

Inquiry Investigations™
Environmental Issues and Solutions MODULE - 1287226
Grades: 7-10

Frey Scientific
 80 Northwest Boulevard
 Nashua, NH 03063-4067
 1-800-225-3739
 www.freyscientific.com
 www.freyscientific.com/inquiryinvestigations

Maryland Content Standards
Science
Grade 7

STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.A.1.	Constructing Knowledge: Design, analyze, or carry out simple investigations and formulate appropriate conclusions based on data obtained or provided.
INDICATOR / PROFICIENCY LEVEL	1.A.1.b.	<p>Develop the ability to clarify questions and direct them toward objects and phenomena that can be described, explained, or predicted by scientific investigations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.c.</p>	<p>Explain and provide examples that all hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on

		<p>Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.e.</p>	<p>Explain that if more than one variable changes at the same time in an investigation, the outcome of the investigation may not be clearly attributable to any one of the variables.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.h.</p>	<p>Use mathematics to interpret and communicate data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 11 Activity

		<p>1: Calculating a Biodiversity Index for Leaf Litter Ecosystems</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.O.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.B.1.	Applying Evidence and Reasoning: Review data from a simple experiment, summarize the data, and construct a logical argument about the cause-and-effect relationships in the experiment.
INDICATOR / PROFICIENCY LEVEL	1.B.1.a.	<p>Verify the idea that there is no fixed set of steps all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>2: Identifying Owl Prey</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

INDICATOR / PROFICIENCY LEVEL	1.B.1.b.	<p>Explain that what people expect to observe often affects what they actually do observe and that scientists know about this danger to objectivity and take steps to try to avoid it when designing investigations and examining data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on
-------------------------------	----------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

		<p>Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.B.1.d.</p>	<p>Describe the reasoning that lead to the interpretation of data and conclusions drawn.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3:

		<p>Determining the LD50 of a Water Pollutant</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.C.1.	Communicating Scientific Information: Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.
INDICATOR / PROFICIENCY LEVEL	1.C.1.a.	<p>Organize and present data in tables and graphs and identify relationships they reveal.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.C.1.b.	<p>Interpret tables and graphs produced by others and describe in words the relationships they show.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.C.1.e.	<p>Explain how different models can be used to represent the same thing. What kind of a model to use and how complex it should be depend on its purpose. Choosing a useful model is one of the instances in which intuition and creativity come into play in science, mathematics, and engineering</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1:

		<p>Modeling Salt Runoff Discharge</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.C.1.f.</p>	<p>Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1:

		<p>Food Web Organization</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.O.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.1.	Technology: Explain that complex systems require control mechanisms.
INDICATOR / PROFICIENCY LEVEL	1.D.1.a.	<p>Explain that the choice of materials for a job depends on their properties and on how they interact with other materials.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>3: Constructing a Predator-Prey Food Web</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.D.1.c.	<p>Realize that design usually requires taking constraints into account. (Some constraints, such as gravity or the properties of the materials to be used, are unavoidable. Other constraints, including economic, political, social, ethical, and aesthetic ones also limit choices.)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.2.	Technology: Analyze, design, assemble and troubleshoot complex systems.
INDICATOR / PROFICIENCY LEVEL	1.D.2.a.	<p>Provide evidence that a system can include processes as well as things.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.D.2.c.</p>	<p>Analyze any system to determine its connection, both internally and externally to other systems and explain that a system may be thought of as containing subsystems and as being a subsystem of a larger system.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.3.	Technology: Analyze the value and the limitations of different types of models in explaining real things and processes.
INDICATOR / PROFICIENCY LEVEL	1.D.3.a.	<p>Explain that the kind of model to use and how complex it should be depends on its purpose and that it is possible to have different models used to represent the same thing.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization

		<ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
INDICATOR / PROFICIENCY LEVEL	1.D.3.b.	<p>Explain, using examples that models are often used to think about processes that happen too slowly, too quickly, or on too small a scale to observe directly, or that are too vast to be changed deliberately, or that are potentially dangerous.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
INDICATOR / PROFICIENCY LEVEL	1.D.3.c.	<p>Explain that models may sometimes mislead by suggesting characteristics that are not really shared with what is being modeled.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
STRAND / TOPIC / STANDARD	MD.2.0.	<p>Earth/Space Science: Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Teacher Resource CD: Air, Water, and Soils
STRAND / TOPIC / STANDARD	MD.3.0.	<p>Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.</p>
TOPIC / INDICATOR	3.A.1.	<p>Diversity of Life: Compile evidence to verify the claim of biologists that the features of organisms connect or differentiate them-these include external and internal structures (features) and processes.</p>
INDICATOR /	3.A.1.a.	<p>Provide examples and explain that organisms sorted into groups share similarities in external structures as well as similarities in internal anatomical structures and</p>

PROFICIENCY LEVEL		<p>processes which can be used to infer the degree of relatedness among organisms: Vascular - non vascular plants; Closed - open circulatory systems; Asexual - sexual reproduction; Respiration (lungs-gills-skin); Digestion.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web
INDICATOR / PROFICIENCY LEVEL	3.A.1.b.	<p>Identify general distinctions among organisms that support classifying some things as plants, some as animals, and some that do not fit neatly into either group: Animals consume food; Plants make food.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey
STRAND / TOPIC / STANDARD	MD.3.0.	Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.
TOPIC / INDICATOR	3.B.1.	Cells: Gather and organize data to defend or argue the proposition that all living things are cellular (composed of cells) and that cells carry out the basic life functions.
INDICATOR / PROFICIENCY LEVEL	3.B.1.a.	<p>Use microscopes or other magnifying instruments to observe, describe, and compare the cellular composition of different body tissues and organs in a variety of organisms (animals and plants).</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY LEVEL	3.B.1.d.	<p>Collect data from investigations using single celled organisms, such as yeast or algae to explain that a single cell carries out all the basic life functions of a multicellular organism: Reproducing; Extracting energy from food; Getting rid of wastes.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY LEVEL	3.B.1.e.	<p>Based on data compiled from a number of lessons completed, take and defend a position on the statement 'The way in which cells function is the same in all organisms.'</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population

