



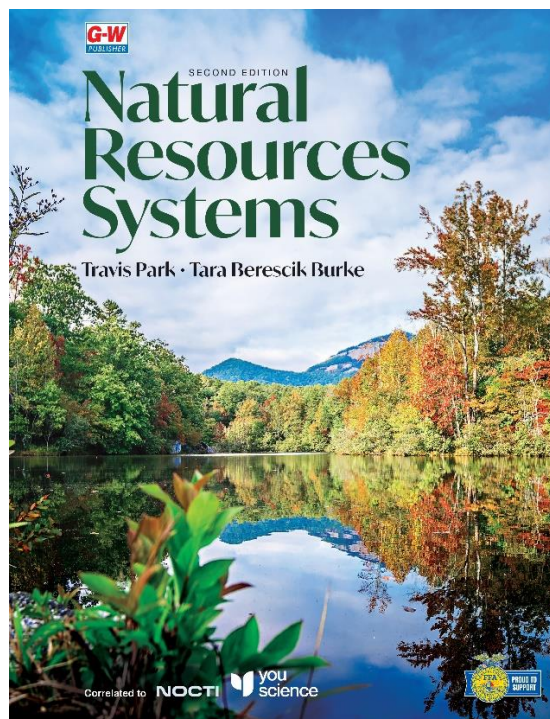
*Correlation
of
Natural Resources Systems
Travis Park, Tara Berescik Burke
(Goodheart-Willcox Publisher ©2025)
to*

**YouScience® Industry Certification: Natural Resource Science–
Exam 170.18**

Goodheart-Willcox is pleased to partner with YouScience® by correlating *Natural Resources Systems* to their Natural Resource Science standards. YouScience® Industry Certifications, part of the YouScience® Brightpath academic and career guidance platform, offer students entry- to mid-level certifications that act as tangible proof of their skills and knowledge.

The correlation chart below lists the Standards, Objectives, and Indicators for the Natural Resource Science I exam in the left column. Corresponding content from *Natural Resources Systems* that can be used by a student to help achieve the standard, objective, or indicator is listed in the right column.

For more information about YouScience®, including a complete listing of their Industry Certifications, please visit <https://www.youscience.com/certifications/>.



Standards / Objectives / Indicators	Textbook Pages
NOTE: End-of-Chapter questions and activities correlating to standards have been included in this chart. Abbreviations for these are TC: Thinking Critically; ST: STEM and Academic Activities; FS: FFA/SAE projects and ideas; CA: Communicating about Natural Resources (reading, writing, speaking)	
STANDARD 1	
Students will explain the role of student organizations in agricultural education	
NOTE: Refer to FFA and SAE Opportunities at the end of each chapter for SAE ideas and FFA participation opportunities	
Objective 1 Discuss the history and organization of student organizations as they relate to the complete program of agricultural education.	The National FFA Organization pp765-770 Time Line of FFA Historical Events p774

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<p>1. Explain the interrelationship of classroom and laboratory instruction, supervised agricultural experience, and student organizations.</p>	<p>Agricultural Education p765 SAEs and Agricultural Education p773</p>
<p>2. Describe how, when, and why student organizations were organized.</p>	<p>The National FFA Organization pp765-770 Time Line of FFA Historical Events p774</p>
<p>3. Identify key historical events within student organizations.</p>	<p>The National FFA Organization pp765-770</p>
<p>4. Identify the mission and strategies, colors, motto, emblem and parts of the emblem, and organizational structure of student organizations.</p>	<p>The FFA Mission Statement pp765-766 Organizational Structure p765 The FFA Motto p767 The FFA Emblem p767 The FFA Creed p767</p>
<p>5. Recite and explain the meaning of a student organization’s creed.</p>	<p>The FFA Creed p767</p>
<p>6. Discuss the meaning and purpose of a program of activities and its committee structure.</p>	<p>Program of Activities p768 Planning a POA p768</p>
<p>7. List student organizations’ officers and discuss the role of each.</p>	<p>Chapter Officers pp768-769</p>
<p>Objective 2 Identify opportunities in student organizations.</p>	
<p>1. Describe student organizations’ opportunities that develop leadership skills, personal growth, and career success.</p>	<p>Opportunities in FFA pp771-773 Local, State, and National Activities pp769-770</p>
<p>2. Summarize major state and national activities available to members within student organizations</p>	<p>Local, State, and National Activities pp769-770</p>
<p>Objective 3 Describe student organizations’ degrees, awards, and career development events (CDEs).</p>	
<p>1. List and explain student organizations’ degree areas.</p>	<p>FFA Degrees pp771-772</p>
<p>2. Identify student organizations’ proficiency awards.</p>	<p>Agricultural Proficiency Awards p772 Star Awards p776</p>
<p>3. List and discuss various team and individual CDEs</p>	<p>Career Development Events and Leadership Development Events pp769-770</p>

