

Englewood Public School District
Science
Grade 5
Third Marking Period

Unit 4: Water on Earth

Overview: In this unit of study, students describe and graph data to provide evidence about the distribution of water on Earth. The crosscutting concepts of *scale, proportion, quantity* and *systems, and systems models* are called out as organizing concepts for these disciplinary core ideas. Students are expected to demonstrate grade-appropriate proficiency in *using mathematics and computational thinking* and in *obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas. This unit is based on 5-ESS2-2 and 5-ESS3-1.

Time Frame: 15 days

Enduring Understandings:

Nearly all of Earth's available water is in the ocean.

Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.

Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.

Individuals and communities are doing things to help protect Earth's resources and environments.

Essential Questions:

Where is water found on the Earth?

What percentage of the Earth's water is fresh water?

How do individual communities use science ideas to protect Earth's resources and environment?

Standards	Topics and Objectives	Activities	Resources	Assessments
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<p>(5-ESS2-2): Describe and graph the amounts and percentages of water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.</p> <p>(5-ESS3-1): Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment .</p>	<p>Topics</p> <p>Water on Earth</p> <p>Twenty-First Century Themes and Skills include:</p> <ul style="list-style-type: none"> • The Four C's • Environmental Literacy • Global Awareness <p>Objectives</p> <p><u>Water Conservation:</u></p> <p>Students will identify sources of fresh water available for consumption and understand the need for water conservation due to the limited fresh water supply at home and in the community.</p> <p><u>Water, Water Everywhere</u></p> <p>Students will identify the percentage of freshwater on earth that is available for human use and the distribution of different types around the globe.</p>	<p><u>Water Conservation</u></p> <p>Students study the availability of fresh water on Earth and the methods that can be used to purify and conserve it. Students also assess how much water they and their families typically use and think about ways to reduce water usage. (RI.5.9, CRP4, CRP8, 8.1.5.A.3, 6.3.8.A.1, 9.2.8.B.3))</p> <p><u>Water, Water Everywhere:</u></p> <p>Students observe a demonstration of how much water is available on the planet for human consumption. (MP.2, 6.3.8.A.1)</p> <p><u>Hydrosphere</u></p> <p>Students explore the distribution of water on Earth by completing an investigation. Then students construct a circle graph to further analyze the Earth's water. (5-ESS2-2, MP.4, SL.5.5, 8.1.5.F.1)</p> <p><u>Water Pollution:</u></p> <p>Students explore water pollution by researching the problem; causes, impact, and the steps humans can take help protect the environment. (5-ESS3-1, W.5.8, W.5.9, 9.2.8.B.3, 6.3.8.A.1)</p>	<p><u>Water Conservation:</u></p> <p><u>Multimedia Resources</u></p> <ul style="list-style-type: none"> • Global Water Distribution Flash Interactive • Water Treatment Plant QuickTime Video • Conserving Water at Home QuickTime Video • Water Conservation: Israel QuickTime Video • Water Conservation: Mexico QuickTime Video • Water Conservation: Denver, CO QuickTime Video <p><u>Materials</u></p> <ul style="list-style-type: none"> • Two 2-liter bottles full of water • Food coloring (dark color preferable) • Measuring cups (for measuring amounts ranging from 50 ml to 14.5 ml) • Five clear containers (to hold water ranging in volume from 1,950 ml to 0.5 ml) • Markers and tape for making labels • Map of your local watershed (See Surf Your Watershed for maps) • Water Use Worksheet PDF Document • Notebooks for student work <p><u>Water, Water Everywhere:</u></p> <p><u>Part 1:</u></p> <ul style="list-style-type: none"> • Large, clear container (can hold at least one gallon) • Medium clear container (can hold at least one cup) • 3 small clear containers (test tubes, juice glasses, etc.) • Water • Soil • Blue food coloring • 1 cup measure • Full set of measuring spoons • Masking tape <p><u>Part 2:</u></p> <ul style="list-style-type: none"> • Adding machine paper (1 meter per student) • Meter sticks • Markers <p><u>Hydrosphere:</u></p> <p><u>Materials:</u></p> <ul style="list-style-type: none"> • 10 One-Liter Bottles of Water (filled, one for each group) 	<p>Formative Assessments:</p> <p>Do Now/Ticket to Leave</p> <p>Water, Water Everywhere:</p> <p>Exit Slip</p> <p>Hydrosphere:</p> <p>Circle Graphs</p> <p>Benchmark Assessment:</p> <p>Exact Path</p> <p>Summative Assessments:</p> <p>Water Conservation:</p> <p>Student Editorial</p> <p>Water Pollution:</p> <p>Student Notes Completed Big Book</p> <p><u>Alternative Assessments:</u></p> <p>Students will describe physical quantities, such as weight and volume, in standard units.</p> <p>Measure, Observe, Graph</p>
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Hydrosphere:

Students will make a graph to show the distribution of water on Earth and write about my observations.

Water Pollution:

Students will explain the steps humans can take to protect the environment from water pollution.

- 10 Tubs of Materials (one for each group)
- 4 Cups, 1 Pipette, 1 Graduated Cylinder, and Paper Towel (materials in each tub)
- 5 Tape Dispensers (1 dispenser shared between two groups)

Investigation PDF

Circle Graph

Water Pollution:**Big Book Examples:**

- Big Book Example 1
- Big Book Example 2
- Big Book Example 3

https://www.goodreads.com/list/show/27342.Best_Childrens_Books_about_Water

Additional Resources:

Environmental Issue Sheet

Teacher Model Notes

<https://water.usgs.gov/edu/earthhowmuch.html>

<https://www.greenfacts.org/en/water-resources/>

<https://www.nationalgeographic.com/environment/freshwater/water-conservation-tips/>

<http://sscwd.org/tips.html>

<http://aquaholics.ucsd.edu/files/WaterConservationFacts1.pdf>

<https://www.conserveh2o.org/water-conservation-kids-activities-games>

<http://www.thewaterpage.com/water-conservation-kids.htm>

<https://wateruseitwisely.com/kids/>

Simulating an Oil Spill to Understand Environmental Impact:

Global Water Distribution

Students will describe and graph quantities such as area and volume to address scientific questions.

Reflection journals, Checklist, Rubrics, Visual Thinking Strategies, Critiques

Students will model with mathematics by using tables, charts, and/or graphs to organize data and information they collect.

Graphic Organizers, Rubrics, Informal Presentations

Students will use print and digital sources to gather information and data that describe the amount of fresh water and salt water on the Earth and where it is found.

Computers, Portfolios-culmination, Essays, Capstone Projects

Students will summarize and paraphrase the

information and use it when creating presentations that describe ways in which communities are using science ideas to protect Earth's resources and environments.

Essays Projects,
Visual
Representations

Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

ELL/ESL students: Students will be supported according to the recommendations for “can do’s” as outlined by WIDA – https://www.wida.us/standards/CAN_DOs/
This particular unit has limited language barriers due to the physical nature of the curriculum.

Students at risk of school failure: Formative and summative data will be used to monitor student success at first signs of failure student work will be Reviewed to determine support. This may include parent consultation, basic skills review and differentiation strategies. With considerations to UDL, time may be a factor in overcoming developmental considerations. More time and will be made available with a certified instructor to aid students in reaching the standards.

Gifted and Talented Students: Students excelling in mastery of standards will be challenged with complex, high level challenges related to the complexity In planning and carrying out investigations and analyzing and interpreting data.

English Language Learners

- Restructure lesson using UDL principals (<http://www.cast.org/our-work/about-udl.html#.VXmoXcfD-UA>).
- Speak and display terminology
- Teacher modeling
- Peer modeling
- Provide ELL students with multiple literacy strategies.
- Word walls
- Use peer readers
- Give page numbers to help the students find answers
- Provide a computer for written work
- Provide two sets of textbooks, one for home and one for school
- Provide visual aides
- Provide additional time to complete a task
- Use graphic organizers

Special Education

- Restructure lesson using UDL principals (<http://www.cast.org/our-work/about-udl.html#.VXmoXcfD-UA>).
- Utilize modifications & accommodations delineated in the student's IEP
- Work with paraprofessional
- Use multi-sensory teaching approaches.
- Work with a partner
- Provide concrete examples
- Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling).

At-Risk

- Using visual demonstrations, illustrations, and models
- Give directions/instructions verbally and in simple written format. Oral prompts can be given.
- Peer Support
- Increase one on one time
- Teachers may modify instructions by modeling what the student is expected to do
- Instructions may be printed out in large print and hung up for the student to see during the time of the lesson.
- Review behavior expectations and make adjustments for personal space or other behaviors as needed.
- Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community.
- Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE,

Gifted and Talented

- Increase the pace of lessons
- Curriculum compacting
- Inquiry-based instruction
- Independent study
- Higher order thinking skills
- Interest based content
- Real world scenarios
- Student Driven Instruction
- Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings.
- Use project-based science learning to connect science with observable phenomena.
- Structure the learning around explaining or solving a social or community-based issue.
- Collaborate with after-school programs or clubs to extend learning opportunities.

		experts from the community helping with a project, journal articles, and biographies).	
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Interdisciplinary Connections:

ELA-NJSLS/ELA:

RI.5.1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1)

RI.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2-2), (5-ESS3-1)

W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS2-2), (5-ESS3-1)

RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1)

W.5.9: Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1)

SL.5.5: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-2)

Mathematics:

MP.2: Reason abstractly and quantitatively. (5-ESS2-2), (5-ESS3-1)

MP.4: Model with mathematics. (5-ESS2-2), (5-ESS3-1)

Career Ready Practices:

CRP4: Communicate clearly and effectively and with reason.

CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Integration of Technology Standards NJSLS 8:

8.1.5.A.3: Use a graphic organizer to organize information about a problem or issue.

8.1.5.F.1: Apply digital tools to collect, organize, and analyze data that supports a scientific finding.

Integration of 21st Century Skills:

9.2.8.B.3

Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career.

Social Studies:

6.3.8.A.1 Deliberate on a public issue affecting an upcoming election, consider opposing arguments, and develop a reasoned conclusion.

Key Vocabulary:

Glacier: A large mass of ice moving slowly over land.

Iceberg: A large mass of ice that has become detached from a glacier and floats in the ocean.

Melt: To change from a solid to a liquid state as a result of warming.

Water: A liquid earth material made of hydrogen and oxygen.

Water quality: A term used to describe the purity of water.

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><u>Using Mathematics and Computational Thinking</u></p> <ul style="list-style-type: none"> Describe and graph quantities such as area and volume to address scientific questions. (5-ESS2-2) <p><u>Obtaining, Evaluating, and Communicating Information</u></p> <ul style="list-style-type: none"> Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1) 	<p><u>ESS2.C: The Roles of Water in Earth's Surface Processes</u></p> <ul style="list-style-type: none"> Nearly all of Earth's available water is in the ocean. Most fresh water is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere. (5-ESS2-2) <p><u>ESS3.C: Human Impacts on Earth Systems</u></p> <ul style="list-style-type: none"> Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1) 	<p><u>Scale, Proportion, and Quantity</u></p> <ul style="list-style-type: none"> Standard units are used to measure and describe physical quantities such as weight and volume. (5-ESS2-2) <p><u>Systems and System Models</u></p> <ul style="list-style-type: none"> A system can be described in terms of its components and their interactions. (5-ESS3-1) <p>-----</p> <p><i>Connections to Nature of Science</i></p> <p>Science Addresses Questions About the Natural and Material World.</p> <ul style="list-style-type: none"> Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)

Englewood Public School District

Science

Grade 5

Third Marking Period

Unit 5: Earth Systems

Overview: In this unit of study, students are able to describe ways in which the geosphere, biosphere, hydrosphere, and atmosphere interact. The crosscutting concept of *systems and system models* is called out as an organizing concept for this disciplinary core idea. Students are expected to demonstrate grade-appropriate proficiency in *developing and using models, obtaining, evaluating, and communicating information*. Students are also expected to use these practices to demonstrate understanding of the core ideas.

This unit is based on 5-ESS2-1 and 5-ESS3-1.

Time Frame: 20 days

Enduring Understandings:

A system can be described in terms of its components and their interactions.

Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans).

Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space.

Essential Questions:

In what ways do the geosphere, biosphere, hydrosphere, and/or atmosphere interact?

How do individual communities use science ideas to protect Earth's resources and environment?

Standards	Topics and Objectives	Activities	Resources	Assessments
(5-ESS2-1): Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or	Topics Earth Systems Twenty-First Century Themes and Skills include: <ul style="list-style-type: none"> The Four C's Environmental 	<u>Shower Curtain Watershed:</u> Students analyze pictures and identify watershed features. Students then make a watershed model using a plastic	<u>Shower Curtain Watershed:</u> <ul style="list-style-type: none"> Watershed pictures Labels or index cards Clear plastic shower curtain Spray bottles with water Sand Diluted food coloring Cake sprinkles Sponges 	Formative Assessments: Do Now/Ticket to Leave Journal Entries <u>Shower Curtain Watershed:</u> Student Diagrams <u>The Rainshadow Effect:</u> Student Notes

<p>atmosphere interacts.</p> <p>(5-ESS3-1): Obtain and combine information about ways individual communities use science ideas to protect the Earth's resources and environment.</p>	<p>Literacy</p> <ul style="list-style-type: none"> Global Awareness <p>Objectives</p> <p><u>Shower Curtain Watershed:</u> Students will identify nonliving and living features found in a watershed and understand possible human negative interactions and positive solutions.</p> <p><u>The Rainshadow Effect:</u> Students explain the rain shadow effect and why it happens.</p> <p><u>The Earth's Systems:</u> Students develop a model to describe Earth's four major systems.</p> <p><u>Polluting the Earth:</u> Students identify ways that humans pollute the soil, air, and water on Earth and create a new sign that could be used to stop pollution.</p> <p><u>Reduce, Reuse, Recycle:</u></p>	<p>shower curtain and a spray bottle of water. (5-ESS2-1, MP.4., 6.3.8.A.1)</p> <p><u>The Rainshadow Effect:</u> Students will begin creating a 3D model of the rain shadow effect. Then, students will explore the rain shadow effect by accessing several online resources. (5-ESS3-1, MP.2, 5.G.A.2, W.5.9, SL.5.5)</p> <p><u>The Earth's Systems:</u> Students are provided with an overview of the four major systems on Earth. Students will then analyze how the four spheres are pictured in a photograph. (W.5.8, 8.2.5.B.2, CRP8, RI.5.7,6.1.4.B.7)</p> <p><u>Polluting the Earth:</u> After identifying ways that humans pollute the air, soil,</p>	<ul style="list-style-type: none"> Small plastic houses, animals, people (6.3.8.A.1) <p><u>The Rainshadow Effect:</u></p> <ul style="list-style-type: none"> <u>Teacher Demonstration</u> <u>Teacher Demonstration - Paint</u> <u>Teacher Demonstration - Vegetation</u> <p><u>Materials:</u></p> <ul style="list-style-type: none"> 10 sets of Brown, Khaki, Green, & Blue Paint 10 Pieces of Cardboard, 10 Half Sheets of Posterboard, and 10 sheets of Bulletin Board Paper (Cardboard Size: 9" x 12", Poster Board: I cut 5 sheets in half.) 10 Tape Dispensers Crayola Model Magic Cut into Thirds 10 Sets of Four Sizes of Paintbrushes Graphic Organizer <p><u>The Earth's Systems:</u></p> <ul style="list-style-type: none"> Video Clip Earth Systems Template Teacher Notes Biosphere Notes Hydrosphere Notes Geosphere Notes Atmosphere Notes <p><u>Polluting the Earth:</u></p> <ul style="list-style-type: none"> Research Page Pollution Signs Example <p><u>Reduce, Reuse, Recycle:</u></p> <p><u>Warm Up:</u></p> <ul style="list-style-type: none"> Chart paper for creating a sign showing how long it takes 10 common items to decompose. I got the information for my poster from a PDF I found online. Black construction paper to cover up the times so that students have to guess. Whiteboard and marker for each student <p><u>Guided Practice:</u></p>	<p>Benchmark Assessment: See Unit 4 for Quarterly Assessment</p> <p>Summative Assessments:</p> <p><u>The Rainshadow Effect:</u> 3D Model Student Notes</p> <p><u>The Earth's Systems: Observation Sheet</u></p> <p><u>Polluting the Earth:</u> Anti – Pollution Poster</p> <p><u>Reduce, Reuse, Recycle:</u> Student project and presentation</p> <p>Alternative Assessments: Students will develop a model using an example to describe a scientific principle.</p> <p>Tables, Charts, Graphs</p> <p>Students will make inferences, answer questions, participate in discussions, solve problems, and support their thinking about the interactions that occur among Earth's systems and the impact that humans have on Earth's resources and environments.</p> <p>Entry/Exit tickets, Socratic discussions, Think Pair Share, Peer Reviews</p>
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	<p>Students will create a product by reusing a common household item such as paper towel rolls, newspaper, or plastic bags.</p>	<p>and water on Earth, students work in groups to create a new sign to stop pollution. (CRP4, 8.2.5.B.4, RI.5.9, 6.3.8.A.1)</p>	<ul style="list-style-type: none"> • Chart paper for creating a poster for meanings • Examples of Reduce, Reuse, and Recycle <p>Explore:</p> <ul style="list-style-type: none"> • Computers or laptops for searching for ideas • A lot of plastic bags, toilet paper rolls, paper towel rolls, and plastic bottles <p><u>Reduce, Reuse, Recycle:</u></p> <p>Students identify ways to reduce, reuse, and recycle products, then work in teams to develop a product by reusing common household items. (RI.5.1,6.3.8.A.1)</p> <p><u>Additional Assessments:</u></p> <p>https://www.youtube.com/watch?v=BnpF0ndXk-8 https://betterlesson.com/lesson/634345/the-earth-s-systems https://pmm.nasa.gov/education/lesson-plans/connect-spheres-earth-systems-interactions https://www.youtube.com/watch?v=tesqNIXwamQ https://www.edhelper.com/ReadingComprehension_33_332.html http://www.csun.edu/science/books/sourcebook/chapters/8-organizing/files/earth-systems-interact NOAA What-a-Cycle Shower Curtain Watershed</p>
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Accommodations and Modifications:

Students with special needs: Support staff will be available to aid students related to IEP specifications. 504 accommodations will also be attended to by all instructional leaders. Physical expectations and modifications, alternative assessments, and scaffolding strategies will be used to support this learning. The use of Universal Design for Learning (UDL) will be considered for all students as teaching strategies are considered.

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English Language Learners	Special Education	At-Risk	Gifted and Talented
<ul style="list-style-type: none"> ● Speak and display terminology ● Teacher modeling ● Peer modeling ● Provide ELL students with multiple literacy strategies. ● Word walls ● Use peer readers ● Give page numbers to help the students find answers ● Provide a computer for written work ● Provide two sets of textbooks, one for home and one for school ● Provide visual aides ● Provide additional time to complete a task ● Use graphic organizers 	<ul style="list-style-type: none"> ● Utilize modifications & accommodations delineated in the student's IEP ● Work with paraprofessional ● Use multi-sensory teaching approaches. ● Work with a partner ● Provide concrete examples ● Restructure lesson using UDL principals (http://www.cast.org/our-work/about-udl.html#.VXmoXcfD_UA). ● Provide students with multiple choices for how they can represent their understandings (e.g. multisensory techniques-auditory/visual aids; pictures, illustrations, graphs, charts, data tables, multimedia, modeling). 	<ul style="list-style-type: none"> ● Using visual demonstrations, illustrations, and models ● Give directions/instructions verbally and in simple written format. Oral prompts can be given. ● Peer Support ● Increase one on one time ● Teachers may modify instructions by modeling what the student is expected to do ● Instructions may be printed out in large print and hung up for the student to see during the time of the lesson. ● Review behavior expectations and make adjustments for personal space or other behaviors as needed. ● Structure lessons around questions that are authentic, relate to students' interests, social/family background and knowledge of their community. ● Provide opportunities for students to connect with people of similar backgrounds (e.g. conversations via digital tool such as SKYPE, experts from the community helping with a project, journal articles, and biographies). 	<ul style="list-style-type: none"> ● Curriculum compacting ● Inquiry-based instruction ● Independent study ● Higher order thinking skills ● Adjusting the pace of lessons ● Interest based content ● Real world scenarios ● Student Driven Instruction ● Engage students with a variety of Science and Engineering practices to provide students with multiple entry points and multiple ways to demonstrate their understandings. ● Use project-based science learning to connect science with observable phenomena. ● Structure the learning around explaining or solving a social or community-based issue. ● Collaborate with after-school programs or clubs to extend learning opportunities.