		<ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.3.0.	Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.
TOPIC / INDICATOR	3.B.2.	Cells: Recognize and provide examples that human beings, like other organisms have complex body systems of cells, tissues and organs that interact to support an organism's growth and survival.
INDICATOR / PROFICIENCY LEVEL	3.B.2.a.	Describe and explain that the complex set of systems found in multicellular organisms are made up of different kinds of tissues and organs which are themselves composed of differentiated cells. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey
STRAND / TOPIC / STANDARD	MD.3.0.	Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and the results from the interactions that occur over time.
TOPIC / INDICATOR	3.E.1.	Flow of Matter and Energy: Explain that the transfer and transformation of matter and energy links organisms to one another and to their physical setting.
INDICATOR / PROFICIENCY LEVEL	3.E.1.a.	Cite evidence from research and observations that food provides molecules that serve as fuel and building materials for all organisms. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web
INDICATOR / PROFICIENCY LEVEL	3.E.1.b.	Cite evidence from research and observations that organisms that eat plants or animals break down what they have consumed (food) to produce the materials and energy they need to survive or store for later use. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	3.E.1.c.	Investigate and describe the processes that enable plants to use the energy from light to make sugars (food) from carbon dioxide and water. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Teacher Resource CD: Air, Water, and Soils

		<ul style="list-style-type: none"> Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	3.E.1.e.	<p>Ask and seek answers to questions about the fact that transfer of matter between organisms continues indefinitely because organisms are decomposed after death to return food materials to the environment.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Ecosystems, Energy, and Biodiversity Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	3.E.1.f.	<p>Provide evidence that supports the premise 'In the flow of matter system the total amount of matter remains constant even though its form and location change': Carbon cycle; Nitrogen (cycle); Food chains and food webs.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.5.0.	<p>Physics: Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming
STRAND / TOPIC / STANDARD	MD.6.0.	<p>Environmental Science: Students will use scientific skills and processes to explain the interactions of environmental factors (living and non-living) and analyze their impact from a local to a global perspective.</p>
TOPIC /	6.B.1.	<p>Environmental Issues: Recognize and describe that environmental</p>

INDICATOR		changes can have local, regional, and global consequences.
INDICATOR / PROFICIENCY LEVEL	6.B.1.a.	<p>Identify and describe a local, regional, or global environmental issue.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem

		<ul style="list-style-type: none"> • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.B.1.b.</p>	<p>Identify and describe that different individuals or groups are affected by an issue in different ways.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Maryland Content Standards
Science
Grade 8**

STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.A.1.	Constructing Knowledge: Design, analyze, or carry out simple investigations and formulate appropriate conclusions based on data obtained or provided.
INDICATOR / PROFICIENCY LEVEL	1.A.1.b.	<p>Develop the ability to clarify questions and direct them toward objects and phenomena that can be described, explained, or predicted by scientific investigations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.c.</p>	<p>Explain and provide examples that all hypotheses are valuable, even if they turn out not to be true, if they lead to fruitful investigations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>1: Dissecting an Owl Pellet</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.e.</p>	<p>Explain that if more than one variable changes at the same time in an investigation, the outcome of the investigation may not be clearly attributable to any one of the variables.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.A.1.h.</p>	<p>Use mathematics to interpret and communicate data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.B.1.	Applying Evidence and Reasoning: Review data from a simple experiment, summarize the data, and construct a logical argument about the cause-and-effect relationships in the experiment.
INDICATOR / PROFICIENCY LEVEL	1.B.1.a.	<p>Verify the idea that there is no fixed set of steps all scientists follow, scientific investigations usually involve the collection of relevant evidence, the use of logical reasoning, and the application of imagination in devising hypotheses and explanations to make sense of the collected evidence.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>3: Constructing a Predator-Prey Food Web</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.B.1.b.</p>	<p>Explain that what people expect to observe often affects what they actually do observe and that scientists know about this danger to objectivity and take steps to try to avoid it when designing investigations and examining data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>1: Dissecting an Owl Pellet</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.B.1.d.</p>	<p>Describe the reasoning that lead to the interpretation of data and conclusions drawn.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4:

		<p>Observing the Effects of Acid Rain and Other Pollutants on Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.C.1.	Communicating Scientific Information: Develop explanations that explicitly link data from investigations conducted, selected readings and, when appropriate, contributions from historical discoveries.
INDICATOR / PROFICIENCY LEVEL	1.C.1.a.	<p>Organize and present data in tables and graphs and identify relationships they reveal.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.C.1.b.	<p>Interpret tables and graphs produced by others and describe in words the relationships they show.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.C.1.e.	<p>Explain how different models can be used to represent the same thing. What kind of a model to use and how complex it should be depend on its purpose. Choosing a useful model is one of the instances in which intuition and creativity come into play in science, mathematics, and engineering</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity

		<p>3: Constructing a Predator-Prey Food Web</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.C.1.f.</p>	<p>Participate in group discussions on scientific topics by restating or summarizing accurately what others have said, asking for clarification or elaboration, and expressing alternative positions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2:

		<p>A Closer Look at Energy Pyramids</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.1.	Technology: Explain that complex systems require control mechanisms.
INDICATOR / PROFICIENCY LEVEL	1.D.1.a.	<p>Explain that the choice of materials for a job depends on their properties and on how they interact with other materials.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity

		<p>1: Calculating a Biodiversity Index for Leaf Litter Ecosystems</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.D.1.c.	<p>Realize that design usually requires taking constraints into account. (Some constraints, such as gravity or the properties of the materials to be used, are unavoidable. Other constraints, including economic, political, social, ethical, and aesthetic ones also limit choices.)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.2.	Technology: Analyze, design, assemble and troubleshoot complex systems.
INDICATOR / PROFICIENCY LEVEL	1.D.2.a.	<p>Provide evidence that a system can include processes as well as things.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.D.2.c.</p>	<p>Analyze any system to determine its connection, both internally and externally to other systems and explain that a system may be thought of as containing subsystems and as being a subsystem of a larger system.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.0.	Skills and Processes: Students will demonstrate the thinking and acting inherent in the practice of science.
TOPIC / INDICATOR	1.D.3.	Technology: Analyze the value and the limitations of different types of models in explaining real things and processes.
INDICATOR / PROFICIENCY LEVEL	1.D.3.a.	<p>Explain that the kind of model to use and how complex it should be depends on its purpose and that it is possible to have different models used to represent the same thing.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2:

