A Correlation of

Environment
The Science Behind the Stories
Withgott

To the

AP® Environmental Science Topics
Correlated to The College Board Topics for AP® Environmental Science

The following correlates the Advanced Placement® Environmental Science topics as outlined by the College Board (dated Fall 2013) with the corresponding chapters in the 5th edition of Environment: The Science Behind the Stories, AP Edition. We continually monitor the College Board’s AP® Course Description for updates to exam topics. For the most current AP® Exam Topic correlation for this textbook, visit www.PearsonSchool.com/AdvancedCorrelations.

I. Earth Systems and Resources (10–15%)
   A. Earth Science Concepts
      (Geologic time scale; plate tectonics, earthquakes, volcanism; seasons; solar intensity and latitude)
      Chapter 2, Chapter 17, Appendix E: Geologic Time Scale
   B. The Atmosphere
      (Composition; structure; weather and climate; atmospheric circulation and the Coriolis Effect; atmosphere—ocean interactions; ENSO)
      Chapter 16, Chapter 17, Chapter 18
   C. Global Water Resources and Use
      (Freshwater/saltwater; ocean circulation; agricultural, industrial, and domestic use; surface and groundwater issues; global problems; conservation)
      Chapter 15, Chapter 16
   D. Soil and Soil Dynamics
      (Rock cycle; formation; composition; physical and chemical properties; main soil types; erosion and other soil problems; soil conservation)
      Chapter 2, Chapter 9

II. The Living World (10–15%)
   A. Ecosystem Structure
      (Biological populations and communities; ecological niches; interactions among species; keystone species; species diversity and edge effects; major terrestrial and aquatic biomes)
      Chapter 3, Chapter 4, Chapter 5
   B. Energy Flow
      (Photosynthesis and cellular respiration; food webs and trophic levels; ecological pyramids)
      Chapter 2, Chapter 4, Chapter 5
   C. Ecosystem Diversity
      (Biodiversity; natural selection; evolution; ecosystem services)
      Chapter 3, Chapter 4, Chapter 5, Chapter 6, Chapter 11
   D. Natural Ecosystem Change
      (Climate shifts; species movement; ecological succession)
      Chapter 4, Chapter 18
   E. Natural Biogeochemical Cycles
      (Carbon, nitrogen, phosphorus, sulfur, water, conservation of matter)
      Chapter 2, Chapter 5

III. Population (10–15%)
   A. Population Biology Concepts
      (Population ecology; carrying capacity; reproductive strategies; survivorship)
      Chapter 3
   B. Human Population
      1. Human population dynamics
         (Historical population sizes; distribution; fertility rates; growth rates and doubling times; demographic transition; age-structure diagrams)
         Chapter 1, Chapter 8
      2. Population size
         (Strategies for sustainability; case studies; national policies)
         Chapter 8
      3. Impacts of population growth
         (Hunger; disease; economic effects; resource use; habitat destruction)
         Chapter 8, Chapter 10, Chapter 11

IV. Land and Water Use (10–15%)
   A. Agriculture

xxiii
1. Feeding a growing population
(Human nutritional requirements; types of agriculture; Green Revolution; genetic engineering and crop productions; deforestation; irrigation; sustainable agriculture)

Chapter 9, Chapter 10, Chapter 12

2. Controlling pests
(Types of pesticides; costs and benefits of pesticide use; integrated pest management; relevant laws)

