student learning goals and service or improve the community.

### **Environmental Literacy** (*noun*)

An understanding of and consideration for environmental issues and the actions needed to help protect and improve the environment.

## SUGGESTED IDEAS AND ACTIVITIES

### **Drinking Water and Conservation**

*Consider any or all of these as suggested actions to engage your students in the long-term protection of water quality in our upstate watersheds and the conservation of our drinking water supply.*

- a. Create a program to monitor and conserve water at home and school. Sharing what they have learned, have students develop a school-wide or community-wide campaign to engage a wider audience in water conservation. Relate your water conservation campaign to an ongoing or pressing issue, such as minimizing our water footprint, preparing for the Delaware Aqueduct Repair Project, or reducing CSOs and harbor water pollution during wet weather.
- b. Apply for a [DOE Office of Sustainability](#) grant to install a water filter fountain in your school. Work with Sustainability Specialists to display accompanying signage featuring the New York City's Water Story: From Mountain Top to Tap map and information about where our drinking water comes from. Calculate how many plastic water bottles are not wasted by refilling reusable bottles.
- c. Participate in the [Trout in the Classroom](#) program to help raise awareness about New York City's watershed ecosystem. Raising trout provides students opportunities to learn about the role of

indicator species and the importance of protecting water quality in watershed streams and reservoirs.

- d. Visit the watershed on a day or overnight trip with funding support from the [Watershed Agricultural Council](#) or the [Catskill Watershed Corporation](#). While planning your trip, work with students and educators to include a service-learning component, such as planting trees, removing invasive plant species, studying and identifying local species, monitoring tree growth and healthy forests, or working to improve stream and riparian habitats.
- e. Plan a trip to the watershed around an annual event, such as DEP's Reservoir Clean-up Day each fall. Connect with students and teachers from other participating schools.
- f. Participate in the Watershed Agricultural Council's [Green Connections](#) program and develop an upstate - downstate partnership with another school. Share letters, connect virtually, and then plan your trips to meet in-person. Discuss shared interests and concerns, such as climate change, and plan stewardship activities to conduct both upstate and downstate.
- g. Participate in DEP's annual [Water Resources Art and Poetry Contest](#). Students can express their new knowledge through various kinds of artwork and poetry. Contest themes cover the importance of water, drinking water supply, wastewater treatment, harbor water quality, and climate change. Create your own exhibit at school to raise awareness and showcase the student entries for your school community.

### **Wastewater, Stormwater, and Harbor Water Quality**

*Consider any or all of these suggested actions to give students the opportunities to collect important data to help monitor the health of our waterways, play a role in preventing pollution from entering the harbor, and raise awareness in their community.*

- a. After learning about stormwater management and green infrastructure, identify and plan locations for planting new trees and plants around your school neighborhood. Develop a plan for maintaining these new green spaces over time. Connect with organizations like [Trees New York](#) or [NYC Parks](#).

- b. Start small and scale up with possibilities to re-design your schoolyard to help manage stormwater, reduce flooding, and provide new outdoor learning environments. Work with organizations like DEP, [DOE Office of Sustainability](#), [GrowNYC](#), [New York City Soil & Water Conservation District](#), and local botanical gardens to cultivate plants, plan and construct planters or a larger school garden, incorporate rain barrels, and install outdoor classrooms.
- c. Based on a water topic of interest, have students help plan, coordinate, and promote a neighborhood clean-up. Become a [Harbor Protector](#) with DEP or connect with the [New York City Parks Department](#) to organize clean-ups and campaigns for neighborhood catch basins, parks, waterfronts or beaches. Organize a litter-free campaign to go along with your community clean-up efforts. Connect with local City Council Members to strategize ways to reduce litter and stormwater pollution in your community.
- d. Plan, promote, and coordinate a school and community campaign on the importance of keeping cooking grease, wet wipes, and other household products out of our drains. Use DEP's [Trash It. Don't Flush It.](#) campaign for inspiration.
- e. Identify and maintain a rain garden near your school through DEP's [Harbor Protectors program](#). Participate in training and involve students in weekly monitoring to remove litter and maintain plants and soil. Determine ways to track the success of the rain garden and collect data, while conducting routine stewardship.
- f. Conduct ongoing water quality monitoring in the harbor, creeks, and streams around New York City. Focus on the waterway closest to your school or participate in a larger study of a unique ecosystem, such as Jamaica Bay, the Bronx River, or the Staten Island Bluebelts. Connect with DEP, [New York State Department of Environmental Conservation](#), [Hudson River Park Trust](#), [Bronx River Alliance](#), or another organization focused on improving water quality in New York Harbor.
- g. Monitor marine animal habitats, such as the American eel, or oysters. Participate in ongoing monitoring programs with the [Billion Oyster Project](#) or the [New York State Department of Environmental Conservation](#). Partner with DEP to participate in the New York State Department of Environmental Conservation's annual eel count on Staten Island.
- h. Study weather and climate using a rain gauge and other weather monitoring equipment. Connect with local universities and agencies that collect climate data and offer citizen science opportunities. Explore DEP's [Climate Change Education Module](#) for more lessons and activities related to climate resiliency.
- i. Apply for the Department of Sanitation's [Zero Waste Schools](#) mini-grant to help kickstart your green team. Explore topics your team is interested in spreading awareness about, including proper trash, recycling, and food waste disposal in your school cafeteria.
- j. Using what you have learned, identify opportunities to fund larger projects for your school. Propose plans to your school administrator. Explore funding opportunities and submit ideas through the New York City Council [Participatory Budgeting](#), or work with your City Council Member to identify community needs and propose plans.

## CONSIDER AND DISCUSS

- It all adds up! Consider the impact of our actions on our water resources and the environment, student-by-student, block-by-block, school-by-school, within the watersheds, and in the city.
- What are the current and long-term benefits of forest land conservation and high quality drinking water for New York City and watershed consumers?
- What are the current and long-term benefits of green infrastructure, restored wetlands, and improved harbor water quality for New York City?
- Discuss the different ways you can measure success (both quantitative and qualitative measures).
- What will students remember most from their water studies?

## ASK THE EXPERT

Your students! Find out what they are most interested in learning more about, and what kinds of actions or projects they are interested in putting their new expertise to.

*Find more New York City and watershed resources and organizations in the appendix of this guide.*