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<p>STANDARD 2</p>	
<p>Students will explain the role of supervised agricultural experience (SAE) programs in agricultural education</p>	
<p>NOTE: Refer to FFA and SAE Opportunities at the end of each chapter for SAE ideas and FFA participation opportunities</p>	
<p>Objective 1 Examine the responsibilities and benefits associated with an SAE.</p>	
<p>1. Explain the meaning and benefits of supervised agricultural experience programs.</p>	<p>Responsibilities and Benefits p773</p>
<p>2. Explain the characteristics of an effective SAE program and the responsibilities of those involved.</p>	<p>SAEs and Agricultural Education p773 Types of SAE Projects pp773-776 Responsibilities and Benefits p773</p>
<p>Objective 2 Determine the types of SAE programs.</p>	
<p>1. Compare entrepreneurship SAEs and placement SAEs.</p>	<p>Ownership/Entrepreneurship SAE pp773-774 Placement/Internship SAE p773</p>
<p>2. Describe research/experimentation SAEs.</p>	<p>Research: Experimental, Analysis, or Invention SAE p775</p>
<p>3. Describe exploratory SAEs</p>	<p>Career Exploration p771</p>
<p>Objective 3 Plan an SAE program.</p>	
<p>1. Identify the steps in planning an SAE program.</p>	<p>Planning Your SAE pp775-776</p>
<p>2. Describe the function of a business/training plan and/or agreement in an SAE program</p>	<p>Planning Your SAE pp775-776 Student Resources Inventory p775</p>
<p>3. Develop a short-range plan and a long-range plan for an SAE program.</p>	<p>Planning Your SAE pp775-776 Setting Goals p775</p>
<p>4. Relate classroom and laboratory instruction to an SAE program.</p>	<p>Agricultural Education p765 SAEs and Agricultural Education p773</p>
<p>Objective 4 Maintain and use SAE records.</p>	
<p>1. Explain the importance of keeping records on an SAE program.</p>	<p>Keeping Records p775 ST#7 p595</p>
<p>2. Explain how SAE records are organized.</p>	<p>Keeping Records p775</p>

Correlation of *Natural Resources Systems* to YouScience® Natural Resource Science I—page 4

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3. Follow approved procedures to make entries in SAE records	Keeping Records p775 FS#1 p197 ST#2 p134 FS#2 p329 ST#1 p644
STANDARD 3	
Students will examine natural resource science and management	
Objective 1 Discuss the basics of natural resource science and management.	
1. Identify types of natural resources.	Chapter 1 Introduction to Natural Resources pp2-19 Renewable or Nonrenewable? pp4-9 Nonrenewable Natural Resources pp9-11 Biotic and Abiotic Natural Resources pp11-12
2. Distinguish between renewable and nonrenewable resources.	Renewable or Nonrenewable? pp4-9 Nonrenewable Natural Resources pp9-11 ST#1, #3 p18
3. Explain the difference between inexhaustible and exhaustible resources.	Renewable or Nonrenewable? pp4-9 Nonrenewable Natural Resources pp9-11
4. Explain the concept of interdependent relationships.	Biotic and Abiotic Natural Resources pp11-12
Objective 2 Examine the relationship between natural resources and society, including conflict management.	
1. Define natural resource management.	Why Are Natural Resources Important? p14