Interdisciplinary Connections:				
ELA-NJSLS/ELA: RI.5.1: Quote accurately from a text when explaining what the text says explicitly and when drawing inferences from the text. (5-ESS3-1) RI.5.7: Draw on information from multiple print or digital sources, demonstrating the ability to locate an answer to a question quickly or to solve a problem efficiently. (5-ESS2-1),(5-ESS3-1) W.5.8: Recall relevant information from experiences or gather relevant information from print and digital sources; summarize or paraphrase information in notes and finished work, and provide a list of sources. (5-ESS3-1) RI.5.9: Integrate information from several texts on the same topic in order to write or speak about the subject knowledgeably. (5-ESS3-1) W.5.9: Draw evidence from literary or informational texts to support analysis, reflection, and research. (5-ESS3-1) SL.5.5: Include multimedia components (e.g., graphics, sound) and visual displays in presentations when appropriate to enhance the development of main ideas or themes. (5-ESS2-2),(5-ESS2-1)				
Mathematics: MP.2: Reason abstractly and quantitatively. (5-ESS2-1),(5-ESS3-1) MP.4: Model with mathematics. (5-ESS2-1),(5-ESS3-1) 5.G.A.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (5-ESS2-1)				
Career Ready Practices: CRP4: Communicate clearly and effectively and with reason. CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.				
Integration of 21st Century Skills: 9.2.8.B.3 Evaluate communication, collaboration, and leadership skills that can be developed through school, home, work, and extracurricular activities for use in a career				
Integration of Technology Standards NJSLS 8: 8.2.5.B.2 : Examine systems used for recycling and recommend simplification of the systems and share with product developers. 8.2.5.B.4: Investigate ways that various technologies are being developed and used to reduce improper use of resources.				

Social Studies:

6.3.8.A.1 Deliberate on a public issue affecting an upcoming election, consider opposing arguments, and develop a reasoned conclusion.

Key Vocabulary:

Watershed: an area of land that sheds water into a common stream, lake, ocean or other body of water.

Runoff: water that flows across the surface of the ground

Hydrosphere: the interacting water on, under, and above Earth's surface

Atmosphere: the layer of gases surrounding Earth. The layers include the troposphere, stratosphere, mesosphere, thermosphere, and exosphere

Biosphere: a system of interacting living organisms on Earth

Recycling: the process of reusing materials for other purpose

Science and Engineering Practices	Disciplinary Core Ideas	Crosscutting Concepts
<p><u>Developing and Using Models</u></p> <ul style="list-style-type: none"> Develop a model using an example to describe a scientific principle. (5-ESS2-1) <p><u>Obtaining, Evaluating, and Communicating Information</u></p> <ul style="list-style-type: none"> Obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem. (5-ESS3-1) 	<p><u>ESS2.A: Earth Materials and Systems</u></p> <ul style="list-style-type: none"> Earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather. (5-ESS2-1) <p><u>ESS3.C: Human Impacts on Earth Systems</u></p> <ul style="list-style-type: none"> Human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments. (5-ESS3-1) 	<p><u>Systems and System Models</u></p> <ul style="list-style-type: none"> A system can be described in terms of its components and their interactions. (5-ESS2-1),(5-ESS3-1) <p>-----</p> <p>---</p> <p><i>Connections to Nature of Science</i></p> <p>Science Addresses Questions About the Natural and Material World.</p> <ul style="list-style-type: none"> Science findings are limited to questions that can be answered with empirical evidence. (5-ESS3-1)

