

Course: Environmental Science

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Unit	Time Frame	Learning Target(s)/Objective(s)	Standards	Vocabulary	Assessments	Program Materials/ Resources
Equipment, Native Species, Invasive Species ID	Daily at the start of class	Identify the equipment, commonly used in the Environmental/Natural Resources Industry; Describe the function of each tool or piece of equipment; Identify native and invasive species common in North America.	ESS.01.02.02.a. Identify basic environmental monitoring instruments and explain their uses. NRS.01.02.03.a. Research and examine the characteristics used to identify wildlife and insects. NRS.01.02.03.b. Apply identification techniques to determine the species of wildlife or insect. NRS.04.03.02.a. Identify and classify invasive species common to a particular region.	Refractometer, Secchi disk, water meter for physical/chemical parameters (pH, conductivity, DO), Bottom Dredges, Fish Measuring Board, Plankton Net, Seines, Sieves, Animal tags/bands, Mammal traps, Snake/Reptile Stick, Radio Telemetry Unit, Wind speed meters, Barometer, Abny level, Push Probe, Soil Auger, Soil Color Book, Armadillo, Badger, Beaver, Bighorn sheep, Bison, Black bear, Balcktail deer, Bobcat, Chipmunk, Cottontail, Coyote, Elk, Fox Squirrel, Gray Squirrel, Gray Wolf, Grizzly Bear, Jack Rabbit, Mole, Moose, Mountain Goat, Mountain Lion, Mule Deer, Muskrat, Opossum, Pocket Gopher, Porcupine, Prairie Dog, Pronghorn, Raccoon, Red Fox, Skunk, Weasel, Whitetail Deer, Woodchuck, Bald eagle, Blue Jay, Bluebird, Brown Thrasher, Canada goose, Canvasback Duck, Cardinal, Cooper's Hawk, Crissal Thrasher, Mourning dove, Great blue heron, Great Horned Owl, Golden Eagle, Hummingbird, Kestrel, Least tern, Mallard duck, Osprey, Pelican, Purple Martin, Quail, Red-tailed Hawk, Sand Hill Crane, Blue-Winged teal, Turkey, Whooping Crane, Wood Duck, Alligator, Alligator Snapping Turtle, Black rat snake, Bullfrog, Collared Lizard, Common Snapping Turtle, Copperhead Snake, Coral Snake, Corn Snake, Cottonmouth, Crocodile, Fence Lizard, Garter Snake, Green Anole Lizard, Gray Tree Frog, Rattlesnake, Red Eared Slider, Rink Neck Snake, Rubber Boa Snake, Scarlet King Snake, Woodhouse's Toad, Blue Catfish, Bream/Bluegill, Brown Trout, Carp, Channel Catfish, Clam, Crab, Crappie, Crayfish, Flathead Catfish, Largemouth Bass, Lobster, Salmon, Shrimp, Smallmouth Bass, Strugeon, Trout, Walleye, Yellow Bullhead Catfish, Broom Snake weed, Cheatgrass, Chinese tallow, Cogon grass, English Ivy, Himalaya blackberry, Hydrilla, Juniper, Kudzu, Leafy Spurge, Melaleuca, Mimosa Tree, Purple Loosestrife, Russian Olive, Saltcedar, Asiatic clam, Asian long-horned beetle, Chinese mitten crab, Chukkar, English Sparrow, European Starling, Feral hog, Feral Horses, Fire ant, Gopher, Norway Rat, Nutria, Ring Neck Pheasant, Sea Lamprey, Tilapia, Zebra Mussel	Quizzes after every 20 Daily Flashcards	Physical Tools, Pictures of animals and plants, Paper, Pencil
Tragedy of the Commons	September	Describe the significance of the Tragedy of the Commons and how it relates to our natural resources.		Natural Resources, Common Resources, Local Commons, Global Commons	Happy Fishing Lab	Gold Fish, Spoons, Lab Wkst

Historical Perspectives of Natural Resources & Conservation	September	Identify and discuss the significance of important historical events related to natural resources; Critique how key figures in history changed our perceptions and conversations about natural resources; Explain legislation and governmental organizations that enable us to be good stewards of our natural resources; Identify and define the mission of environmental advocacy organization	NRS.01.01.01.c. Devise strategies for the preservation of natural resources based on their classification. NRS.02.01. Examine and interpret the purpose, enforcement, impact and effectiveness of laws and agencies related to natural resource management, protection, enhancement and improvement (e.g., water regulations, game laws, historic preservation laws, environmental policy, etc.). NRS.02.01.01.a. Distinguish between the types of laws associated with natural resources systems. NRS.02.01.02.c. Evaluate the impact and effectiveness of agencies associated with natural resources systems (e.g., regulation of consumption, prevention of damage to natural resources systems, management of ecological interactions, etc.). NRS.02.03.02.a. Research and assess how historical figures played a prominent role in shaping how natural resources are viewed and used today (e.g., Aldo Leopold, Teddy Roosevelt, John Muir, Rachel Carson, Gaylord Nelson, etc.).	