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<p>2. Identify and compare major natural resource management agencies and companies.</p>	<p>Environmental Protection Agency pp127f, 128, 166, 336, 424, 505, 506 National Marine Fisheries Service p70 National Oceanic and Atmospheric Administration pp70, 156, 157, 493, 497, 510, 695 Natural Resources Conservation Service (NRCS) pp55, 71, 215, 217, 240, 265, 322, 659 US Army Corps of Engineers p376 US Bureau of Land Management pp72, 156, 657, 695, 708 US Department of Agriculture pp70-71, 141, 635 US Department of Commerce p497 US Department of Defense p695 US Department of the Interior pp54, 71, 695 US Fish and Wildlife Service p72, pp449-450, 497, 695 US Forest Service pp71, 695, 697 US Geological Survey p282 US National Park Service pp71, 156, 695</p>
<p>3. Describe human demands on natural resources.</p>	<p>CH 1 Introduction to Natural Resources pp2-19 Agricultural Destruction (habitat) p143 Additional Human Activities (habitat destruction) p143 Human Population p157</p>
<p>4. Compare and contrast conservation and preservation.</p>	<p>Conservation and Preservation pp13-14 Environmental Stewardship p13 Perceptions of the Environment over Time pp112-113</p>
<p>5. Provide examples of multiple uses of natural resources. (e.g., recreation, mining, agriculture, forestry, etc.)</p>	<p>CH 12 Mining of Natural Resources pp280-305 CH 13 Water Supply pp306-329 CH 15 Wetlands pp356-381 CH 20 Fisheries pp490-529 CH 21 Game Species pp530-559 CH 22 Forests pp560-595 CH 25 Grasslands and Rangelands pp646-6677 CH 26 Outdoor Recreation pp668-691 CH 27 National Protected Areas pp692-717</p>

Correlation of *Natural Resources Systems* to YouScience® Natural Resource Science I—page 6

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<p>6. Explore and describe societal issues related to natural resource management.</p>	<p>Water Hoarding p162 Water Rationing pp161–162 Water Rights pp161, 323–324 Social Pressures pp162-163 Economic Value of Resources pp163-164 Water Regulation p313 TC#7 p174 FS#1 p153 TC#3 p328</p>
<p>Objective 3 Identify career opportunities in natural resource science.</p>	
<p>1. Identify and describe the major areas of natural resource science.</p>	<p>Careers in Natural Resources p11</p>
<p>2. Identify career opportunities in natural resource science and determine the education and training they entail</p>	<p>Level of Education or Training required pp26-27 Internships and Job Shadowing p27 <u>Career Connections</u> Careers in Natural Resources p11 Ecologist p24 Federal Government Careers in Natural Resources p72 (continued)</p>

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<p>2. Identify career opportunities in natural resource science and determine the education and training they entail</p>	<p><i>(continued)</i> Sustainability Project Manager p121 Lance Wealing, Entrepreneur p129 Conservation Advocate p157 Population Biologist p182 Soil Scientist p205 Matt Lohr, Chief of National Resources Conservation Service p242 Clayton Zimmerman, Project Earthwork and Grading Supervisor p261 Soil Conservation Technician p265 Matthew Olson, Soil Conservationist p284 Hydrologist p319 Water Quality Technician p335 Thunder View Farms, Coombe Family p340 Wetlands Tour Guide p362 Meteorologist p393 Dr. Hailey Wilmer, Rangeland and Social Scientist p421 Jessica Heitt, Wildlife Education Coordinator p438 Wildlife Photographer p454 Paleobiologist p466 Shawn Sanders, US Fish and Wildlife Service p496 Andy King, Fish and Wildlife Biologist p543 Ty Bowgren, Head of Procurement, Wagner Lumber p566 Matt Spalding, Education and Volunteer Manager p605 Fraser Smith, Forestry Consultant p622 Major Waltman, Project Director, Olmsted Parks Conservancy p652 Jacob Zuniga, Assistant Director, Parks and Recreation p673 Jim Barborak, Colorado State University p703 Evan Patrick, Natural Areas Manager p726</p>
<p>STANDARD 4</p>	
<p>Students will investigate ecological concepts and science principles related to natural resource systems</p>	
<p>Objective 1 Examine ecology.</p>	
<p>1. Define ecosystem and related terms. (e.g., climate, precipitation, weather, etc.)</p>	<p>CH 4 Ecology and Earth pp80-107 Ecosystems pp82-83 Climate p82 Topography p83 Soil Composition p83 Biogeochemical Cycles pp83-87 The Water Cycle p84 The Nitrogen Cycle p85 The Carbon Cycle p86 The Energy Cycle p87</p>

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<p>2. Describe the interdependence of organisms within an ecosystem including population, community, biotic and abiotic factors, trophic levels, and food chain.</p>	<p>Ecosystems pp82-83 abiotic factors p82 biotic factors p82 ST#5 p559 Energy Cycle (food chain) p87 Food Webs and Energy Transfer pp444-446 Overfishing p503 food web pp444–447</p>
<p>3. Describe and identify a habitat; food, water, shelter, and space.</p>	<p>habitat p138 Staples of Life p178 Space pp178-180 Habitats p435</p>
<p>4. Describe the processes associated with ecological succession.</p>	<p>Adaptation p439 STEM Connection: Adaptations for Survival p442 ST#7 p617</p>
<p>5. Explain population ecology, population density, and population dispersion.</p>	<p>CH 8 Population Dynamics pp176-197 Population Ecology pp182-184 Population Dispersion pp184-187 Population Density pp187-189</p>
<p>6. Explain the importance of biodiversity.</p>	<p>biodiversity p12 Biodiversity p435 Ecological Niche p435 The Impacts of Mining on the Environment pp296-297 Loss of Biodiversity pp296-297 Biodiversity and Ecological Health p474 ST#8 p460 CA#1 p461 TC#5 p487 ST#4-5 p488 ST#8 p595</p>
<p>7. Explain the process of natural selection.</p>	<p>Natural Selection p439 Figure 18-9 Evolution by Natural Selection p439</p>
<p>8. Use taxonomy keys to identify common plants and animals.</p>	<p>STEM Connection: Animal Classification p534 Soil Taxonomy p221</p>

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<p>9. Identify and classify game birds and other local birds.</p>	<p>CH 21 Game Species pp530–559 Wild Turkey p542 Ring-Necked Pheasant p544 Bobwhite Quail p545 Canada Geese p546 Other Game Species p546 TC#1, #5 p558 ST#3 p559</p>
<p>10. Identify and classify game animals and other local animals.</p>	<p>CH 21 Game Species pp530–559 White-Tailed Deer p535 Mule Deer p536 Caribou p537 Canada Moose p538 Elk p539 Pronghorn p540 Wild Boar p540 Bighorn Sheep p541 Other Game Species p546 TC#1 p558 ST#3 p559</p>
<p>11. Define invasive species and discuss factors that influence the establishment and spread of invasive species</p>	<p>Introduction of Invasive Species pp140-143 Removal of Invasive Species pp141-143 Figure 6-6 Invasive Species p142 Invasive Species p454 Invasive Species (aquatic) pp507-509 STEM Connection: Aquarium Snails p507 Invasive Species (cause of extinction) p469 Monitoring Invasive Species p724 Invasive Plant Pests pp632-636 Reporting Invasive Species p640</p>
<p>Objective 2 Describe biological, physical, and chemical properties of soil.</p>	
<p>1. Explain the importance of soil as a life-supporting layer.</p>	<p>CH 9 What Is Soil? pp198- Soil Functions p200</p>

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<p>2. Explain the roles of parent material, topography, organisms, time, weathering, and climate in soil formation.</p>	<p>Soil Formation pp206- Parent Material p207 Climate and Weathering pp207-208 Topography p208 Organisms p209 Time p210</p>
<p>3. Describe the physical characteristics of soil.</p>	<p>Soil Components pp200-206 Organic Matter p200 Soil Particles pp201-203 Sand, Silt, Clay p202 Figure 9-3 Soil Particles p202 Pore Spaces p203 Minerals p204 Micronutrients p205 Soil Profiles and Horizons pp210-</p>
<p>4. Describe the biodiversity found in soil and the contribution of biodiversity to the physical and chemical characteristics of soil.</p>	<p>Plant Materials p2009 Insects and Animals p209 Human Beings p209 Physical Properties of Soil pp211-215</p>
<p>5. Describe the chemical properties of soil.</p>	<p>Soil Chemistry pp217-219</p>
<p>6. Explain the characteristics of soil water</p>	<p>Soil Water Movement pp215-217</p>
<p>Objective 3 Examine hydrology principles.</p>	
<p>1. Describe the movement of water through the water cycle.</p>	<p>Hydrologic Cycle pp308-310</p>
<p>2. Compare and contrast ground water and surface-water flow.</p>	<p>Groundwater pp311-316 Surface Water pp316-322 ST#2 p329 ST#1 p380 ST#6 p135 TC#1 p328</p>
<p>3. Discriminate between point and nonpoint pollution sources.</p>	<p>Point Source Pollution p343 Nonpoint Source Pollution p344 TC#6 p353</p>