		A Closer Look at Energy Pyramids
INDICATOR / PROFICIENCY LEVEL	1.D.3.b.	<p>Explain, using examples that models are often used to think about processes that happen too slowly, too quickly, or on too small a scale to observe directly, or that are too vast to be changed deliberately, or that are potentially dangerous.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
INDICATOR / PROFICIENCY LEVEL	1.D.3.c.	<p>Explain that models may sometimes mislead by suggesting characteristics that are not really shared with what is being modeled.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
STRAND / TOPIC / STANDARD	MD.2.0.	Earth/Space Science: Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.
TOPIC / INDICATOR	2.B.1.	Earth History: Explain how sedimentary rock is formed periodically, embedding plant and animal remains and leaving a record of the sequence in which the plants and animals appeared and disappeared.
INDICATOR / PROFICIENCY LEVEL	2.B.1.b.	<p>Cite evidence to confirm that thousands of layers of sedimentary rock reveal the long history of the changing surface of the Earth.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
STRAND / TOPIC / STANDARD	MD.2.0.	Earth/Space Science: Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.
TOPIC /	2.D.3.	Astronomy: Recognize and explain the effects of the tilt of Earth's axis.

INDICATOR		
INDICATOR / PROFICIENCY LEVEL	2.D.3.c.	<p>Recognize and describe how the tilt of Earth's axis affects the climate in Maryland.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Environmental Issues
STRAND / TOPIC / STANDARD	MD.2.0.	Earth/Space Science: Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.
TOPIC / INDICATOR	2.E.1.	Interactions of Hydrosphere and Atmosphere: Cite evidence to explain the relationship between the hydrosphere and atmosphere.
INDICATOR / PROFICIENCY LEVEL	2.E.1.a.	<p>Describe the composition of the atmosphere and hydrosphere.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	2.E.1.b.	<p>Recognize and describe the water cycle as the distribution and circulation of Earth's water through the glaciers, surface water, groundwater, oceans, and atmosphere.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Air, Water, and Soils
STRAND / TOPIC / STANDARD	MD.2.0.	Earth/Space Science: Students will use scientific skills and processes to explain the chemical and physical interactions (i.e., natural forces and cycles, transfer of energy) of the environment, Earth, and the universe that occur over time.
TOPIC / INDICATOR	2.E.3.	Interactions of Hydrosphere and Atmosphere: Recognize and describe the various factors that affect climate.
INDICATOR / PROFICIENCY LEVEL	2.E.3.b.	<p>Recognize and describe the global effects of volcanic eruptions, greenhouse gases, and El Nino.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	2.E.3.c.	<p>Identify and describe how various tools are used to collect weather data and forecast weather conditions: Barometer; Thermometer; Anemometer; Psychrometer.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
STRAND / TOPIC / STANDARD	MD.3.0.	Life Science: The students will use scientific skills and processes to explain the dynamic nature of living things, their interactions, and

		the results from the interactions that occur over time.
TOPIC / INDICATOR	3.D.1.	Evolution: Recognize and describe that evolutionary change in species over time occurs as a result of natural variation in organisms and environmental changes.
INDICATOR / PROFICIENCY LEVEL	3.D.1.a.	<p>Recognize and describe that gradual (climatic) and sudden (floods and fires) changes in environmental conditions affect the survival of organisms and populations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	3.D.1.b.	<p>Recognize that adaptations may include variations in structures, behaviors, or physiology, such as spiny leaves on a cactus, birdcalls, and antibiotic resistant bacteria.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity

		3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.4.0.	Chemistry: Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations.
TOPIC / INDICATOR	4.B.1.	Conservation of Matter: Provide evidence to support the fact that the idea of atoms explains conservation of matter.
INDICATOR / PROFICIENCY LEVEL	4.B.1.a.	Use appropriate tools to gather data and provide evidence that equal volumes of different substances usually have different masses. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.4.0.	Chemistry: Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations.
TOPIC / INDICATOR	4.D.1.	Physical and Chemical Changes: Compare compounds and mixtures based on data from investigations and research.
INDICATOR / PROFICIENCY LEVEL	4.D.1.a.	Cite evidence from investigations to explain how the components of mixtures can be separated. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant
INDICATOR / PROFICIENCY LEVEL	4.D.1.c.	Analyze the results of research completed to develop a comparison of compounds and mixtures. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant
STRAND / TOPIC / STANDARD	MD.4.0.	Chemistry: Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations.
TOPIC / INDICATOR	4.D.2.	Physical and Chemical Changes: Cite evidence and give examples of chemical properties of substances.
INDICATOR / PROFICIENCY LEVEL	4.D.2.a.	Based on data from investigations and research, identify and describe chemical properties of common substances: Reacts with oxygen (rusting/tarnishing and burning); Reacts with acids; Reacts with bases. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey
INDICATOR / PROFICIENCY LEVEL	4.D.2.b.	Use information gathered from investigations using indicators to classify materials as acidic, basic, or neutral. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants

		<ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.4.0.	Chemistry: Students will use scientific skills and processes to explain the composition, structure, and interactions of matter in order to support the predictability of structure and energy transformations.
TOPIC / INDICATOR	4.D.3.	Physical and Chemical Changes: Provide evidence to support the fact that common substances have the ability to change into new substances.
INDICATOR / PROFICIENCY LEVEL	4.D.3.a.	Investigate and describe the occurrence of chemical reactions using the following evidence: Color change; Formation of a precipitate or gas; Release of heat or light. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis
INDICATOR / PROFICIENCY LEVEL	4.D.3.d.	Provide data from investigations to support the fact that energy is transformed during chemical reactions. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
INDICATOR / PROFICIENCY LEVEL	4.D.3.e.	Provide examples to explain the difference between a physical change and a chemical change. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis
STRAND / TOPIC / STANDARD	MD.5.0.	Physics: Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur.
TOPIC / INDICATOR	5.B.1.	Thermodynamics: Describe and cite evidence that heat can be transferred by conduction, convection and radiation.
INDICATOR / PROFICIENCY LEVEL	5.B.1.a.	Based on observable phenomena, identify and describe examples of heat being transferred through conduction and through convection. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1:

		The Greenhouse Effect and Global Warming
INDICATOR / PROFICIENCY LEVEL	5.B.1.b.	Based on observable phenomena, identify examples to illustrate that radiation does not require matter to transfer heat energy. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming
STRAND / TOPIC / STANDARD	MD.5.0.	Physics: Students will use scientific skills and processes to explain the interactions of matter and energy and the energy transformations that occur.
TOPIC / INDICATOR	5.B.2.	Thermodynamics: Identify and explain that heat energy is a product of the conversion of one form of energy to another.
INDICATOR / PROFICIENCY LEVEL	5.B.2.a.	Identify and describe the various forms of energy that are transformed in order for systems (living and non-living) to operate: Chemical - Flashlight-Light; Mechanical - Pulleys-Motion; Solar/Radiant - Solar calculator; Chemical - Plant cells. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.6.0.	Environmental Science: Students will use scientific skills and processes to explain the interactions of environmental factors (living and non-living) and analyze their impact from a local to a global perspective.
TOPIC / INDICATOR	6.B.1.	Environmental Issues: Recognize and explain how human activities can accelerate or magnify many naturally occurring changes.
INDICATOR / PROFICIENCY LEVEL	6.B.1.a.	Based on data from research identify and describe how natural processes change the environment: Cyclic climate change; Sedimentation in watersheds; Population cycles; Extinction. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution Teacher Resource CD: Ecosystems, Energy, and Biodiversity Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	6.B.1.b.	Identify and describe how human activities produce changes in natural processes: Climate change; Loss of habitat; Introduction of nonnative species; Cycling of

matter.

- Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
- Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
- Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming
- Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
- Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants
- Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web
- Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems
- Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
- Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization
- Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
- Teacher Resource CD: Air, Water, and Soils

		<ul style="list-style-type: none"> • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Maryland Content Standards
Science
Grade 9**

STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.2.	The student will pose scientific questions and suggest investigative approaches to provide answers to questions.
INDICATOR / PROFICIENCY LEVEL	1.2.1.	<p>The student will identify meaningful, answerable scientific questions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.2.2.	<p>The student will pose meaningful, answerable scientific questions. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.2.4.</p>	<p>The student will test a working hypothesis. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.2.5.</p>	<p>The student will select appropriate instruments and materials to conduct an investigation.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.2.6.	<p>The student will identify appropriate methods for conducting an investigation (independent and dependent variables, proper controls, repeat trials, appropriate sample size, etc.).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.2.7.	<p>The student will use relationships discovered in the lab to explain phenomena observed outside the laboratory.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.3.	The student will carry out scientific investigations effectively and employ the instruments, systems of measurement, and materials of science appropriately.
INDICATOR / PROFICIENCY LEVEL	1.3.1.	<p>The student will develop and demonstrate skills in using lab and field equipment to perform investigative techniques. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3:

		<p>Examining Oil-Degrading Microbes</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.2.</p>	<p>The student will recognize safe laboratory procedures.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2:

		<p>Cleaning Up Shore Environments</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.3.</p>	<p>The student will demonstrate safe handling of the chemicals and materials of science. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1:

		<p>Biodegrading a Simulated Oil Spill</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.4.</p>	<p>The student will learn the use of new instruments and equipment by following instructions in a manual or from oral direction. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1:

		<p>Observing Radiation Effects on Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
---------------------------	-------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

TOPIC / INDICATOR	1.4.	The student will demonstrate that data analysis is a vital aspect of the process of scientific inquiry and communication.
INDICATOR / PROFICIENCY LEVEL	1.4.1.	<p>The student will organize data appropriately using techniques such as tables, graphs, and webs (for graphs: axes labeled with appropriate quantities, appropriate units on axes, axes labeled with appropriate intervals, independent and dependent variables on correct axes, appropriate title).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.4.2.	<p>The student will analyze data to make predictions, decisions, or draw conclusions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2:

		<p>Identifying Owl Prey</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.4.</p>	<p>The student will determine the relationships between quantities and develop the mathematical model that describes these relationships.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1:

		<p>Dissecting an Owl Pellet</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.5.</p>	<p>The student will check graphs to determine that they do not misrepresent results.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on

		<p>Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.6.</p>	<p>The student will describe trends revealed by data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.4.8.	<p>The student will use models and computer simulations to extend his/her understanding of scientific concepts. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
STRAND / TOPIC / STANDARD	MD.1.	<p>Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.</p>
TOPIC / INDICATOR	1.5.	<p>The student will use appropriate methods for communicating in writing and orally the processes and results of scientific investigation.</p>
INDICATOR / PROFICIENCY LEVEL	1.5.1.	<p>The student will demonstrate the ability to summarize data (measurements/observations).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.5.2.	<p>The student will explain scientific concepts and processes through drawing, writing, and/or oral communication.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1:

		Biodegradation in a Landfill
INDICATOR / PROFICIENCY LEVEL	1.5.3.	<p>The student will use computers and/or graphing calculators to produce the visual materials (tables, graphs, and spreadsheets) that will be used for communicating results. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.5.4.	<p>The student will use tables, graphs, and displays to support arguments and claims in both written and oral communication.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.5.5.	<p>The student will create and/or interpret graphics. (scale drawings, photographs, digital images, field of view, etc.)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
INDICATOR / PROFICIENCY LEVEL	1.5.7.	<p>The student will use, explain, and/or construct various classification systems.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY LEVEL	1.5.8.	<p>The student will describe similarities and differences when explaining concepts and/or principles.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.5.9.</p>	<p>The student will communicate conclusions derived through a synthesis of ideas.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.6.	The student will use mathematical processes.
INDICATOR / PROFICIENCY LEVEL	1.6.3.	<p>The student will express and/or compare small and large quantities using scientific notation and relative order of magnitude.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2:

		Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.6.4.	<p>The student will manipulate quantities and/or numerical values in algebraic equations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.7.	The student will show that connections exist both within the various fields of science and among science and other disciplines including mathematics, social studies, language arts, fine arts, and technology.
INDICATOR / PROFICIENCY LEVEL	1.7.1.	<p>The student will apply the skills, processes, and concepts of biology, chemistry, physics, or earth science to societal issues.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.7.2.	<p>The student will identify and evaluate the impact of scientific ideas and/or advancements in technology on society.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	1.7.6.	<p>The student will explain how development of scientific knowledge leads to the creation of new technology and how technological advances allow for additional scientific accomplishments.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes

STRAND / TOPIC / STANDARD	MD.2.	Concepts Of Earth/Space Science: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain the physical behavior of the environment, Earth, and the universe.
TOPIC / INDICATOR	2.3.	The student will explain how the transfer of energy and matter affect Earth systems.
INDICATOR / PROFICIENCY LEVEL	2.3.1.	The student will describe how energy and matter transfer affect Earth systems. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	2.3.2.	The student will explain how global conditions are affected when natural and human-induced change alter the transfer of energy and matter. <ul style="list-style-type: none"> Teacher Resource CD: Air, Water, and Soils
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.1.	The student will be able to explain the correlation between the structure and function of biologically important molecules and their relationship to cell processes.
INDICATOR / PROFICIENCY LEVEL	3.1.3.	The student will be able to compare the transfer and use of matter and energy in photosynthetic and non-photosynthetic organisms. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.2.	The student will demonstrate an understanding that all organisms are composed of cells which can function independently or as part of multicellular organisms.
INDICATOR / PROFICIENCY LEVEL	3.2.1.	The student will explain processes and the function of related structures found in unicellular and multicellular organisms. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY	3.2.2.	The student will conclude that cells exist within a narrow range of environmental conditions and changes to that environment, either naturally occurring or induced,

LEVEL		<p>may cause changes in the metabolic activity of the cell or organism.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.3.	<p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>
TOPIC / INDICATOR	3.3.	<p>The student will analyze how traits are inherited and passed on from one generation to another.</p>
INDICATOR / PROFICIENCY LEVEL	3.3.3.	<p>The student will explain how a genetic trait is determined by the code in a DNA molecule.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
INDICATOR / PROFICIENCY LEVEL	3.3.4.	<p>The student will interpret how the effects of DNA alteration can be beneficial or harmful to the individual, society, and/or the environment.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
STRAND / TOPIC / STANDARD	MD.3.	<p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>
TOPIC / INDICATOR	3.5.	<p>The student will investigate the interdependence of diverse living organisms and their interactions with the components of the biosphere.</p>
INDICATOR / PROFICIENCY LEVEL	3.5.1.	<p>The student will analyze the relationships between biotic diversity and abiotic factors in environments and the resulting influence on ecosystems.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	3.5.2.	<p>The student will analyze the interrelationships and interdependencies among different organisms and explain how these relationships contribute to the stability of the ecosystem.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Teacher Resource CD: Air, Water, and Soils

		<ul style="list-style-type: none"> • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>3.5.3.</p>	<p>The student will investigate how natural and man-made changes in environmental conditions will affect individual organisms and the dynamics of populations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	3.5.4.	<p>The student will illustrate how all organisms are part of and depend on two major global food webs that are positively or negatively influenced by human activity and technology.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.3.	<p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>
TOPIC / INDICATOR	3.6.	<p>The student will investigate a biological issue and develop an action plan.</p>
INDICATOR / PROFICIENCY LEVEL	3.6.1.	<p>The student will analyze the consequences and/or trade-offs between technological changes and their effect on the individual, society, and the environment. They may select topics such as bioethics, genetic engineering, endangered species, or food supply. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	3.6.2.	<p>The student will investigate a biological issue and be able to defend their position on topics such as animal rights, drug and alcohol abuse, viral diseases (e.g., AIDS), genetic engineering, bioethics, biodiversity, population growth, global sustainability, or origin of life. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.4.	Concepts Of Chemistry: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain composition and interactions of matter in the world in which we live.
TOPIC / INDICATOR	4.2.	The student will explain how the properties of compounds are related to the arrangement and type of atoms they contain.
INDICATOR / PROFICIENCY LEVEL	4.2.3.	<p>The student will describe the properties of solutions and explain how they form.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
STRAND / TOPIC / STANDARD	MD.4.	Concepts Of Chemistry: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain composition and interactions of matter in the world in which we live.
TOPIC / INDICATOR	4.5.	The student will explain that matter undergoes transformations, resulting in products that are different from the reactants.

INDICATOR / PROFICIENCY LEVEL	4.5.1.	The student will describe the general types of chemical reactions. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.1.	The student will explain how matter and energy move through the biosphere (lithosphere, hydrosphere, atmosphere and organisms).
INDICATOR / PROFICIENCY LEVEL	6.1.1.	The student will demonstrate that matter cycles through and between living systems and the physical environment constantly being recombined in different ways (At least - nitrogen cycle; carbon cycle; phosphorus cycle (rock/mineral); hydrologic cycle). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	6.1.2.	The student will analyze how the transfer of energy between atmosphere, land masses and oceans results in areas of different temperatures and densities that produce weather patterns and establish climate zones around the earth (At least - differential heating and cooling; oceanic and atmospheric circulation patterns; climates and microclimates; biomes). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Environmental Issues
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.2.	The student will investigate the interdependence of organisms within their biotic environment.
INDICATOR / PROFICIENCY LEVEL	6.2.1.	The student will explain how organisms are linked by the transfer and transformation of matter and energy at the ecosystem level (At least - Photosynthesis/respiration; Producers, consumers, decomposers; Trophic levels; Pyramid of energy/pyramid of biomass). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2:

		<p>Cleaning Up Shore Environments</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Ecosystems, Energy, and Biodiversity • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	6.2.2.	<p>The student will explain why interrelationships & interdependencies of organisms contribute to the dynamics of ecosystems (At least - Interspecific and intraspecific competition; Niche; Cycling of materials among organisms; Equilibrium/cyclic fluctuations; Dynamics of disturbance and recovery; Succession: aquatic and terrestrial).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	6.2.3.	<p>The student will conclude that populations grow or decline due to a variety of factors (At least - Linear/exponential growth; Carrying capacity/limiting factors; Species specific reproductive factors (such as birth rate, fertility rate); Factors unique to the human population (medical, agricultural, cultural); Immigration/emigration; Introduced species).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Teacher Resource CD: Ecosystems, Energy, and Biodiversity • Teacher Resource CD: Environmental Issues
STRAND / TOPIC / STANDARD	MD.6.	<p>Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.</p>
TOPIC / INDICATOR	6.3.	<p>The student will analyze the relationships between humans and the earth's resources.</p>

INDICATOR / PROFICIENCY LEVEL	6.3.1.	<p>The student will evaluate the interrelationship between humans and air quality (At least - ozone; greenhouse gases; volatile organic compounds (smog); acid rain; indoor air; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	6.3.2.	<p>The student will evaluate the interrelationship between humans and water quality and quantity (At least - fresh water supply; point source/nonpoint source pollution; waste water treatment; thermal pollution; Chesapeake Bay and its watershed; eutrophication; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	6.3.3.	<p>The student will evaluate the interrelationship between humans and land resources (At least - wetlands; soil conservation; mining; solid waste management; land use planning; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1:

		<p>Food Web Organization</p> <ul style="list-style-type: none"> • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	6.3.4.	<p>The student will evaluate the interrelationship between humans and biological resources (At least - food production/agriculture; forest and wildlife resources; species diversity/genetic resources; integrated pest management; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
STRAND / TOPIC / STANDARD	MD.6.	<p>Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.</p>
TOPIC / INDICATOR	6.4.	<p>The student will develop and apply knowledge and skills gained from an environmental issue investigation to an action project which protects and sustains the environment.</p>
INDICATOR / PROFICIENCY LEVEL	6.4.1.	<p>Identify an environmental issue and formulate related research questions (Methods of gathering information may include: writing letters; performing a literature search; using the internet; interviewing experts).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	6.4.2.	<p>Design and conduct the research (Methods of data collection may include: field or laboratory; questionnaire/opinionnaire).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	6.4.3.	Interpret the findings to draw conclusions and make recommendations to help resolve the issue.

- Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
- Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments
- Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes
- Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming
- Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
- Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants
- Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability
- Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant
- Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey
- Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web
- Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems
- Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
- Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization
- Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution
- Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
- Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen

<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.4.4. Apply the conclusions to develop and implement an action project (Methods of implementation may include: physical action; persuasion; consumer action; political action).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
--------------------------------------	-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

		<ul style="list-style-type: none"> • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	----------------------------------------------------------------------------------------------------------------------------------------------------------------------------

**Maryland Content Standards
Science
Grade 10**

STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.2.	The student will pose scientific questions and suggest investigative approaches to provide answers to questions.
INDICATOR / PROFICIENCY LEVEL	1.2.1.	<p>The student will identify meaningful, answerable scientific questions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.2.2.	<p>The student will pose meaningful, answerable scientific questions. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.2.4.</p>	<p>The student will test a working hypothesis. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.2.5.</p>	<p>The student will select appropriate instruments and materials to conduct an investigation.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.2.6.	<p>The student will identify appropriate methods for conducting an investigation (independent and dependent variables, proper controls, repeat trials, appropriate sample size, etc.).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.2.7.	<p>The student will use relationships discovered in the lab to explain phenomena observed outside the laboratory.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.3.	The student will carry out scientific investigations effectively and employ the instruments, systems of measurement, and materials of science appropriately.
INDICATOR / PROFICIENCY LEVEL	1.3.1.	<p>The student will develop and demonstrate skills in using lab and field equipment to perform investigative techniques. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3:

		<p>Examining Oil-Degrading Microbes</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.2.</p>	<p>The student will recognize safe laboratory procedures.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2:

		<p>Cleaning Up Shore Environments</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.3.</p>	<p>The student will demonstrate safe handling of the chemicals and materials of science. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1:

		<p>Biodegrading a Simulated Oil Spill</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.3.4.</p>	<p>The student will learn the use of new instruments and equipment by following instructions in a manual or from oral direction. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1:

		<p>Observing Radiation Effects on Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

STRAND / TOPIC / STANDARD	<p>MD.1. Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.</p>
---------------------------	------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------

TOPIC / INDICATOR	1.4.	The student will demonstrate that data analysis is a vital aspect of the process of scientific inquiry and communication.
INDICATOR / PROFICIENCY LEVEL	1.4.1.	<p>The student will organize data appropriately using techniques such as tables, graphs, and webs (for graphs: axes labeled with appropriate quantities, appropriate units on axes, axes labeled with appropriate intervals, independent and dependent variables on correct axes, appropriate title).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.4.2.	<p>The student will analyze data to make predictions, decisions, or draw conclusions.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2:

		<p>Identifying Owl Prey</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.4.</p>	<p>The student will determine the relationships between quantities and develop the mathematical model that describes these relationships.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1:

		<p>Dissecting an Owl Pellet</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.5.</p>	<p>The student will check graphs to determine that they do not misrepresent results.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on

		<p>Plants</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.4.6.</p>	<p>The student will describe trends revealed by data.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.4.8.	<p>The student will use models and computer simulations to extend his/her understanding of scientific concepts. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids
STRAND / TOPIC / STANDARD	MD.1.	<p>Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.</p>
TOPIC / INDICATOR	1.5.	<p>The student will use appropriate methods for communicating in writing and orally the processes and results of scientific investigation.</p>
INDICATOR / PROFICIENCY LEVEL	1.5.1.	<p>The student will demonstrate the ability to summarize data (measurements/observations).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.5.2.	<p>The student will explain scientific concepts and processes through drawing, writing, and/or oral communication.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1:

		Biodegradation in a Landfill
INDICATOR / PROFICIENCY LEVEL	1.5.3.	<p>The student will use computers and/or graphing calculators to produce the visual materials (tables, graphs, and spreadsheets) that will be used for communicating results. (NTB)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.5.4.	<p>The student will use tables, graphs, and displays to support arguments and claims in both written and oral communication.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.5.5.	<p>The student will create and/or interpret graphics. (scale drawings, photographs, digital images, field of view, etc.)</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill
INDICATOR / PROFICIENCY LEVEL	1.5.7.	<p>The student will use, explain, and/or construct various classification systems.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY LEVEL	1.5.8.	<p>The student will describe similarities and differences when explaining concepts and/or principles.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>1.5.9.</p>	<p>The student will communicate conclusions derived through a synthesis of ideas.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.6.	The student will use mathematical processes.
INDICATOR / PROFICIENCY LEVEL	1.6.3.	<p>The student will express and/or compare small and large quantities using scientific notation and relative order of magnitude.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2:

		Determining the Carrying Capacity of a Population
INDICATOR / PROFICIENCY LEVEL	1.6.4.	<p>The student will manipulate quantities and/or numerical values in algebraic equations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.1.	Skills And Processes: The student will demonstrate ways of thinking and acting inherent in the practice of science. The student will use the language and instruments of science to collect, organize, interpret, calculate, and communicate information.
TOPIC / INDICATOR	1.7.	The student will show that connections exist both within the various fields of science and among science and other disciplines including mathematics, social studies, language arts, fine arts, and technology.
INDICATOR / PROFICIENCY LEVEL	1.7.1.	<p>The student will apply the skills, processes, and concepts of biology, chemistry, physics, or earth science to societal issues.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	1.7.2.	<p>The student will identify and evaluate the impact of scientific ideas and/or advancements in technology on society.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	1.7.6.	<p>The student will explain how development of scientific knowledge leads to the creation of new technology and how technological advances allow for additional scientific accomplishments.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes

STRAND / TOPIC / STANDARD	MD.2.	Concepts Of Earth/Space Science: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain the physical behavior of the environment, Earth, and the universe.
TOPIC / INDICATOR	2.3.	The student will explain how the transfer of energy and matter affect Earth systems.
INDICATOR / PROFICIENCY LEVEL	2.3.1.	The student will describe how energy and matter transfer affect Earth systems. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	2.3.2.	The student will explain how global conditions are affected when natural and human-induced change alter the transfer of energy and matter. <ul style="list-style-type: none"> Teacher Resource CD: Air, Water, and Soils
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.1.	The student will be able to explain the correlation between the structure and function of biologically important molecules and their relationship to cell processes.
INDICATOR / PROFICIENCY LEVEL	3.1.3.	The student will be able to compare the transfer and use of matter and energy in photosynthetic and non-photosynthetic organisms. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.2.	The student will demonstrate an understanding that all organisms are composed of cells which can function independently or as part of multicellular organisms.
INDICATOR / PROFICIENCY LEVEL	3.2.1.	The student will explain processes and the function of related structures found in unicellular and multicellular organisms. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
INDICATOR / PROFICIENCY	3.2.2.	The student will conclude that cells exist within a narrow range of environmental conditions and changes to that environment, either naturally occurring or induced,

LEVEL		<p>may cause changes in the metabolic activity of the cell or organism.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.3.	The student will analyze how traits are inherited and passed on from one generation to another.
INDICATOR / PROFICIENCY LEVEL	3.3.3.	<p>The student will explain how a genetic trait is determined by the code in a DNA molecule.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
INDICATOR / PROFICIENCY LEVEL	3.3.4.	<p>The student will interpret how the effects of DNA alteration can be beneficial or harmful to the individual, society, and/or the environment.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants
STRAND / TOPIC / STANDARD	MD.3.	Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.
TOPIC / INDICATOR	3.5.	The student will investigate the interdependence of diverse living organisms and their interactions with the components of the biosphere.
INDICATOR / PROFICIENCY LEVEL	3.5.1.	<p>The student will analyze the relationships between biotic diversity and abiotic factors in environments and the resulting influence on ecosystems.</p> <ul style="list-style-type: none"> • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	3.5.2.	<p>The student will analyze the interrelationships and interdependencies among different organisms and explain how these relationships contribute to the stability of the ecosystem.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Teacher Resource CD: Air, Water, and Soils

		<ul style="list-style-type: none"> • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>3.5.3.</p>	<p>The student will investigate how natural and man-made changes in environmental conditions will affect individual organisms and the dynamics of populations.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution

		<ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem Teacher Resource CD: Environmental Issues Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	3.5.4.	<p>The student will illustrate how all organisms are part of and depend on two major global food webs that are positively or negatively influenced by human activity and technology.</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.3.	<p>Concepts Of Biology: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) and major biological concepts to explain the uniqueness and interdependence of living organisms, their interactions with the environment, and the continuation of life on earth.</p>
TOPIC / INDICATOR	3.6.	<p>The student will investigate a biological issue and develop an action plan.</p>
INDICATOR / PROFICIENCY LEVEL	3.6.1.	<p>The student will analyze the consequences and/or trade-offs between technological changes and their effect on the individual, society, and the environment. They may select topics such as bioethics, genetic engineering, endangered species, or food supply. (NTB)</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	3.6.2.	<p>The student will investigate a biological issue and be able to defend their position on topics such as animal rights, drug and alcohol abuse, viral diseases (e.g., AIDS), genetic engineering, bioethics, biodiversity, population growth, global sustainability, or origin of life. (NTB)</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.4.	Concepts Of Chemistry: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain composition and interactions of matter in the world in which we live.
TOPIC / INDICATOR	4.2.	The student will explain how the properties of compounds are related to the arrangement and type of atoms they contain.
INDICATOR / PROFICIENCY LEVEL	4.2.3.	<p>The student will describe the properties of solutions and explain how they form.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population
STRAND / TOPIC / STANDARD	MD.4.	Concepts Of Chemistry: The student will demonstrate the ability to use scientific skills and processes (Core Learning Goal 1) to explain composition and interactions of matter in the world in which we live.
TOPIC / INDICATOR	4.5.	The student will explain that matter undergoes transformations, resulting in products that are different from the reactants.

INDICATOR / PROFICIENCY LEVEL	4.5.1.	The student will describe the general types of chemical reactions. <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.1.	The student will explain how matter and energy move through the biosphere (lithosphere, hydrosphere, atmosphere and organisms).
INDICATOR / PROFICIENCY LEVEL	6.1.1.	The student will demonstrate that matter cycles through and between living systems and the physical environment constantly being recombined in different ways (At least - nitrogen cycle; carbon cycle; phosphorus cycle (rock/mineral); hydrologic cycle). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	6.1.2.	The student will analyze how the transfer of energy between atmosphere, land masses and oceans results in areas of different temperatures and densities that produce weather patterns and establish climate zones around the earth (At least - differential heating and cooling; oceanic and atmospheric circulation patterns; climates and microclimates; biomes). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Environmental Issues
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.2.	The student will investigate the interdependence of organisms within their biotic environment.
INDICATOR / PROFICIENCY LEVEL	6.2.1.	The student will explain how organisms are linked by the transfer and transformation of matter and energy at the ecosystem level (At least - Photosynthesis/respiration; Producers, consumers, decomposers; Trophic levels; Pyramid of energy/pyramid of biomass). <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2:

		<p>Cleaning Up Shore Environments</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Ecosystems, Energy, and Biodiversity • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	6.2.2.	<p>The student will explain why interrelationships & interdependencies of organisms contribute to the dynamics of ecosystems (At least - Interspecific and intraspecific competition; Niche; Cycling of materials among organisms; Equilibrium/cyclic fluctuations; Dynamics of disturbance and recovery; Succession: aquatic and terrestrial).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Ecosystems, Energy, and Biodiversity
INDICATOR / PROFICIENCY LEVEL	6.2.3.	<p>The student will conclude that populations grow or decline due to a variety of factors (At least - Linear/exponential growth; Carrying capacity/limiting factors; Species specific reproductive factors (such as birth rate, fertility rate); Factors unique to the human population (medical, agricultural, cultural); Immigration/emigration; Introduced species).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Teacher Resource CD: Ecosystems, Energy, and Biodiversity • Teacher Resource CD: Environmental Issues
INDICATOR / PROFICIENCY LEVEL	6.2.4.	<p>The student will provide examples and evidence showing that natural selection leads to organisms that are well suited for survival in particular environments (At least - coevolutionary relationships, e.g. symbiotic relationships; variation within a species increases survival potential; natural selection provides a mechanism for evolution; adaptations of organisms within biomes).</p>

		<ul style="list-style-type: none"> Teacher Resource CD: Ecosystems, Energy, and Biodiversity
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.3.	The student will analyze the relationships between humans and the earth's resources.
INDICATOR / PROFICIENCY LEVEL	6.3.1.	<p>The student will evaluate the interrelationship between humans and air quality (At least - ozone; greenhouse gases; volatile organic compounds (smog); acid rain; indoor air; human health).</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants Teacher Resource CD: Air, Water, and Soils
INDICATOR / PROFICIENCY LEVEL	6.3.2.	<p>The student will evaluate the interrelationship between humans and water quality and quantity (At least - fresh water supply; point source/nonpoint source pollution; waste water treatment; thermal pollution; Chesapeake Bay and its watershed; eutrophication; human health).</p> <ul style="list-style-type: none"> Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem Teacher Resource CD: Air, Water, and Soils Teacher Resource CD: Environmental Issues Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
INDICATOR / PROFICIENCY LEVEL	6.3.3.	<p>The student will evaluate the interrelationship between humans and land resources (At least - wetlands; soil conservation; mining; solid waste management; land use</p>

		<p>planning; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Teacher Resource CD: Air, Water, and Soils • Teacher Resource CD: Environmental Issues
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.3.4.</p>	<p>The student will evaluate the interrelationship between humans and biological resources (At least - food production/agriculture; forest and wildlife resources; species diversity/genetic resources; integrated pest management; human health).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1:

		<p>Calculating a Biodiversity Index for Leaf Litter Ecosystems</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
STRAND / TOPIC / STANDARD	MD.6.	Environmental Science: The student will demonstrate the ability to use the scientific skills and processes (Core Learning Goal 1) and major environmental science concepts to understand interrelationships of the natural world and to analyze environmental issues and their solutions.
TOPIC / INDICATOR	6.4.	The student will develop and apply knowledge and skills gained from an environmental issue investigation to an action project which protects and sustains the environment.
INDICATOR / PROFICIENCY LEVEL	6.4.1.	<p>Identify an environmental issue and formulate related research questions (Methods of gathering information may include: writing letters; performing a literature search; using the internet; interviewing experts).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3:

		<p>Determining the LD50 of a Water Pollutant</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.4.2.</p>	<p>Design and conduct the research (Methods of data collection may include: field or laboratory; questionnaire/opinionnaire).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.4.3.</p>	<p>Interpret the findings to draw conclusions and make recommendations to help resolve the issue.</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2: Soil Porosity and Permeability • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates

		<ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
<p>INDICATOR / PROFICIENCY LEVEL</p>	<p>6.4.4.</p>	<p>Apply the conclusions to develop and implement an action project (Methods of implementation may include: physical action; persuasion; consumer action; political action).</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 1 Lab 1 Activity 1: Biodegradation in a Landfill • Environmental Issues and Solutions: Unit 1 Lab 2 Activity 1: Observing Radiation Effects on Plants • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 1: Biodegrading a Simulated Oil Spill • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 2: Cleaning Up Shore Environments • Environmental Issues and Solutions: Unit 1 Lab 3 Activity 3: Examining Oil-Degrading Microbes • Environmental Issues and Solutions: Unit 1 Lab 4 Activity 1: The Greenhouse Effect and Global Warming • Environmental Issues and Solutions: Unit 1 Lab 5 Activity 1: Modeling Salt Runoff Discharge • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 1: Identifying Airborne Pollutants • Environmental Issues and Solutions: Unit 2 Lab 6 Activity 2: Observing Air Pollution Indicators - Lichens • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 1: Soil Analysis • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 2:

		<p>Soil Porosity and Permeability</p> <ul style="list-style-type: none"> • Environmental Issues and Solutions: Unit 2 Lab 7 Activity 3: Soil Testing For Nitrogen, pH, and Phosphates • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 1: How Water Pollutants Are Measured • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 2: Water Analysis • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 3: Determining the LD50 of a Water Pollutant • Environmental Issues and Solutions: Unit 2 Lab 8 Activity 4: Observing the Effects of Acid Rain and Other Pollutants on Plants • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 1: Dissecting an Owl Pellet • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 2: Identifying Owl Prey • Environmental Issues and Solutions: Unit 3 Lab 10 Activity 3: Constructing a Predator-Prey Food Web • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 1: Calculating a Biodiversity Index for Leaf Litter Ecosystems • Environmental Issues and Solutions: Unit 3 Lab 11 Activity 2: Determining the Carrying Capacity of a Population • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 1: Food Web Organization • Environmental Issues and Solutions: Unit 3 Lab 9 Activity 2: A Closer Look at Energy Pyramids • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 1: Modeling a Water Treatment Plant • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 2: Biological Treatment of Pollution • Environmental Issues and Solutions: Unit 4 Lab 12 Activity 3: Evaluating the Health of an Ecosystem • Teacher Resource CD: Environmental Issues • Virtual Laboratory: The Effect of Temperature on Dissolved Oxygen
--	--	-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------