Bioaccumulate, Conservation ethic, Conservation Movement, DDT, Dispersant, Dust Bowl, Earth Day, Industrial Revolution, Land ethic, Natural Disaster, Progressive Era, Smog, Synthetic Pesticide, Conservation, Conservationist, Environmental Stewardship, Preservation, Preservationist	Historical Figure Role Play	iPad, Historical Conservationist/Preservationsit Cards
Biomes	Sept./Oct.	Explain ecological regions in the United States	NRS.04.01.04.a. Identify and categorize characteristics of healthy rangeland. NRS.04.01.06.a. Identify and categorize characteristics of healthy marine and coastal natural resources. NRS.04.01.03.a. Identify and categorize characteristics of a healthy wildlife habitat. NRS.01.06. Apply ecological concepts and principles to living organisms in natural resource systems.	Biome, Bioshere (zone of life), Ecology, Ecological Regions (Ecoregions), Anthropogenic Ecoregions, Topography, Polar Biome, Savanna Biome, Steppe Biome, Taiga Biome, Tropical Rain Forest Biome, Tundra Biome, Mediterranean vegetation biome, Montane biome, Deciduous forest biome, Desert Biome	Shoebox Biome OR Biome Travel Brochure Project	iPad, Note Sheets, Our Planet Video Series, Shoebox, Maker Materials

Ecosystems & Interactions	Oct./Nov.	Differentiate between freshwater and marine ecosystems; Identify and Explain the energy cycle; Create a model of the energy cycle; Identify and explain the characteristics and interactions of organism in an ecological community; Explain and understand the processes of natural selection, adaptation, and evolution; Explain and understand food webs and energy transfer in an ecosystem; Explain how producers, consumers, and decomposers function in the trophic hierarchy; Identify and define the characteristics of a keystone species; Explain how the absence or elimination of a keystone species affects an ecosystem; Identify and explain the function of foundation, umbrella, indicator, and flagship species; Recognize organizations and programs established to combat invasive species	NRS.01.01.02.a. Summarize the components that comprise all ecosystems. NRS.01.01.02.b. Analyze the interdependence of organisms within an ecosystem (e.g., food webs, niches, impact of keystone species, etc.) and assess the dependence of organisms on nonliving components (climate, geography, energy flow, nutrient cycling, etc.). NRS.01.01.03.c. Evaluate biodiversity in ecosystems and devise strategies to enhance the function of an ecosystem and the availability of natural resources by increasing the level of biodiversity. NRS.01.05.01.a. Research and describe the stages of ecological succession. NRS.01.05.01.c. Evaluate the stages of succession present in an ecosystem and predict which species will become more prevalent through future stages of succession.	Ecosystem, Energy, Energy Cycle, Food Chain, Food Web, Abiotic factors, Biotic factors, Lake, Pond, Littoral Zone, Limnetic Zone, Plankton, Epilimnion Zone, Thermocline, Profundal Zone, Hypolimnion Zone, Benthic Zone, Kinetic Energy, Potential Energy, Adaptation, Apex predator, Autotroph, Carnivore, Commensalism, Competitor, Competitive Exclusion/interaction, Decomposer/Detritivore, Ecological Community, Ecological Niche, Edge effect, Evolution, Flagship species, Foundation species, Herbivore/Herbivory, Heterotroph, Indicator species, Interaction, Keystone species, Mutualism, Mutualistic keystone species, Native habitat, Natural Selection, Neutralism, Omnivore, Parasite/Parasitism, Predation/Predator/Prey, Predator Keystone Species, Predatory interaction, Primary consumer, Primary producer, Secondary consumer, Symbiotic relationship, Trophic level, Umbrella species, Flora, Fauna. Biodiversity	Build Your Own Biosphere Lab, Lynx Eats Hare Activity, Biodiversity Lab	iPad, Note Sheets, 2L plastic bottles, Scissors, Duct tape, String, Drill, Seeds, Soil, Pebbles, Small plants, Beads, Plant transect
