



MCKEOWN ELEMENTARY SCHOOL STORMWATER SUMMER CAMP

Sussex County Municipal Utilities Authority-Walkkill River Watershed Management Group in partnership with New Jersey Future's Mainstreaming Green Infrastructure Project

July 25, 2019 - July 31, 2019

Thursday, July 25, 2019:

- Pre-Camp Stormwater Survey: To assess what students know about stormwater management before participating in a week of stormwater-themed educational lessons.
- Rain Garden Showcase for Halsted Middle School
 - Stormwater Camp participants will present to Halsted Middle School students enrolled in the Choose 2 Connect program about the most rewarding aspects of installing a rain garden at their school and describe how they have continued to interact with the rain garden since it was installed in 2016.
- Rain Garden Community Outreach Campaign
 - McKeown and Halsted students from Hampton and Newton Townships will work together in small groups to create a jingle/commercial/song/poster about the benefits of rain gardens and other types of green infrastructure.
 - Students will then present their skits/posters in front of the whole group.
- A-maze-ing Water (Project WET Activity)
 - McKeown and Halsted students will guide a water droplet through a maze of drainage pipes to learn how activities in their homes affect water quality.
 - Students will understand that water treatment plants help to remove contaminants from water supplies to meet the guidelines for specific designated uses (like recreation or drinking water).
- Stormwater (Project WET Activity)
 - Using sponges, students will mimic how stormwater runoff can be captured, stored, and released.
 - Students will learn how city planners can install best management practices like rain gardens, rain barrels, and porous pavement to reduce the effects of polluted stormwater runoff.

Friday, July 26, 2019:

- The Incredible Journey (Project WET Activity)
 - Students will play a game to simulate the movement of a drop of water through the water cycle.
- Water, Water Everywhere
 - Students will understand the limited availability of clean, freshwater through a demonstration involving a 5-gallon bucket, measuring cups, and an eyedropper.

- Students will recognize that most of the water on Earth is unavailable to humans because it is frozen or contains salt.
- Water Filtration Project
 - Students will learn that lack of clean water is an ongoing battle in many developing nations that causes people to become sick or die. Yet, individuals are developing low-cost water filtration solutions to help prevent premature mortality in the developing world.
 - Students will test the efficiency of different types of basic water filters against prepared water standards to determine what the most effective method of filtration is.
 - Students will learn about incorporating cost analysis into the development of their water filters in order to understand that both cost and filtration effectiveness are considered before a water filter is placed on the market for sale.
- Water Filter Design Challenge
 - Students will design and construct their own water filters using a combination of different household products.
 - The water filters will then be tested for how well they filter sediment out of a water sample.
 - Discussion: How are rain gardens like water filters?

Monday, July 29, 2019:

- Wastewater Treatment Plant Site Visit
 - Students will visit the Upper Walkkill Valley Wastewater Treatment Plant for a tour of the plant.
 - Camp participants will learn how wastewater from homes and businesses is managed at the facility. Additionally, students will understand that large rainstorms can dramatically impact the volume of stormwater that needs to be treated at a wastewater facility.
- Ideal Farms Site Visit
 - Students will visit a livestock and crop farm to learn about the different types of non-point source pollutants running off of the property and into the Paulins Kill River.
 - Students will then walk through a forested buffer installed on the property to see steps that the farmers are taking to reduced their environmental impact. Students will observe how the trees act as natural pollutant/waste treatment systems.

Tuesday, July 30, 2019:

- Super Bowl Surge (Project WET Activity)
 - Students will learn how wastewater systems can become overwhelmed during times of peak demand, causing excess waste to be discharged directly into rivers.
 - Students will then develop solutions to combat the problem, such as building a secondary wastewater treatment plant or encouraging residents to install low-flow toilets and showers in their homes.
- McKeown School rain garden maintenance
 - Students will work with the SCMUA-WRWGM to weed the rain garden that was installed in 2016.
- Porous Pavement Design Plans
 - Students will examine the design plans/porous pavement construction site at McKeown School.
 - They will then discuss how porous pavement installation can reduce the volume of polluted runoff that enters the nearby Paulins Kill River.

- Porous paver field test
 - Students will test water infiltration through a porous paver made by the SCMUA-WRWMG and will discuss what materials need to be removed to make a paver porous.
- Turfstone (grass) paver installation at McKeown School
 - Students will work with the SCMUA-WRWMG to install permeable pavers along the perimeter of the school's Japanese garden and discuss how such pavers can be installed on driveways, sidewalks, and patios as an alternative to traditional asphalt/concrete.
 - Students will understand that by incorporating soil and grass between each paving stone, they will be helping to increase stormwater infiltration (and reducing runoff) during rainfall events.

Wednesday, July 31, 2019:

- Planting at the Culver Lake rain garden: students will enhance the Culver Lake rain garden that was installed in October 2018 by planting additional flowers and shrubs within the garden.
- The SCMUA-WRWMG will educate students about its Paulins Kill Lakes Initiative, helping them understand how high density stormwater management projects in lake communities are beneficial for protecting the health of the lake.
- Presentation from the Greater Culver Lake Watershed Conservation Foundation about the history of land use and water quality changes at Culver Lake
- Water testing activity
 - Students will test several water samples from different streams/lakes in the Paulins Kill Watershed for the following parameters: chlorine, copper, nitrates, nitrites, alkalinity, pH, hardness, and iron
 - Students will develop an understanding about the importance of water quality monitoring for tracking pollutant inputs into local waterways.
 - With baseline data, students will discuss policy/practice changes that can be adopted by Sussex County residents to reduce the amount of pollution entering rivers, lakes, and streams.
- Post-Camp Stormwater Survey: To determine if students' level of knowledge increased after participation in SCMUA-WRWMG Stormwater Camp.
- Pizza picnic lunch at Sunrise Mountain in Stokes State Forest
 - From the peak, students will be able to see a wide cross-section of Sussex County, including views of the Delaware River.
 - Discussion: how land use impacts stream health

Friday, August 30, 2019

- Floating Classroom Tour
 - Students will participate in a floating classroom tour around Lake Hopatcong led by volunteers from the Lake Hopatcong Foundation.
 - Students will understand the human role in causing water pollution as well as steps that are currently being undertaken to combat the problem around Lake Hopatcong and beyond.