

Unit Title: Stormwater Management

Summary: An integrated, cross-curricular project based unit of study.

Status:

- Initial Draft (date: ___/10/5/15___)
- Revised Draft (date: _____)
- peer-reviewed (date: _____)

Stage 1 – Identify Desired Results

Big Ideas:

Students need to understand how our climate is changing and how our ecosystems can be impacted both positively and negatively by our actions. Our community, state, country, and world are all involved in impacting our world.

Newark is its own unique ecosystem. We have a responsibility to ourselves and our environment to maintain and protect it as a safe, healthy place for ourselves and all things that live in it.

Established Goals:

Standards:

CCSS.ELA-Literacy

[.RI.3.1](#) Ask and answer questions to demonstrate understanding of a text, referring explicitly to the text as the basis for the answers.

[.RI.3.3](#) Describe the relationship between a series of historical events, scientific ideas or concepts, or steps in technical procedures in a text, using language that pertains to time, sequence, and cause/effect.

[.RI.3.4](#) Determine the meaning of general academic and domain-specific words and phrases in a text relevant to a *grade 3 topic or subject area*.

[.RI.3.5](#) Use text features and search tools (e.g., key words, sidebars, hyperlinks) to locate information relevant to a given topic efficiently.

[.RI.3.6](#) Distinguish their own point of view from that of the author of a text.

[.RI.3.7](#) Use information gained from illustrations (e.g., maps, photographs) and the words in a text to demonstrate understanding of the text (e.g., where, when, why, and how key events occur).

[.SL.3.1](#) Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 3 topics and texts*, building on others' ideas and expressing their own clearly.

[.SL.3.1.a](#) Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.

[.SL.3.1.b](#) Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).

[.SL.3.1.c](#) Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.

[.SL.3.1.d](#) Explain their own ideas and understanding in light of the discussion.

[.SL.3.4](#) Report on a topic or text, tell a story, or recount an experience with appropriate facts and relevant, descriptive details, speaking clearly at an understandable pace.

[.SL.3.6](#) Speak in complete sentences when appropriate to task and situation in order to provide requested detail or clarification.

[.W.3.1](#) Write opinion pieces on topics or texts, supporting a point of view with reasons.

[.W.3.2](#) Write informative/explanatory texts to examine a topic and convey ideas and information clearly.

[.W.3.4](#) With guidance and support from adults, produce writing in which the development and organization are appropriate to task and purpose.

[.W.3.5](#) With guidance and support from peers and adults, develop and strengthen writing as needed by planning, revising, and editing.

CCSS.Math.Content

[.3.MD.B.4](#) Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units—whole numbers, halves, or quarters.

[.3.MD.C.5](#) Recognize area as an attribute of plane figures and understand concepts of area measurement.

[.3.MD.C.7](#) Relate area to the operations of multiplication and addition.

[.3.MD.D.8](#) Solve real world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

[.3.G.A.1](#) Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

[.3.G.A.2](#) Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. For example, partition a shape into 4 parts with equal area, and describe the area of each part as $\frac{1}{4}$ of the area of the shape.

NJCCCS: Technology

8.1 Educational Technology - All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.

Next Generation Science Standards:

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

3-5-ETS1-1. Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

4-ESS2-2. Analyze and interpret data from maps to describe patterns of Earth's features.

5-ESS3-1. Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.

3-5-ETS1-2. Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.

3-5-ETS1-3. Plan and carry out fair tests in which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.

3-LS4-3. Construct an argument with evidence that in a particular habitat some organisms can survive well, some survive less well, and some cannot survive at all.

3-LS4-4. Make a claim about the merit of a solution to a problem caused when the environment changes and the types of plants and animals that live there may change.

3-ESS2-1. Represent data in tables and graphical displays to describe typical weather conditions expected during a particular season.

3-ESS2-2. Obtain and combine information to describe climates in different regions of the world.

3-ESS3-1. Make a claim about the merit of a design solution that reduces the impacts of a weather-related hazard

What essential questions will be considered?

- How does our environment impact living things and vice versa?
- What is an ecosystem?
- How do humans affect our environment?
- Where and what types of environments are found in NJ?
- How are decisions made about environmental issues?
- What is our responsibility to maintaining a healthy environment for ourselves and other living things?
- What are current environmental issues and concerns?
- How can we communicate with our government to help make change?
- How do engineers and scientists attempt to solve environmental issues?
- What is my personal impact on the environment?

What understandings are desired?