Fish/Wildlife/Game Species	Nov./Dec.	Determine how fisheries are classified; Geographically locate the major marine fisheries; Discuss the history of fisheries and their management, including policies, laws, and administration; Explain the economic and environmental significance of fisheries; Identify key species of vertebrate and invertebrate species that make up fisheries; Discuss the economic importance of hunting; Discuss methods of managing populations of major game animals; Identify and describe major game species of mammals and birds in North America; Describe harvesting methods of game animals; Explain zoonotic diseases and safety related to hunting; List and explain hunter ethics; Discuss issues related to hunting game animals	NRS.01.Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals. NRS.03.01.02.a. Research and describe methods by which wildlife can be sustainably harvested (e.g., controlled harvests, hunting licenses, regulations, etc.).	Anadromous, Aquaculture, Bycatch, Catadromous, Catch per unit effort (CPUE), Catch rate, Collapsed fishery, Commercial fishing, Discards, Exclusive Economic Zone (EEZ), Fish farming, Fish management plan, Fisheries, Freshwater aquaculture, Freshwater fisheries, Fully exploited fishery, Ghost fishing, Hatchery, Mariculture, Marine aquaculture, Marine fisheries, Overexploited fishery, Overfished, Overfishing, Recovering fishery, Recreational (sport) fishing, Stock, Stock complex, Subsistence fishing, Sustainable fishery, Binomial nomenclature, Binomial/Scientific name, Boar, Buck, Bull, Chronic Wasting Disease (CWD), Cow, Doe, Estrus, Ewe, Extirpated, Fawn, Game species, Harvesting, Hen, Hunting Season, Jake, Mast, Muzzleloader, Piglet, Poaching, Poultry, Ram, Rifle, Rifling, Rooster, Rut, Safety, Shot, Shotgun, Sow, Taxonomy, Tom (gobbler), Ungulate, Zoonotic Disease	Deer Food Plot PBL	iPad, Food Plot Planning Sheet

Habitat Destruction	December	Define habitat and explain the effects of habitat destruction, fragmentation, and degradation; Identify both natural and human-made destruction; Explain the global impact of habitat degradation to each of the biomes; Identify different invasive species and discuss how they affect habitats; Compare different methods of waste disposal and explain how they affect the environment; Distinguish ways to protect the environment from habitat destruction in the future; Understand and explain the terminology used to describe the status of plant and animal species on the endangered species lists; Categorize the primary causes of extinction of living species due to human activity; Assess causes of extinction and describe how those causes relate to loss of biodiversity; Explain the methods and technology used to assess wildlife species and their habitats; Determine strategies for preventing the loss of species and biodiversity include recover and	NRS.01.Plan and conduct natural resource management activities that apply logical, reasoned and scientifically based solutions to natural resource issues and goals. NRS.01.02.03.c. Evaluate the species of wildlife and insects present to assess the health of an ecosystem. NRS.01.05.02.a. Compare and contrast the impact of habitat disturbances and habitat resilience. NRS.01.05.02.b. Analyze and summarize examples of habitat disturbances and habitat resilience. NRS.01.05.02.c. Interpret signs of habitat disturbances and resilience in an ecosystem and use these signs to assess the health of an ecosystem. NRS.01.06.02.a. Research and summarize examples of invasive species. NRS.01.06.02.b. Analyze factors that influence the establishment and spread of invasive species and determine the appropriate steps to prevent or minimize the impact of invasive species. NRS.02.02.02.a. Categorize the primary causes of extinction of living species due to human activity (e.g., overharvesting,	Biome, Carrying