Englewood Public School District
Environmental Science
Second Marking Period, Continued

Unit 3: Humans and the Environment

Overview: In this unit of study, *mathematical models* provide support for students' conceptual understanding of systems and students' ability to *design, evaluate, and refine solutions* for reducing the impact of human activities on the environment. Students create or revise a simulation to test solutions for mitigating adverse impacts of human activity. Crosscutting concepts of *systems* and *system models* play a central role in students' understanding of science and engineering practices. Mathematical models also provide support for students' conceptual understanding of systems and their ability to develop design solutions for reducing the impact of human activities on the environment.

Time Frame: 25 to 30 Days

Enduring Understandings:
Humans affect the global environment more than any other species alive today.

Essential Questions:
How does the human population affect the environment?
What is the relationship between environmental health and our own health?
How can we balance our needs for housing and jobs with the needs of the environment?

Standards	Topics and Objectives	Activities	Resources	Assessments
HS-ESS3-1 Construct an explanation based on evidence for how the availability of natural resources, occurrence of natural hazards, and changes in climate have influenced human activity. **HS-ETS1-1 Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.**	**Topics** Human Population Environmental Health Urbanization Twenty-First Century Themes and Skills include: • The Four C's • Life and Career Skills • Information and Media Literacy • Global Awareness • Environmental	Students will complete the text and digital activities: 1. Central Case Studies 2. 3-D Geo Tours 3. Quick Labs 4. Go Outside Investigations 5. Map It and Real Data Activities 6. Unit Projects 7. Lab: Longevity 8. Lab: Using Census Data 9. Lab: Interpreting Age Structure 10. Lab: Tracking an Outbreak	**Text:** • *Environmental Science: Your World, Your Turn* **Materials:** For Quick Labs and Go Outside Investigations: • See Teacher Edition p. 28 For Lab: Longevity • Old T-shirt or 1 yd. solid-colored cloth • Black permanent marker • Small paper cup • Calculator • Bag of black-eyed peas or beans	Student needs will be evaluated after completing Quick Labs, Go Outside Investigations, Map It and Real Data Activities. Students will receive a grade for the following lab activity conclusions: Longevity, Using Census Data, Interpreting Age Structure, Tracking an Outbreak, Home Hazmat Survey, Testing for Lead, Local Land Cover, Patterns of Sprawl, and Green Building

HS-ETS1-2 Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. **HS-ETS1-3 Evaluate a solution to a complex real-world problem based on prioritized criteria and tradeoffs that account for a range of constraints, including cost, safety, reliability, and aesthetics, as well as possible social, cultural, and environmental impacts.** **HS-ETS1-4 Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.** **NJSLSA.R7 Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.** **RST.11-12.7 (HS-LS2-7)** **NJSLSA.R8 Delineate and**	Literacy **Objectives** Describe how technological advances have contributed to trends in human population growth. Define and describe the factors that affect population growth. Describe how humans and technology have positive and negative impacts on the environment. Describe the reasons why individuals respond differently to the same environmental hazards. Explain how physical, biological, and social factors affect human health. Evaluate the impacts of land use and propose sustainable solutions.	11. Lab: Home Hazmat Survey 12. Lab: Testing for Lead 13. Lab: Local Land Cover 14. Lab: Patterns of Sprawl 15. Lab: Green Building Design Students will watch Bellringer Videos to introduce topics and Crash Course Ecology videos to reinforce concepts Students will watch a segment of a NASA video Earth: Planet of Altered States and discuss how the Earth is constantly changing. Students will explore Natural Hazards and how to avoid their harmful impact. Students will answer the question How Does Your Environment Affect Your Health? in a self-paced interactive lesson. Students will explore Environmental Hazards on the Farm, Environmental Hazards at the Coast, and Environmental Hazards in the City interactive simulations. Student will watch Urbanization and the Evolution of Cities Across 10,000 Years and	For Lab: Using Census Data • Computer with Internet access or pre-printed census data tables • Graph template (in lab) or graph paper For Lab: Testing for Lead • 6 lead test swabs • Distilled water • 3 250 mL beakers • Lead fishing sinker • Warm tap water and cold tap water • 2 additional test objects • Painters' masks (if handling dust) • 2 re-sealable plastic bags **Websites:** • http://www.pearsonrealize.com/ • How Does Your Environment Affect Your Health? • Environmental Hazards on The Farm • Environmental Hazards at the Coast • Environmental Hazards in the City **Videos:** • http://www.pearsonrealize.com/ • Crash Course Ecology • Earth: Planet of Altered States • Urbanization and the Evolution of Cities Across 10,000 Years • Retrofitting Suburbia	Design. Student portfolios will be used to monitor progress. A Common Formative Assessment will be given at the close of this unit to assess students' mastery of the skills identified.

evaluate the argument and specific claims in a text, including the validity of the reasoning as well as the relevance and sufficiency of the evidence. RST.11-12.8 (HS-ETS1-3) **NJSLSA.W5 Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach.** **WHST.9-12.5 (HSLS4-6).** **MP.2 Reason abstractly and quantitatively. (HS-LS2-7), (HS-ETS1-3)** **MP.4 Model with mathematics. (HS-ETS1-3)** **HSN.Q.A.2 Define appropriate quantities for the purpose of descriptive modeling. (HS-ETS1-3)** **HSN.Q.A.3 Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. (HS-ETS1-3)**		Retrofitting Suburbia and participate in an online quiz and discussion. **Enrichment Activity:** Student will explore Careers in Environmental Health via an interactive interests survey.	**Enrichment Lesson Plans:** See Careers in Environmental Health	

Modifications:

- New Jersey Department of Education – Instructional Supports and Scaffolds
- Suggested Strategies for English Language Learners
- Enrichment activities were created to allow for greater personalized learning to meet the needs of all learners including students with gifts and talents.