Chapter 10, Chapter 14

B. Forestry
(Tree plantations; old growth forests; forest fires; forest management; national forests)

Chapter 12

C. Rangelands
(Overgrazing; deforestation; desertification; rangeland management; federal rangelands)

Chapter 9

D. Other Land Use
1. Urban land development
(Planned development; suburban sprawl; urbanization)

Chapter 13

2. Transportation infrastructure
(Federal highway system; canals and channels; roadless areas; ecosystem impacts)

Chapter 12, Chapter 13, Chapter 15

3. Public and federal lands
(Management; wilderness areas; national parks; wildlife refuges; forests; wetlands)

Chapter 3, Chapter 6, Chapter 11, Chapter 12, Chapter 19

4. Land conservation options
(Preservation; remediation; mitigation; restoration)

Chapter 3, Chapter 4, Chapter 6, Chapter 11, Chapter 12, Chapter 22, Chapter 23

5. Sustainable land-use strategies

Chapter 9, Chapter 11, Chapter 12, Chapter 13

E. Mining
(Mineral formation; extraction; global reserves; relevant laws and treaties)

Chapter 6, Chapter 19, Chapter 23

F. Fishing
(Fishing techniques; overfishing; aquaculture; relevant laws and treaties)

Chapter 10, Chapter 16

G. Global Economics
(Globalization; World Bank; Tragedy of the Commons; relevant laws and treaties)

Chapter 1, Chapter 6, Chapter 7, Chapter 24

V. Energy Resources and Consumption (10–15%)

A. Energy Concepts
(Energy forms; power; units; conversions; Laws of Thermodynamics)

Chapter 2, Chapter 19

B. Energy Consumption
1. History (Industrial Revolution; exponential growth; energy crisis)

Chapter 1, Chapter 8, Chapter 19

2. Present global energy use

Chapter 2, Chapter 19, Chapter 20, Chapter 21

3. Future energy needs

Chapter 2, Chapter 19, Chapter 20, Chapter 21

C. Fossil Fuel Resources and Use
(Formation of coal, oil, and natural gas; extraction/purification methods; world reserves and global demand; synfuels; environmental advantages/disadvantages of sources)

Chapter 19, Chapter 20

D. Nuclear Energy
(Nuclear fission process; nuclear fuel; electricity production; nuclear reactor types; environmental advantages/disadvantages; safety issues; radiation and human health; radioactive wastes; nuclear fusion)

Chapter 20
E. Hydroelectric Power
(Dams; flood control; salmon; silting; other impacts)

F. Energy Conservation
(Energy efficiency; CAFÉ standards; hybrid electric vehicles; mass transit)

G. Renewable Energy
(Solar energy; solar electricity; hydrogen fuel cells; biomass; wind energy; small-scale hydroelectric; ocean waves and tidal energy; geothermal; environmental advantages/disadvantages)

VI. Pollution (25–30%)
A. Pollution Types
1. Air pollution
(Sources- primary and secondary; major air pollutants; measurement units; smog; acid deposition- causes and effects; heat islands and temperature inversions; indoor air pollution; remediation and reduction strategies; Clean Air Act and other relevant laws)

2. Noise pollution
(Sources; effects; control measures)

3. Water Pollution
(Types; sources, causes, and effects; cultural eutrophication; groundwater pollution; maintaining water quality; water purification; sewage treatment/septic systems; Clean Water Act and other relevant laws)

4. Solid Waste
(Types; disposal; reduction)

B. Impacts on Environment and Human Health
1. Hazards to human health
(Environmental risk analysis; acute and chronic effects; dose-response relationships; air pollutants; smoking and other risks)

2. Hazardous chemicals in the environment
(Types of hazardous waste; treatment/disposal of hazardous waste; cleanup of contaminated sites; biomagnification; relevant laws)

C. Economic impacts
(Cost-benefit analysis; externalities; marginal costs; sustainability)

VII. Global Change (10-15%)
A. Stratospheric Ozone
(Formation of stratospheric ozone; ultraviolet radiation; causes of ozone depletion; effects of ozone depletion; strategies for reducing ozone depletion; relevant laws and treaties)

B. Global Warming
(Greenhouse gases and greenhouse effect; impacts and consequences of global warming; reducing climate change; relevant laws and treaties)

C. Loss of Biodiversity
1. Habitat loss; overuse; pollution; introduced species; endangered and extinct species.

2. Maintenance through conservation

3. Relevant laws and treaties

Chapter 15, Chapter 20
Chapter 13, Chapter 18, Chapter 19
Chapter 2, Chapter 20, Chapter 21
Chapter 13, Chapter 17, Chapter 18, Chapter 19
Chapter 13
Chapter 5, Chapter 7, Chapter 15, Chapter 16, Chapter 19
Chapter 22
Chapter 14, Chapter 17
Chapter 14, Chapter 22
Chapter 1, Chapter 6, Chapter 7, Chapter 24
Chapter 17
Chapter 3, Chapter 4, Chapter 6, Chapter 11, Chapter 18
Chapter 3, Chapter 4, Chapter 11, Chapter 12, Chapter 16
Chapter 3, Chapter 4, Chapter 11, Chapter 12, Chapter 16
Chapter 11