Summary of Proposed Curriculum Improvements
Unit 11.5.7, Lesson 5

edit #	Page #	**Original Language**	**Proposed Change**
1	Page 105	most plastic bags end up as urban blight or in landfills, waterways, and	most plastic shopping bags end up in landfills, or as litter on land, in waterways and
2		Americans discard an estimated 100 billion polyethylene plastic bags each year. Data from the United States Environmental Protection Agency (US EPA) indicate that about 12% of plastic bags and film are recycled each year.	Recycling rates specific to plastic shopping bags are not currently calculated by state or federal agencies. In California, certain grocery and retail stores are required to participate in an at-store recycling program for plastic bags, and the bags distributed by those stores are marked with language encouraging recycling. CalRecycle estimates that in 2009, the recycling rate for the plastic bags distributed by these stores and recycled at these stores was 3%. In addition, the United States Environmental Protection Agency (U.S. EPA) provides data on the recovery of municipal solid waste including plastics. In 2009, USEPA estimated that for one category of plastics, which includes bags, sacks and wraps, the recycling rate was 9%.
3		Returning to paper bags is expensive, both financially and environmentally. Producing paper consumes natural resources, generates harmful byproducts, and requires more fossil fuels to pro-duce and transport than plastics. To produce one plastic bag costs about two cents, while paper bags cost about four cents.	Paper shopping bags are an option but producing paper bags consumes natural resources, generates harmful byproducts, and requires fossil fuels to produce and transport.
4		Alternatives, called bioplastic bags, can be made from natural starches (for example, corn, potato, or cassava) or vegetable oils at a cost of seven or eight cents per bag.	Alternatives, called bioplastic bags, can be made from natural starches or vegetable oils. There are costs, benefits and impacts associated with this option as well.
5		It has been estimated that one reusable bag for an average person can replace up to 500 individual uses of plastic bags.	Many customers in the United States and other countries now bring their own cloth or resuable bags to grocery stores.
6	Page 107	Visual Aid #14: (title)	Title to be updated consistent with changes in visual aids that are needed as follows: Visual Aid 14 new map or graphic to be used. We are going to seek NOAA permission to use one of their graphics.
7	Page 110	II. Polyethylene was first used to make plastic shopping bags in 1977, but it was not until 1982 that people started relying on plastic shopping bags	Polyethylene was first used to make plastic shopping bags for retail stores in the 1970s, but it was not until the 1980s that people started relying on plastic shopping bags

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8		IIa. Large grocery companies started replacing paper bags with more convenient and affordable plastic bags.	IIa. Large grocery companies started ~~replacing paper bags with plastic bags~~ offering plastic shopping bags instead of paper bags during the 1980s.
9		IIb. Plastic bags require 70% less energy to make than paper bags, take less energy to recycle, and take up less space in landfills than paper bags.	IIb. Plastic bags are durable, lightweight and take up less space than paper bags
10		IId. Five hundred billion to 1 trillion plastic bags are used worldwide every year.	deleted
11		IIe. & IIf.	Change letter selection IIe. to IId. & change IIf to IIe. (as a result of edit #10, deleting the original answer selection IId.)
12		IIf. *Added item*	IIf. Plastic shopping bags can be recycled.
13		IIId. The North Pacific Gyre is home to the world's largest floating island of trash that is estimated to be more than 5 million square miles—larger than the entire United States. A study conducted by Algalita Marine Research Foundation in the North Pacific Gyre found six more times the mass of plastic particles than plankton.	IIId. The North Pacific Gyre is home to an area of marine debris concentration in the North Pacific Ocean. Sometimes referred to as "garbage patches", these areas of concentrated debris are really more like a diluted soup much of which consists of small plastic pieces. Efforts are underway to reduce man-made litter and debris that enters our oceans and waterways.
14		III. Problems with Plastic Shopping Bags	III. Issues with Plastic Shopping Bags
15	Page 111	III. Problems with Plastic Shopping Bags (continued)	III. Issues with Plastic Shopping Bags (continued)
16		IIIg. Studies of the seafloor in the northwestern Mediterranean found that plastics made up 77% of the debris on the seafloor. Of this debris, 93% was plastic bags.	deleted
17		IIIh. Citing environmental reasons	IV. Addressing the Impacts of Plastic Shopping Bags a. Citing environmental reasons
18		IIIi. In 2007, the city of San Francisco	IVb. Beginning in 2007, ~~the city of San Francisco banned the use of~~ multiple municipalities throughout California began implementing laws to discourage, or ban, the use of plastic shopping bags ~~in large supermarkets and retail pharmacy chains~~.

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19		IIIi. (partial) This law has eliminated the use of an estimated five million plastic bags each month. Currently, other cities, counties, and states are considering a ban on plastic shopping bags.	IVb. These ~~This laws~~ ~~has~~ have eliminated the use of millions of plastic shopping bags each month.
20			c. Many customers in the United States, Europe and other countries, now bring their own reusable bags to grocery stores.
21		IV. Advantages of Plastic Shopping Bags (entire section)	deleted
22	Page 112	*VA 16 - Graphic Organizer Science and Events* - Plastic developed. Convenience and cost of paper bags high.	deleted
23		*VA 16 - Graphic Organizer New Technology* - Plastic bags designed; more convenient, less cost to manufacture; less landfill space needed.	*New Technology* - Plastic bags designed; convenient, strong, lightweight, and durable.
24	Page 115	*This page is a repeat of the graphic organizer contained on page 112 , used here as a lesson assessment*	make all changes as described on page 112
25	Page 116	*Byproducts and waste answer* - Non-biodegradable polymer pieces become "white pollution" in the ocean and land; fill up landfills; harm animals.	Non-biodegradable polymer pieces as white pollution; bags litter ocean and land; disposal into landfills; harm animals.
26	Page 117	1. What are the advantages of using plastic shopping bags?	1. What factors have contributed to the consumption of plastic shopping bags?
27		Plastic shopping bags are very convenient to use. They take less energy to manufacture than paper bags, cost less to transport, and can be reused.	Plastic shopping bags are convenient to use, strong and lightweight. Grocery stores provide plastic shopping bags free to customers; some businesses develop bags for marketing and advertising; people reuse plastic shopping bags for trash, lunch bags, and pet pick-up.
28		2. How does the production of plastic shopping bags affect natural systems?	2. How does the production and use of plastic shopping bags affect natural systems?
29		3. What might be done to change the cycle of mass production, marketing, and consumption of plastic bags?	3. How can consumers change the cycle of mass production, marketing, and consumption of plastic shopping bags?

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30		New technologies could recycle disposed materials in an inexpensive manner to create sturdy, affordable, convenient bags instead of plastic shopping bags. This way, natural systems would benefit from less waste going into landfills. Oil and natural gas would no longer be needed to make the plastic bags. Marketing efforts could present these reusable bags as a great alternative and create demand for recycled-material bags as the solution for future generations. Consumers could be convinced about the importance of reusing and recycling plastic bags.	New technologies could increase the recycling of plastic shopping bags and consumers could be convinced about the importance of reusing and recycling plastic bags. Marketing efforts could present reusable bags as a great alternative and create demand for this option as the solution for future generations.
31		4. What is the government doing to manage concerns about plastic bags via regulation, incentives, and/or new technologies?	4. What is the government doing to manage concerns about the impacts on natural systems caused by the use and disposal of plastic shopping bags via regulation, incentives, and/or new technologies?
32		The government is also funding advertisements to teach the public about the environmental concerns of plastic bags.	deleted
33	Page 121	VA 14	to be replaced with accurate graphic consistent with NOAA description and policy statements (seeking NOAA permission for use of its graphic)