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<p>4. Survey the local area for pollution sources.</p>	<p>Point Source Pollution p343 Nonpoint Source Pollution p344 Water Pollution pp342-350</p>
<p>5. Calculate water distribution for an irrigation district.</p>	<p>Agricultural Water Use pp339-341</p>
<p>6. Compare and contrast water usage in flood irrigation systems and sprinkler irrigation systems.</p>	<p>Agricultural Water Use pp339-341 ST#1 p329</p>
<p>7. Identify local drinking water sources and measures that may be taken to protect the quality of the drinking (potable) water.</p>	<p>CH 13 Water Supply pp306-329 Groundwater pp311-316 Surface Water pp316-322 CH 14 Water Quality pp330- Domestic Water Use pp336-339 Industrial Water Use p341 Protecting Groundwater p316</p>
<p>8. Discuss current regulations associated with water quality and water pollution.</p>	<p>Water Regulation: Ogallala Aquifer p313 Water Rights pp323-324 Water Rights: Conflicts in California p323 Wetland Conservation and Management pp374-375</p>
<p>9. Compare and contrast the differences between fresh water and salt/saline water.</p>	<p>Marine Wetlands pp364-368 Freshwater Wetlands pp368-376 ST#7 p529</p>
<p>Objective 4 Investigate air resources.</p>	
<p>1. Identify components and structural layers of the earth's atmosphere.</p>	<p>Earth's Atmosphere pp384-388</p>
<p>2. Identify sources of air pollution.</p>	<p>Types of Air Pollution pp406-418</p>
<p>3. Describe the effects of air pollution on people and their environment.</p>	<p>Chemical Pollution p408 Nitrogen oxides (NO_x) p411 Carbon monoxide (CO) p410 Figure 17-6 CO inhalation and Toxic Symptoms p410 Sulfur Oxides (SO_x) p412 Particulate Matter p413 Lead pp413-414 Volatile Organic Compounds pp414-415 (continued)</p>

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<p>3. Describe the effects of air pollution on people and their environment.</p>	<p><i>(continued)</i> Ground-Level Ozone p415 Noise Pollution pp416-417 Light Pollution pp417-418 Air Quality: Pollution-Related Deaths p422</p>
<p>4. Illustrate the formation of acid precipitation and explain its impact on the environment.</p>	<p>Rainwater p335 Nitrogen oxides (NO_x) p411 Sulfur Oxides pp412–413 Air Pollution and Acid Rain p639</p>
<p>STANDARD 5</p>	
<p>Students will relate range resources and management to natural resources</p>	
<p>Objective 1 Analyze the interrelationships between range management and other natural resource activities.</p>	
<p>1. Identify characteristics of healthy rangeland.</p>	<p>CH 25 Grasslands and Rangelands pp646- Healthy Grasslands and Rangelands pp654-656</p>
<p>2. Identify methods of rangeland improvement. (e.g., facilities, wells, springs, reseeding, chaining, etc.)</p>	<p>Management of Grasslands and Rangelands pp656-661</p>
<p>3. Evaluate a rangeland and develop a management plan for improvement.</p>	<p>Management of Grasslands and Rangelands pp656-661 ST#2 p742</p>
<p>4. Discuss livestock use of rangeland. (e.g., Animal Unit Month (AUM) carrying capacity)</p>	<p>The Konza Prairie: Bison on the Prairie p654</p>
<p>5. Discuss wildlife use of rangeland.</p>	<p>Maintaining Wildlife Populations pp660-661</p>
<p>6. Discuss additional uses of rangeland. (e.g., recreation, mining, watershed, etc.)</p>	<p>Maintaining Grass Species pp657-658 Rotational Grazing p657</p>
<p>7. Compare and contrast the effect of various uses of rangelands.</p>	<p>Maintaining Grass Species pp657-658 Rotational Grazing p657</p>
<p>8. Describe plant environment interactions.</p>	<p>CH 18 Interactions pp432–461 Commensalism p436 Competition Between Plants pp437–438, 439 Herbivory p441 Mutualism p437 Neutralism p444 Parasitism pp440, 441 Predation p441</p>

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<p>9. Explain range transects and their use in evaluating a specific location.</p>	<p>Population Estimate pp180-182 STEM Connection: Quadrat Sampling p181</p>
<p>STANDARD 6</p>	
<p>Students will examine waste management</p>	
<p>Objective 1 Investigate waste generation, waste reduction, and disposal.</p>	<p>Point Source Pollution p343 Nonpoint Source Pollution p344</p>
<p>1. Describe different types of solid waste.</p>	<p>STEM Connection: The Waste We Make p123 Solid Waste p125 Types of Waste p125-127</p>
<p>2. Evaluate environmental hazards created by different types of solid waste, solid waste accumulation, and solid waste disposal.</p>	<p>Landfills p124 Types of Waste pp125-127 Hazardous Waste pp126-127 ST#6 p135</p>
<p>3. Explain practical management options for treating solid waste.</p>	<p>Waste Management pp123-129 ST#3 p134 ST#7 p135</p>
<p>4. Explain the importance of reducing, reusing, and recycling.</p>	<p>Composting p127 Recycling and Upcycling pp127-128 Reduce, Reuse, Recycle p128 ST#2 p174</p>
<p>5. Describe recycling methods and identify materials that can be recycled. (e.g., biogas generation, green waste composting, animal waste recycling, etc.)</p>	<p>Composting p127 Recycling and Upcycling pp127-128 Reduce, Reuse, Recycle p128 ST#8 p135</p>
<p>6. Define wastewater (effluent).</p>	<p>Wastewater pp125-126</p>
<p>7. Discuss the general steps in wastewater treatment.</p>	<p>Figure 5-14 Wastewater Treatment Facility p126 Wastewater Control and Treatment pp359-360 Figure 14-17 Sewer System and Wastewater p360</p>
<p>8. Assess agriculture’s impact on the environment through waste generation. (e.g., animal waste, pesticide residue, fertilizer runoff, sedimentation/erosion, and odors/dust)</p>	<p>Agriculture pp115-117 What Are Sustainable Agriculture Practices? pp116-117 Soil Erosion pp236-241 STEM Connection: Plants and Erosion Control p241</p>
<p>9. Discuss the meaning and use of nutrient management plans.</p>	<p>Agriculture pp115-117 What Are Sustainable Agriculture Practices? pp116-117</p>

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<p>STANDARD 7</p>	
<p>Students will explain land classification, resource inventories, and monitoring methods</p>	
<p>Objective 1 Discuss land-use management planning</p>	
<p>1. Describe the interrelationships between land-use planning and natural resources.</p>	<p>Soil Classification pp219-221 Land Capability Classification pp221-224 Land Use Classification pp258-259</p>
<p>2. Identify land uses, capability factors, and land capability classes.</p>	<p>Soil Classification pp219-221 Land Capability Classification pp221-224 Land Use Classification pp258-259 TC#4 p254 TC#5 #6, p229</p>
<p>3. Demonstrate how GIS/GPS applies to land-use planning.</p>	<p>Land Use Regulations p160 Land Measurement pp720-722 Surveying Tools pp721-722 Global Positioning System pp678, 722–723 Geographic Information Systems pp724-726 TC#1-2 p742 ST#1, #4 p742 ST#7 p743</p>
<p>4. Use a soil survey to determine the land capability classes for different parcels of land in an area.</p>	<p>soil survey p219 Soil Classification pp219-221 Land Capability Classification pp221-224 Land Use Classification pp258-259 ST#9 p691 CA#3 p691</p>
<p>Objective 2 Discuss monitoring of land use.</p>	
<p>1. Identify the components of a monitoring plan.</p>	<p>Monitoring Invasive Species p724 ST#3 p488</p>

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<p>2. Discuss the procedures for conducting resource inventories and population studies.</p>	<p>CH 8 Population Dynamics pp176-197 STEM Connection: Quadrat Sampling p181 Population Ecology pp182-184 Population Dispersion pp184-187 Population Density pp187-189 ST#2 p18 ST#2 p595 ST#3 p616</p>
<p>3. List and describe the required components of an Environmental Impact Statement (EIS).</p>	<p>Ecological Impact Study p24 ST#3 p305</p>
<p>4. Develop and implement a basic plan for monitoring a natural resource project.</p>	<p>FS#3 p153 FS#2 p153 FS#2 p197</p>
<p>5. Participate in public involvement processes in land-use planning.</p>	<p>FS#1 p153 TC#4 p174 FS#2 p667 ST#9 p691</p>