capacity, Deciduous forest biome, desert biome, habitat, habitat degradation, habitat destruction, habitat fragmentation, invasive species, Mediterranean vegetation biome, Montane biome, Native Species, Polar Biome, Savanna Biome, Steppe Biome, Taiga Biome, Tropical Rain Forest Biome, Tundra Biome, Background extinction rate, Bioindicators, Captive Breeding Program, Complete Count, Critically endangered species (CR), DNA barcode, DNA barcoding, Endangered Species, Ex Situ Conservation, Extinct, Extinct in the Wild species, Extinct Species, Extirpation, Generalized Species, Highly specialized species, Incomplete Count, Indirect Count, IUCN Red List of Threatened Species, Least concern species, Mass extinction, Near Threatened species, Pandemic disease, Quadrat, Quadrat Analysis, Remote Sensing, Species Survival Plan, Threatened Species, Total Count, Transect line, Vulnerable Species, Zoonotic disease	Case Study/Real Life Scenario, Current Event	iPad, Note Sheets
Population Dynamics/ Urbanization	January	Define population and the impacts that population changes have had on the environment; Explain changes in populations over time; Distinguish between population ecology, population dispersion, and population density; Describe population ecology, density, and dispersion in environmental situations; Identify ways in which human populations affect Earth	NRS.01.02.06.a. Research the purpose and value of resource inventories and population studies. NRS.01.02.06.c. Conduct an assessment of the resource inventories or population in a given area. NRS.01.06.01.a. Differentiate between population ecology, population density and population dispersion and describe the importance of these concepts to natural resource systems. NRS.01.06.01.b. Analyze the factors that influence population density and population dispersion in natural resource systems. NRS.02.02. Assess the impact of human activities on the availability of natural resources.	Aggression, Allelopathy, Arrangement, Band Recovery, Capture-recapture, Carrying Capacity, Census, Clumped Dispersion, Emigration, Feral, Food Insecure, Home Range, Immigrant, Immigration, Interspecific, Intraspecific, Limiting Factor, Mark-recapture, Mark-release-capture, Migration, Population, Population Density, Population Dispersion, Population Dynamics, Population Ecology, Population Sampling, Quadrat, Quadrat Sample, Random Dispersion, Regular Dispersion, Stable, Stressor, Surrender, Survey, Territorialism, Uniform Dispersion	Town Council Meeting, Case Study	iPad, Town Council Meeting Scenario, Roles, and Planning Guide

Biogeochemical Cycles	January	Identify and explain the biogeochemical cycles; Create models of the water, nitrogen, and carbon cycles; Identify and explain the major components of the hydrologic cycle; List and Explain the three natural forms of water; Determine the difference between atmospheric water, groundwater, and surface water and provide examples of each; Define and explain the importance of a watershed; Identify types of water rights and discuss how they are employed in different areas of the U.S.; Distinguish different types of water-holding locations	NRS.01.03.01.a. Classify different kinds of biogeochemical cycles and the role they play in natural resources systems. NRS.01.03.01.b. Assess the role that the atmosphere plays in the regulation of biogeochemical cycles. NRS.01.03.01.c. Evaluate and make recommendations to lessen the impact of human activity on the ability of the atmosphere to regulate biogeochemical cycles. NRS.01.04.01.a. Summarize the roles and properties of watersheds. NRS.01.04.01.b. Assess the function of watersheds and their effect on natural resources. NRS.01.04.01.c. Evaluate and defend the importance of watersheds to ecosystem function.	Carbon Cycle, Nitrogen Cycle, Carbon Pool, Carbon Sink, Carbon Source, Hydrologic (Water) Cycle, Fixation, Legumes, Ammonification, Nitrification, Nitrates, Denitrification, Transpiration, Condensation, Precipitation, Groundwater, Evaporation, Surface Runoff, Storage, Source, Springs, Headwaters, Mouth, Estuaries, Wetlands- tidal and nontidal, Brackish Water, Accumulation, Aquifer, Atmospheric water, Bog, Brook, Channel, Confined Aquifer, Creek, Embeddedness, Fen, Forest Swamp, Hydrology, Infiltration, In-stream water rights, Kill, Liquid water, Marsh, Ocean, Pond, Pool, Prior appropriation water rights, Riffle, Riparian water rights, River, Run, Sea, Shrub Swamp, Snow Cover, Solid Water, Strait, Stream, Surface Water, Transpiration, Unconfined aquifer, Water rights, water vapor, Watershed	Personal Carbon Footprint Calculation, Ocean Acidification Lab	iPad, Sea Shells, Vinegar, Calcium Chloride, Sodium Bicarbonate, Plastic Cups & Spoons, Water, Pipette
Energy Resources & Consumption	February	Identify the natural resources that are mined in the United States; Explain the economic value of mining; Explain the different types of mining; Discuss the impact of mining on the environment; Identify types of natural resources; Explain why natural resources are important; Analyze which natural resources are limited and explain why they are limited; Compare and contrast conservation and preservation of natural resources; Compare and Contrast the benefits and drawbacks of renewable and nonrenewable energy	NRS.01.01. Apply methods of classification to examine natural resource availability and ecosystem function in a particular region. NRS.01.01.01.a. Summarize and classify the different kinds of natural resources using common classification schemes (e.g., living versus non-living, renewable versus nonrenewable, native versus introduced, etc.). NRS.02.04. Examine and explain how economics affects the use of natural resources. NRS.02.04.01.a. Compare and contrast how the economic value of a natural resource affects its availability. NRS.02.04.03.a. Compare and contrast the economic impact of green technology and alternative energy. NRS.03.01.04.a. Compare and contrast the costs and benefits (e.g., impacts on environment, economic, wildlife, etc.) of fossil fuels to a local, state and/or national economy. NRS.03.01.06.a. Compare and contrast the costs and benefits (e.g., environmental impacts, etc.) of alternative sources of energy (e.g.,	Acid rock drainage, Calcination, Cement, Coal, Commodity, Containment pond, Crude oil, Crushed stone, Fracking, Fracking slurry, Geologist, Hydrofracking, In-situ mining, Limestone, Mining, Mountaintop Removal mining (MTR), Natural Gas, Offshore drilling, Open-pit mining, Overburden, Petroleum, Placer Mining, Quarry, Quartz, Reclamation, Seismic survey, Sinkhole, Strip mining, subsurface containment system, Subsurface mining, Surface mining, Tailings, Underground mining, Biofuel, Biomass, Biomass Energy, Environmental Stewardship, Exhaustible resource, Fossil Fuel, Inexhaustible resource, Natural Resource, Nonrenewable resource, Renewable Resource, Solar Energy, Solar Power, Uranium, Wind Energy, Hydropower, Geothermal Energy, Nuclear Energy	Renewable v. Nonrenewable Energy Class Debate, Biofuel Lab	iPad, Debate Roles, Debate Scenario, Debate Planning Guide, Vegetable Oil, Sodium Hydroxide, Methanol, Mason Jars (Quart), Accurate Scale, Thermometer, Graduated Cylinder

Pollution	March	Identify natural and anthropogenic sources of pollution and how their effect on the environment differs; Analyze water chemistry principles; Determine the different uses of water; Identify contaminants that impact water quality; Explain how biomagnification impacts species; List bioindicators and explain their importance in the ecosystems; Determine the general composition of air; Identify types of contamination that are found in air; Describe the origin of each type of pollution; Explain the concept of airsheds; Identify organization and legislation that control and study air quality	NRS.01.03. Apply ecological concepts and principles to atmospheric natural resource systems. NRS.01.04.02.a. Examine and describe the importance of groundwater and surface water to natural resources. NRS.01.04.02.c. Devise and apply strategies to manage, protect, enhance or improve sources of groundwater or surface water based on its properties. NRS.01.04.03.a. Compare and contrast riparian zones and riparian buffers based on their function. NRS.01.04.03.b. Assess techniques used in the creation, enhancement and management of riparian zones and riparian buffers. NRS.02.02.03.c. Evaluate how modern lifestyles affect resource consumption and energy use and devise a strategy to prevent the complete loss of a natural resource.	Landfill, Liquid Waste, Solid Waste, Recycle, Upcycle, Anthropogenic pollution, Pollution, Acid rain, Algae bloom, Benthic Macroinvertebrate (BMI), Bioindicator, Biomagnification, Biological Magnification, Dipolar molecule, Dissolved Oxygen (DO), Dredging, Effluent, Eutrophication, Filling, Gray Water, Hydroelectric power, Hydrogen bond, Hydroseeding, Ion, Mutation, Nonpoint source pollution, Persistent Bioaccumulation and toxic chemical (PBT), Point Source pollution, Radionuclide, Sewage, Solvent, Surface Tension, Universal Solvent, Wastewater, Water pollution, Active sampling, Air pollution, Airshed, Automatic Sampling, Cap-and-trade, Carbon Dioxide (CO ₂), Carbon footprint, Carbon Monoxide (CO), Carbon sequestration, Chemical Pollution, Emission offsetting, Emission trading, Ground-level ozone, Lead (Pb), Light pollution, Methane (CH ₄), Nitrogen Oxides (NO _x), Noise pollution, Ozone (O ₃), Particulate Matter (PM), Passive sampling, Pollution credit, Primary pollutant, Secondary pollutant, Smog, Sulfur oxides (SO _x), Tropospheric Ozone, Volatile organic compounds (VOCs), Zero Emission vehicle (ZEV), Zero Emissions, Riparian Buffers	Upcycling Project, Water Quality, Water Remediation Lab	iPad, Computer, Pencil/Pen, Paper, Polluted Water Sample, Pipettes, Spoon, Extra Beaker, Filter, Funnel, Buffer, Sponge, Note Sheets, Water test kit, Pond Water Samples
Soil- What is it?, Erosion, Leaching, & Pollution, Controlling Erosion	April	Identify the functions of soil; Identify and define the components of soil; Explain how soil forms; Identify and explain soil horizons; Describe soil's physical characteristics; Explain the difference between percolation and infiltration; Explain the impact of soil chemistry regarding soil health and fertility; Explain how soils are classified; Describe how we evaluate soils and land for agricultural and other uses; Explain ways that soil degrades in the environment; Discuss how compaction degrades soil; Identify factors that contribute to soil erosion; Discuss how leaching degrades soil; Discuss how pollution degrades soil and ways in which it can be prevented; Explain how land classification is used to determine sustainable land use; Identify and explain how different tillage systems affect soil erosion; Identify erosion control structures and discuss their applications	NRS.01.01. Apply methods of classification to examine natural resource availability and ecosystem function in a particular region. NRS.01.01.01.b. Assess the characteristics of a natural resource to determine its classification. NRS.01.02.05.a. Research and examine the characteristics used to identify non-living resources (e.g., soil types, climate, geography, etc.). NRS.01.02.05.b. Apply identification techniques to determine the types of non-living resources in an area. NRS.01.05.04.a. Compare and contrast techniques associated with soil management (e.g., soil survey and interpretation, erosion control, etc.). NRS.01.05.04.b. Analyze a plot of land in order to determine which soil management techniques would be most applicable. NRS.01.05.04.c. Devise a soil management plan to minimize erosion and maximize biodiversity, plant productivity, and the formation of topsoil.	Acidic soil, Aeolian soil, Aeration, A-horizon, Alkaline soil, Alluvial soil, B-horizon, Cation Exchange Capacity (CEC), C-horizon (substratum), Colluvial soil, Cumulose soil, Fragipan, Glacial Till, Humus, Lacustrine soil, Land capability classification (LCC), Limiting layer, Loess soil, Marine Soil, Micronutrient, Mineral Soil, Minor/trace elements, Moraines, Neutral Soil, Nonmineral nutrients, O-horizon, Organic soil, Outwash plain, Parent Material, Ped, Percolation, pH, Primary macronutrient, R-horizon, Saturation, Secondary Macronutrient, Soil, Soil Classification, Soil Horizon, Soil Infiltration, Soil Profile, Soil Reactivity, Soil Structure, Soil Survey, Soil Texture, Topsoil, Weathering, Tillage, Reduced Till, No Till, Beach Erosion, Channel, Channel Erosion, Coastal Erosion, Erodibility Index (EI), Erodibility of soils, Eutrophication, Gully Erosion, Highly Erodible Land (HEL), Leaching, Overburden, Rill Erosion, Sediment, Sheet Erosion, Shoreline Erosion, Silt Fence, Slope, Soil compaction, Soil degradation, Soil Erosion, Splash Erosion, Streambank Erosion, T/T value, Water Erosion, Wind Erosion, Buffer Strip, Conservation buffer, Conservation tillage, Contour Tillage, Conventional Tillage, Crop Residue, Cultivation, Fencerow, Field Tile, Gabion, Grassed Waterway, Great Plains Shelterbelt, Movement corridor, Mulch Tillage, Plant residue, Ridge tillage, Riparian buffer, Riparian zone, Riprap, Shelterbelt, Structural conservation practices, Subsurface drainage, Surface Drainage, Terrace, Tile Drainage, Water and sediment control basin (WASCOB), Windbreak, Zone tillage	Soil Horizons Activity, Soil Texture/Color Activity, Soil Leaching Activity, Web Soil Survey Activity, Soil Testing Lab (pH, etc.), Soil Profile Lab, Soil Fertilizer Problems	iPad or Computer, Soil Color Book, Soil pH Test kit, Soil Texture Flow Chart, Soil Samples, Soil Probes, Soil Fertilizer Problems, Edible Soil Profile Materials, Soil Note Sheets

Agriculture, Food, Hunger, Sustainability	May	Explain the basic principles of sustainability; Identify the three pillars of sustainability; Discuss how perceptions of the environment have changed over time; Explain how natural resources can have sustainable yields; Explain how technology and innovation influence sustainability; Explain the concept of sustainability in the context of agriculture, food, and natural resources; Explain how the triple bottom line is used as a measure of sustainability; Explain the economic and environmental benefits of local foods.	NRS.02.02.01.b. Assess and explain how different kinds of human activity affect the use and availability of natural resources (i.e., agriculture, industry, transportation, etc.). NRS.02.03.01.a. Summarize and categorize the different social considerations in regards to the use of natural resources (e.g., public versus private, laws and regulations, economics, green technology, etc.).	Compost, Decomposition, Ecological Sustainability, Economic Sustainability, Environmental Sustainability, Gray Water, Green Building, Green Roof, Hazardous Waste, Landfill, Leachate, LEED (Leadership in Energy and Environmental Design), Liquid Waste, Living Roof, Social Sustainability, Solid Waste, Sustainability, Sustainable Agriculture, Sustainable Development, Sustainable Energy, Sustained Yield, Triple Bottom Line (TBL/3BL), Waste Disposal, Wastewater, Water-wise landscaping, Zero Waste, Integrated Pest Management (IPM), Genetic Engineering, Green Revolution, Nutrient Mass Balance, Food Miles, Carbon Neutral, Carbon Zero, Xeriscaping, Food Insecure	NMB Lab(s), Food Miles Activity, Composting	NMB Labs, iPad, NMB Software, Food Miles Activity Sheet
Global Environmental Issues	June	Identify social considerations associated with the use of natural resources and the manner in which these considerations affect the use of natural resources; Identify the primary factors that affect land and water use; Analyze uses of natural resources in both the public and private sector; Explain how the economic value of resources changes and how it differs among groups; Discuss different types of green technology and provide examples of each; Define ecological footprint and understand how it is calculated; Identify ways in which an individual can reduce his or her ecological footprint.	NRS.01.01.01.c. Devise strategies for the preservation of natural resources based on their classification. NRS.02.01.01.c. Evaluate the impact of laws associated with natural resources systems (e.g., mitigation, water regulations, carbon emissions, game limits, invasive species, etc.). NRS.02.01.02.c. Evaluate the impact and effectiveness of agencies associated with natural resources systems (e.g., regulation of consumption, prevention of damage to natural resources systems, management of ecological interactions, etc.). NRS.02.03.01.c. Develop predictions for how the management, protection, enhancement and improvement of natural resources will evolve through social considerations (e.g., establishment of national parks, public opinion, and fishing, reduction of waste and energy consumption, etc.). NRS.02.04.03.a. Compare and contrast the economic impact of green technology and alternative energy.	Biocapacity, Deregulation, Ecological Footprint, Economic Strength, Fracking, Green Chemistry, Green Technology, Hydrofracking, Land cover, Land use, Nonrivalrous, Peer Pressure, Private Land, Public Land, Rivalrous, Social Pressure, Water hoarding, Water rationing	Current Event	

Outdoor Recreation, National Protected Areas, Conservation Clubs, State Parks	June	Discuss types of outdoor recreation; Explain responsible engagement for various types of outdoor recreation; Understand safety measures for various types of outdoor recreation; Discuss the economic impact of outdoor recreation; Analyze the sustainability of outdoor recreational activities; Explain the difference among designations of protected areas; Identify the different federal agencies that manage our national protected areas; Identify and describe other protected areas besides parks	NRS.02.01. Examine and interpret the purpose, enforcement, impact and effectiveness of laws and agencies related to natural resource management, protection, enhancement and improvement (e.g., water regulations, game laws, historic preservation laws, environmental policy, etc.). NRS.02.01.02.b. Analyze the specific purpose of agencies associated with natural resources systems. NRS.02.04.02.a. Research the impact of the use of natural resources on local, state and national economies (e.g., outdoor recreation, energy production, preservation, etc.). NRS.03.01.07.b. Assess different options for improving the sustainability of outdoor recreation based on its impact on natural resources and likelihood of acceptance.	All-terrain vehicles (ATVs), Backpacking, Birding, Birdwatching, Camping, Frostbite, Geocache, Geocaching, Heat Stroke, Hiking, Hypothermia, National conservation area, National estuarine reserve, National forest, National grassland, National historic trail, National lakeshore, National marine sanctuary, National memorial, National monument, National park, National parkway, National preserve, National protected area, National Recreation area, National Register of Historic Places, National river, National Scenic Trail, National Seashore, National wild and scenic riverway, National wilderness area, National wildlife refuge, Private lands, Public lands, Conservation Clubs, State Parks	Geocaching Lab	Cell phones, Airtight container, Geocache sight, Clipboards, Tree ID guides
Careers	Scattered Throughout	Research career in or directly related to the environmental science/natural resources industries.	CS.05.01.01.a. Identify and summarize the steps to pursue a career in an AFNR pathway (e.g., self-assessment, set goals, etc.). CS.05.01.02.a. Examine the educational, training, and experiential requirements to pursue a career in an AFNR pathway (e.g., degrees, certifications, training, internships, etc.).	Conservation Scientist, Zoologist, Forest Firefighter, Ecologist, Geographer, Sustainability Project Manager, Conservation Advocate, Population biologist, Soil Scientist, Chief of Natural Resources Conservation Service USDA, Project Earthwork and Grading Supervisor, Soil Conservation Technician, Soil Conservationist, Hydrologist, Water Quality Technician, Thunder View Farms (Coombe Family), Wetlands Tour Guide, Meteorologist, Rangeland and Social Scientist, Wildlife Education Coordinator, Paleobiologist, Fish Biologist- U.S. Fish and Wildlife Service, Wildlife Biologist, Head of Procurement, Education and Volunteer Manager, Forestry Consultant, Project Director-Olmstead Parks Conservancy, Assistant Director- Parks and Recreation, Natural Areas Manager	Career Profile (s)	iPad, Computer, Pencil/Pen, Career Profile Sheet

* Additional Topics should time permit: Surveying & Cartography and Weather/Climate/Geography