- Living things have an impact on the environment and vice versa
- An ecosystem is a biological community of interacting organisms and their physical environment
- Humans can affect the environment both positively and negatively
- NJ has several regions with very different environments
- The government makes decisions that can affect the environment
- People have a responsibility to maintain a healthy environment for ourselves and the living organisms in our environment both now and in the future
- People can affect positive change by becoming active, expressing opinions to government representatives
- We can each make personal changes that can have a positive impact of the environment
- Engineers work to address problems and find solutions using science, technology, and math



Newark Educators' Community Charter School

Participants to be interviewed by the 3rd Grade Class



Deborah Kim Gaddy, Environmental Justice Organizer, Clean Water Action

Kim develops and implements Clean Water Action and Clean Water Fund's grassroots environmental justice campaigns and coalition building efforts. She is the Chair, Newark Environmental commission and former Chair of the Essex County Environmental Commission. Also, she is a member of NJDEP's Environmental Justice Advisory Council, founding member of the NJ Environmental Justice Alliance and New Jersey President of the International Black Women's Congress. Previously, she worked in

Municipal government in Newark for 12 years and served as the first female Chief of Staff for the Newark Municipal Council. Kim is a 2000 Neighborhood Leadership Fellow and former elected school board member for the Newark Public schools. Kim is a 2007 recipient of the Environmental Protection Agency Region 2 Environmental Community award for her fight for Environmental Justice in urban communities. She is a graduate of Rutgers University, member of the First Baptist Church of Nutley and proud mother of Sonny Jr., Frankie Mo'Nay, and Julian.



Chris Perez, Program Associate, Rutgers Cooperative Extension Water Resources Program

Chris graduated in 2014, with a Bachelor of Science in Landscape Architecture from the School of Environmental and Biological Sciences at Rutgers University. He started at the Water Resources Program as an intern just prior to graduating. While interning, he applied technical skills to contribute to the planning and design of one of the first public green infrastructure projects in the City of Newark. As a full-time staff member, he provides conceptual and technical design input for green

infrastructure and urban stormwater management projects across the state of New Jersey. He develops design documents including feasibility studies, conceptual renderings, and construction documents. As a member of Rutgers Cooperative Extension, Chris provides technical and graphic expertise in support of community outreach and design workshops, in addition to green infrastructure feasibility assessment and project implementation.



Elena López, Program Director for Newark, New Jersey Tree Foundation

Elena joined the NJ Tree Foundation in January 2013, and is very excited to have become a professional tree-hugger. She earned her Bachelor's degree in Environmental Studies and Anthropology from Franklin and Marshall College. When not hugging trees she can be found playing Ultimate Frisbee, taking photos, or just enjoying the outdoors.



**Justin Allen, Director of Urban Agriculture,
Greater Newark Conservancy**

Since 2012, Justin has grown his passion for organic farming at Greater Newark Conservancy, first as farm stand coordinator, next, Director of Community Greening, and now as the Director of Urban Agriculture. In addition to managing the Conservancy's two urban farm sites, he is enthusiastic about sharing his knowledge of organic growing techniques, permaculture and holistic nutrition with the public through seminars, workshops and everyday

conversations. Justin received an Associate of Arts from Bergen Community College. He also received his Bachelors of Science in Nutritional Science with a concentration in Dietetics, along with a certificate in Food Systems Education and Administration from Rutgers University. He went on to complete a Dietetic Internship at Montclair State University.



**Sarah O'Leary, Education Program
Coordinator/Horticulturist, Greater Newark Conservancy**

Sarah came to Greater Newark Conservancy in 2009 with experience in botanic gardens, landscape architecture offices, and perhaps most importantly, at home as a mother. As an education program coordinator and horticulturist for the Conservancy she works with schools to design, develop, cultivate and program school gardens. She loves teaching and sharing her enthusiasm for growing things with learners of all ages.

Sarah has enjoyed learning about the unique environments of the places she's lived. She earned her bachelor's degree at the chilly University of Minnesota, her Master of Landscape

Architecture at the temperate University of Virginia, and was fascinated by the varied habitats she explored during a Fulbright Fellowship year in Israel.



Jacob Kim, Director of Community Greening, Greater Newark Conservancy

Jacob Kim grew up in Brooklyn, NY and loves cities. His interest in making Newark a green, sustainable, healthy city brought him to Greater Newark Conservancy in 2014. He coordinated the Central Ward Garden project creating ten new gardens for Newark and planting dozens of fruit trees. He now serves as Director of Community Greening helping preserve green space in the city and teaching others to cultivate productive food-producing plots.

Jacob graduated from Rutgers University majoring in psychology and criminal justice. He has expanded his knowledge of horticulture, sustainability and growing practices with certified master gardener training, tree pruning and cultivation courses, as well as Will Allen's Community Food Systems workshops.

Name _____ Date _____ #: _____

Environmentalist Interview

Environmentalist Name: _____

Environmentalist Position: _____

Question 1: How do you take care of the earth?

Question 2: What environments do you work to protect?

Question 3: What instruments do you use to make our environment healthy?

Question 4: What is your favorite part of helping the environment?

Question 5: What is the most difficult part of helping the environment?

Question 6: How can we as students help our environment?

Other Relevant Questions and Notes: