Teaching Eighth-Grade **Nonfiction Text Features** Using ***Trashing the Planet: Examining Our Global Garbage Glut***

Features that help students understand how an informational text is organized:

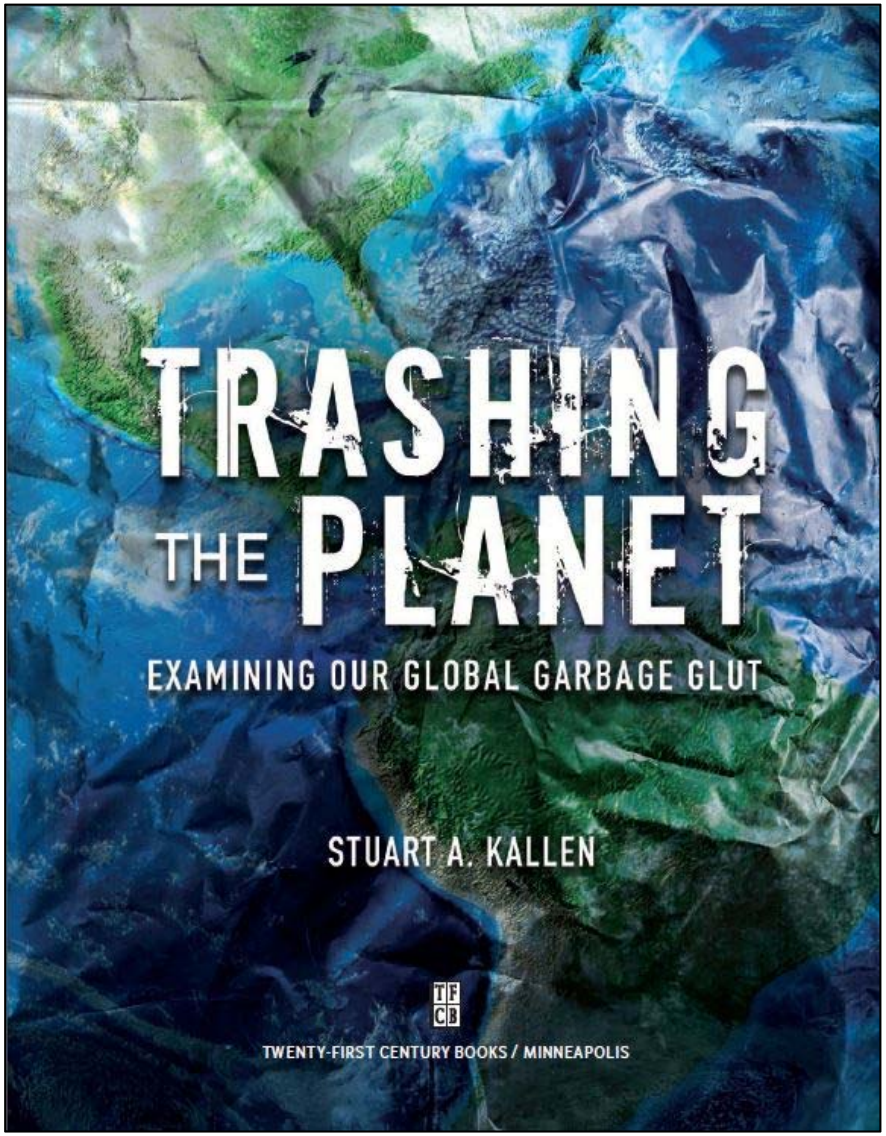
FEATURE	PURPOSE
Title page	Confirms title, author's name, and publisher
Table of Contents/Contents Page	Identifies the topics to be presented and their order
Chapter name, heading, or subheading	Helps students identify main topics on a quick pass through the text
Further reading and websites	Helps students expand their knowledge of the topic by listing other informational texts in print or on the Internet
Index	Lists the main ideas in the text, with page numbers to help students find them

Visual aids that help students understand informational texts:

VISUAL AID	PURPOSE
Photo, drawing, or illustration	Shows how something in the text looked or might have looked
Diagram	Gives a more detailed view of a complex topic
Graph	Shows how bits of information on the same topic relate to one another

Features that point out important or additional information:

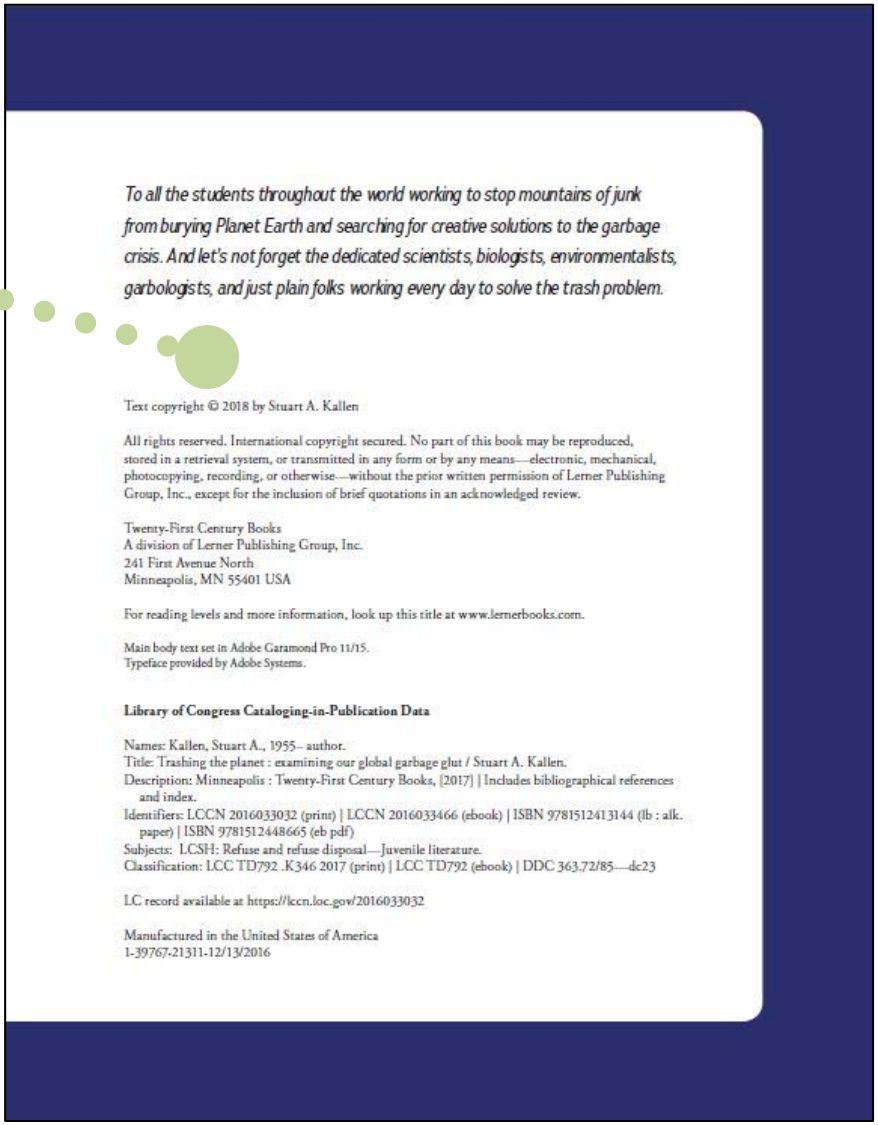
FEATURE	PURPOSE
Copyright page	Tells students how current the information in a book is
Note to Reader	Sets for the author's purpose for writing the book
Colored print	Highlights a key topic or feature
Italic Print	Tells students the word is supposed to stand out. It may be for emphasis or because it is a book name, newspaper, movie title, foreign word, or the directional for a photo or illustration.
Caption	Points out what's in a photo, a drawing, or an illustration and relates it to the informational text; often gives more information
Label	Identifies important points of interest in a diagram or photograph that students might otherwise miss
Timeline	A chart of list that helps students understand the sequence of events in the informational text
Source Note	Tells the students where the quoted material came from
Author's Acknowledgement/Afterword	Winds down the informational text; sets forth the names of those with whom the author worked to create the book



TITLE PAGE: This page tells you the title, author, and publisher of a book.

COPYRIGHT YEAR

COPYRIGHT PAGE:
This page tells you the year the book was published. This may be important for report writing when you need up-to-date information. On this page, you can also find the address of the publisher.



To all the students throughout the world working to stop mountains of junk from burying Planet Earth and searching for creative solutions to the garbage crisis. And let's not forget the dedicated scientists, biologists, environmentalists, garbologists, and just plain folks working every day to solve the trash problem.

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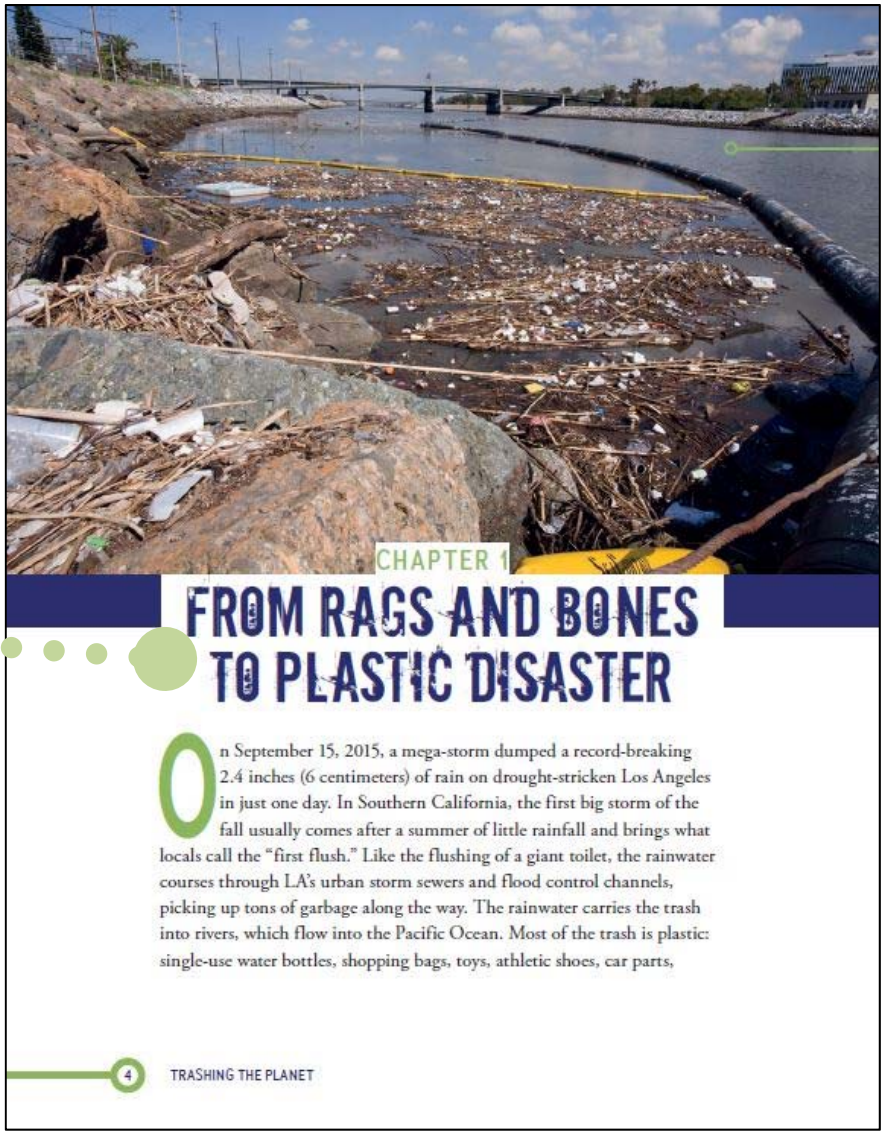
TABLE OF CONTENTS PAGE: This lists the chapters by chapter title and the pages on which they begin. After the chapter list, there may be a list of extra features, such as source notes or an index, that you'll find at the end of the book.

CONTENTS

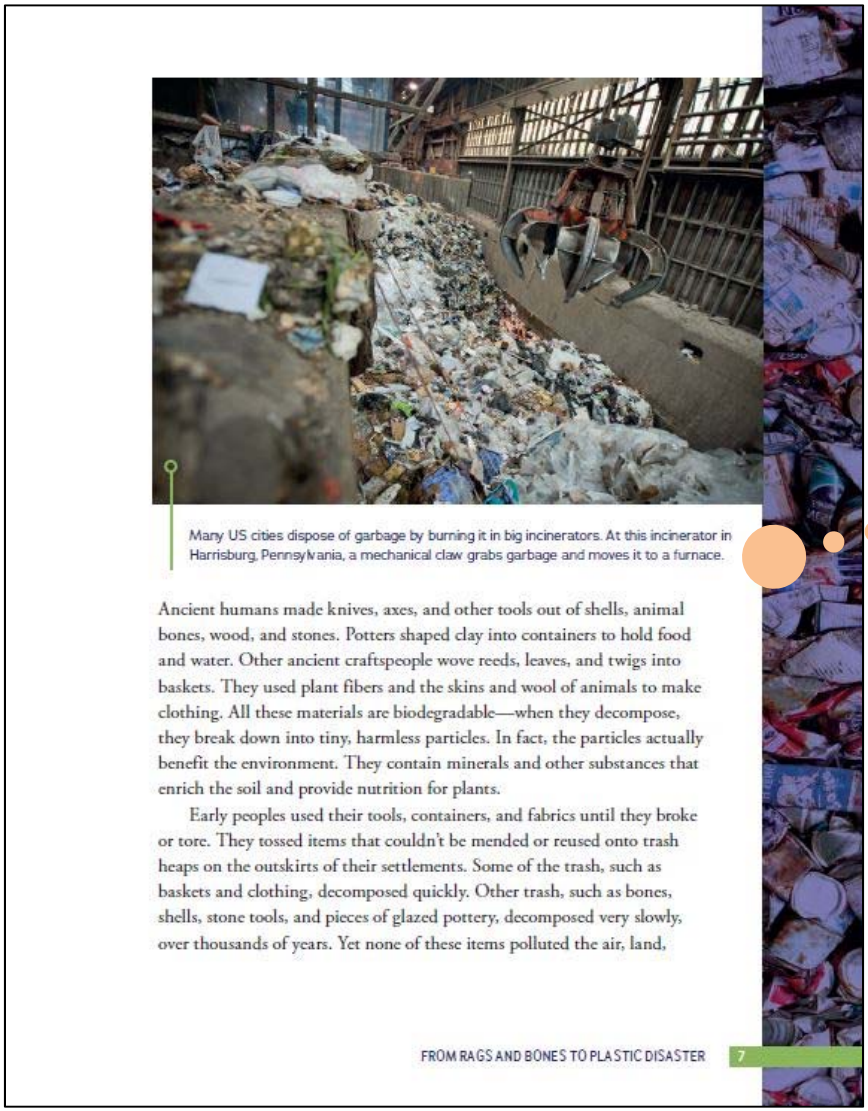
CHAPTER TITLE: This tells you what topic will be discussed in the chapter. Chapter titles often give you the main ideas of the book.



CHAPTER 1

FROM RAGS AND BONES TO PLASTIC DISASTER

On September 15, 2015, a mega-storm dumped a record-breaking 2.4 inches (6 centimeters) of rain on drought-stricken Los Angeles in just one day. In Southern California, the first big storm of the fall usually comes after a summer of little rainfall and brings what locals call the "first flush." Like the flushing of a giant toilet, the rainwater courses through LA's urban storm sewers and flood control channels, picking up tons of garbage along the way. The rainwater carries the trash into rivers, which flow into the Pacific Ocean. Most of the trash is plastic: single-use water bottles, shopping bags, toys, athletic shoes, car parts,



Many US cities dispose of garbage by burning it in big incinerators. At this incinerator in Harrisburg, Pennsylvania, a mechanical claw grabs garbage and moves it to a furnace.

Ancient humans made knives, axes, and other tools out of shells, animal bones, wood, and stones. Potters shaped clay into containers to hold food and water. Other ancient craftspeople wove reeds, leaves, and twigs into baskets. They used plant fibers and the skins and wool of animals to make clothing. All these materials are biodegradable—when they decompose, they break down into tiny, harmless particles. In fact, the particles actually benefit the environment. They contain minerals and other substances that enrich the soil and provide nutrition for plants.

Early peoples used their tools, containers, and fabrics until they broke or tore. They tossed items that couldn't be mended or reused onto trash heaps on the outskirts of their settlements. Some of the trash, such as baskets and clothing, decomposed quickly. Other trash, such as bones, shells, stone tools, and pieces of glazed pottery, decomposed very slowly, over thousands of years. Yet none of these items polluted the air, land,

FROM RAGS AND BONES TO PLASTIC DISASTER 7

CAPTION: This is a description of a photo or diagram. A caption is usually placed close to the picture it describes. Sometimes a caption will tell you if the picture is a photo or a drawing. A caption may also give you additional information that is not in the main text.

A sanitation worker loads trash from a Dumpster into the back of a garbage truck. Every year, Americans generate more than 390 million tons (354 million metric tons) of garbage.

CHAPTER 2

THE UNITED STATES OF TRASH

Americans have a love affair with trash. The United States has about 5 percent of the world's population but generates 30 percent of its garbage. According to a 2008 study by Columbia University in New York, the average American throws away about 7.1 pounds (3.2 kg) of waste each day, every day. That adds up to about 102 tons (93 metric tons) of trash over a person's lifetime. Edward Humes, author of the book *Garbology: Our Dirty Love Affair with Trash*, says, "Each of our bodies may occupy only one cemetery plot when we're done with this world, but a single person's 102-ton trash legacy will require the equivalent [space] of 1,100 graves. Much of the refuse will outlast any grave marker, pharaoh's pyramid or modern skyscraper."

Once we've put our garbage cans out on the curb, trash collectors load our waste into garbage trucks, compress it, and haul it away. And it takes a lot of trucks to handle US garbage. In fact, each day Americans throw away enough stuff to fill sixty-three thousand garbage trucks. According to Humes, one of every six big trucks in the United States is a garbage truck.

New York City, the largest city in the United States, relies on both trucks and trains to handle its garbage. Every day, such vehicles leave the city loaded with 12,000 tons (10,886 metric tons) of garbage headed for out-of-state landfills. "How much is 12,000 tons a day?" asks Humes. "That's like throwing away sixty-two Boeing 747 jumbo jets daily, or driving 8,730 new Honda Civics into a landfill each morning."

SANITARY LANDFILLS

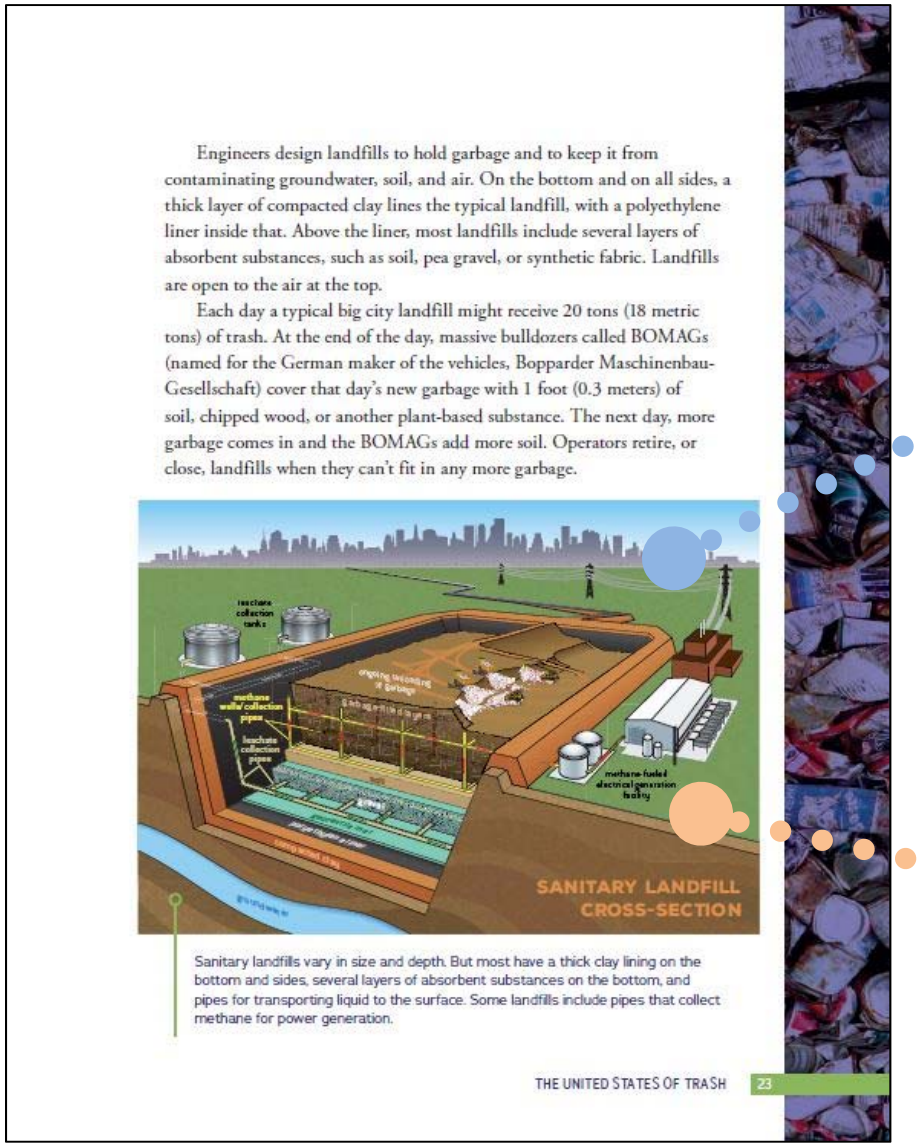
The end of the line for most US garbage—about 70 percent of it—is the sanitary landfill. The EPA oversees US landfills and enforces numerous regulations governing their design and operations. US landfills vary in size. Some measure hundreds of feet in depth and cover several hundred acres of land.

SHRINK-WRAPPING TEXAS

Pulitzer Prize–winning journalist Edward Humes has compiled many statistics about American waste. Humes writes that each year Americans discard the following:

- 5.7 million tons (5.2 million metric tons) of carpet
- 19 billion pounds (8.6 billion kg) of polystyrene peanuts (Styrofoam)
- thirty-five billion plastic bottles
- forty billion plastic knives, forks, and spoons
- 4.5 million tons (4 million metric tons) of office paper
- enough wood to heat fifty million homes for twenty years
- enough plastic film to shrink-wrap Texas

HEADINGS AND SUBHEADINGS: These separate the main text into smaller chunks of information.



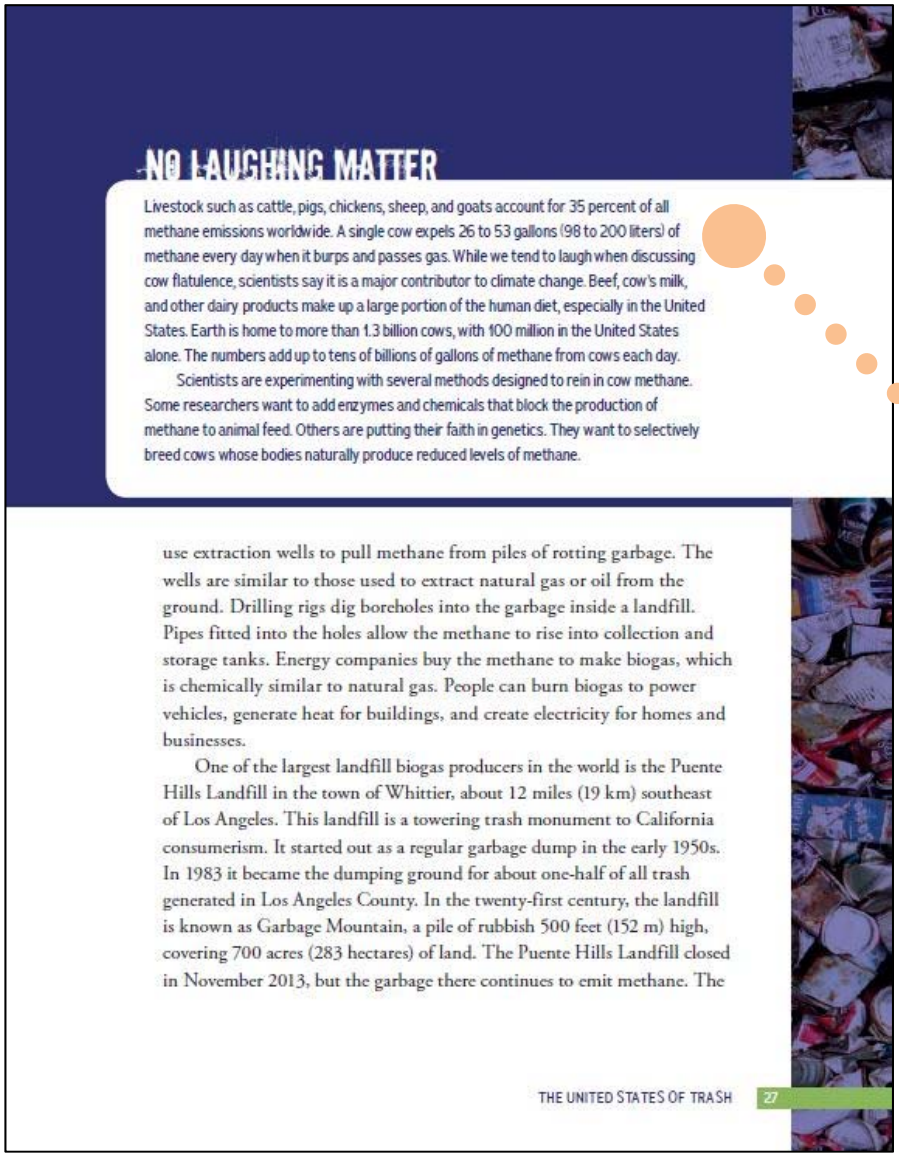
Engineers design landfills to hold garbage and to keep it from contaminating groundwater, soil, and air. On the bottom and on all sides, a thick layer of compacted clay lines the typical landfill, with a polyethylene liner inside that. Above the liner, most landfills include several layers of absorbent substances, such as soil, pea gravel, or synthetic fabric. Landfills are open to the air at the top.

Each day a typical big city landfill might receive 20 tons (18 metric tons) of trash. At the end of the day, massive bulldozers called BOMAGs (named for the German maker of the vehicles, Bopparder Maschinenbau-Gesellschaft) cover that day's new garbage with 1 foot (0.3 meters) of soil, chipped wood, or another plant-based substance. The next day, more garbage comes in and the BOMAGs add more soil. Operators retire, or close, landfills when they can't fit in any more garbage.

Sanitary landfills vary in size and depth. But most have a thick clay lining on the bottom and sides, several layers of absorbent substances on the bottom, and pipes for transporting liquid to the surface. Some landfills include pipes that collect methane for power generation.

DIAGRAM:
This is a drawing that gives a simpler view of complex information. Short labels point out important parts of the drawing.

LABELS:
These words on a diagram or photo point out important parts of the diagram or photo. On a map, labels name important features, such as rivers or cities.



NO LAUGHING MATTER

Livestock such as cattle, pigs, chickens, sheep, and goats account for 35 percent of all methane emissions worldwide. A single cow expels 26 to 53 gallons (98 to 200 liters) of methane every day when it burps and passes gas. While we tend to laugh when discussing cow flatulence, scientists say it is a major contributor to climate change. Beef, cow's milk, and other dairy products make up a large portion of the human diet, especially in the United States. Earth is home to more than 1.3 billion cows, with 100 million in the United States alone. The numbers add up to tens of billions of gallons of methane from cows each day.

Scientists are experimenting with several methods designed to rein in cow methane. Some researchers want to add enzymes and chemicals that block the production of methane to animal feed. Others are putting their faith in genetics. They want to selectively breed cows whose bodies naturally produce reduced levels of methane.

use extraction wells to pull methane from piles of rotting garbage. The wells are similar to those used to extract natural gas or oil from the ground. Drilling rigs dig boreholes into the garbage inside a landfill. Pipes fitted into the holes allow the methane to rise into collection and storage tanks. Energy companies buy the methane to make biogas, which is chemically similar to natural gas. People can burn biogas to power vehicles, generate heat for buildings, and create electricity for homes and businesses.

One of the largest landfill biogas producers in the world is the Puente Hills Landfill in the town of Whittier, about 12 miles (19 km) southeast of Los Angeles. This landfill is a towering trash monument to California consumerism. It started out as a regular garbage dump in the early 1950s. In 1983 it became the dumping ground for about one-half of all trash generated in Los Angeles County. In the twenty-first century, the landfill is known as Garbage Mountain, a pile of rubbish 500 feet (152 m) high, covering 700 acres (283 hectares) of land. The Puente Hills Landfill closed in November 2013, but the garbage there continues to emit methane. The

SIDEBAR:
These are short bits of text with their own headers. They are usually boxed and separated from the main text. Sidebars give additional information.

SOURCE NOTES:
This lists the books, magazines, and other resources from which the author borrowed specific quotations.

SOURCES NOTES

5 Katie Allen, "Torrential Rainstorm Sends Plastic Pollution into the Ocean," Story of Stuff Project, accessed July 19, 2016, http://storyofstuff.org/blog/torrential-rainstorm-sends-plastic-pollution-into-the-ocean.

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20–21 Edward Humes, *Garbology: Our Dirty Love Affair with Trash* (New York: Avery, 2012), 14.

21 Ibid., 18.

24 Richard Weizel, "A School on a Dump Site Divides Hamden," *New York Times*, June 30, 2002, http://www.nytimes.com/2002/06/30/nyregion/a-school-on-a-dump-site-divides-hamden.html?pagewanted=all.

25 G. Fred Lee and Anne Jones-Lee, *Assessment of the Performance of Engineered Waste Containment Barriers* (Washington, DC: National Academies, 2009), 2.

29 Carlos Granada, "Sun Valley High-Tech Plant Looks to Separate Treasures from Trash," *ABC7*, April 8, 2016, http://abc7.com/news/sun-valley-high-tech-plant-looks-to-separate-treasures-from-trash/1283462.

32 Noelle Nicholas, "Silverton, Colorado: State of Emergency Declared following Massive Toxic Spill," *Inquisitr*, August 11, 2015, http://www.inquisitr.com/2326137/silverton-colorado-toxic-spill/.

32 Julie Turkewitz, "Environmental Agency Uncorks Its Own Toxic Water Spill at Colorado Mines," *New York Times*, August 10, 2015, http://www.nytimes.com/2015/08/11/us/durango-colorado-mine-spill-environmental-protection-agency.html?smid=tw-nytimes&_r=0.

33 John Hickenlooper, quoted in Nicholas, "Silverton, Colorado."

33 Tom Myers, quoted in Brennan Linsley, Lindsay Whitehurst, Colleen Slevin, Ivan Moreno, Susan Montoya Bryan, and Brian Skoloff, "EPA Spill of Toxic Waste Could Be Long-Term Calamity," *Huffington Post*, August 12, 2015, http://www.huffingtonpost.com/entry/epa-spill-of-toxic-waste-could-be-long-term-calamity_us_55cbb9c9e4b064d5910a6abd.

48 Valentin Thurn, "Author: European Food Waste Adds to World Hunger," *Deutsche Welle*, March 25, 2012, http://www.dw.com/en/author-european-food-waste-adds-to-world-hunger/a-15837215.

49 "Michael Pollan Says: Take Back Control of Your Plate!," *Feedback*, accessed June 3, 2016, http://feedbackglobal.org/2014/10/830.

50–51 Dana Gunders, "Wasted: How America Is Losing Up to 40 Percent of Its Food from Farm to Fork to Landfill," Natural Resources Defense Council, August 2012, http://www.nrdc.org/sites/default/files/wasted-food-IP.pdf.

FURTHER INFORMATION

BOOKS

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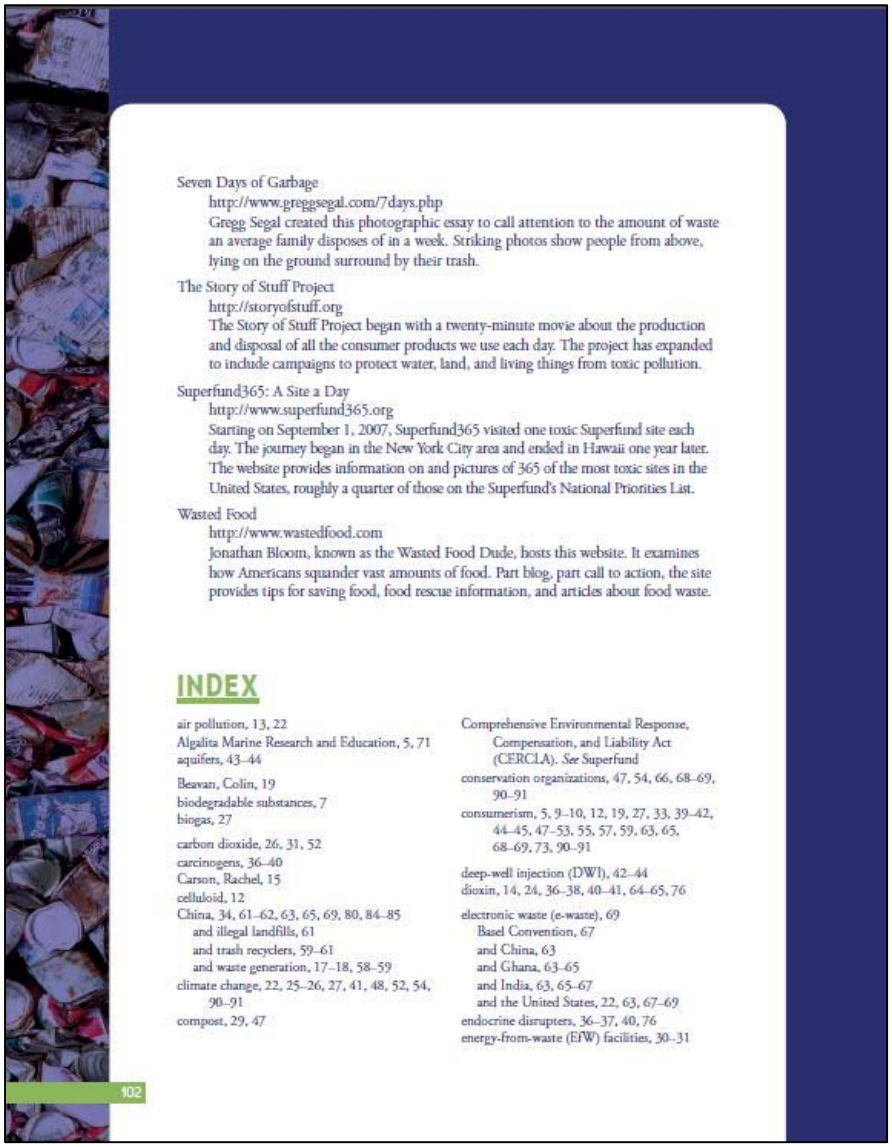
Terry, Beth. *Plastic-Free: How I Kicked the Plastic Habit and How You Can Too*. New York: Skyhorse, 2015.

Young, Karen Romero. *Space Junk: The Dangers of Polluting Earth's Orbit*. Minneapolis: Twenty-First Century Books, 2016.

FURTHER READING: This list at the end of the book suggests books and websites on the same or related subjects. This list can be helpful in doing research for reports.



Seven Days of Garbage
http://www.greggsegal.com/7days.php
Gregg Segal created this photographic essay to call attention to the amount of waste an average family disposes of in a week. Striking photos show people from above, lying on the ground surround by their trash.

The Story of Stuff Project
http://storyofstuff.org
The Story of Stuff Project began with a twenty-minute movie about the production and disposal of all the consumer products we use each day. The project has expanded to include campaigns to protect water, land, and living things from toxic pollution.

Superfund365: A Site a Day
http://www.superfund365.org
Starting on September 1, 2007, Superfund365 visited one toxic Superfund site each day. The journey began in the New York City area and ended in Hawaii one year later. The website provides information on and pictures of 365 of the most toxic sites in the United States, roughly a quarter of those on the Superfund's National Priorities List.

Wasted Food
http://www.wastedfood.com
Jonathan Bloom, known as the Wasted Food Dude, hosts this website. It examines how Americans squander vast amounts of food. Part blog, part call to action, the site provides tips for saving food, food rescue information, and articles about food waste.

INDEX

INDEX: This list of the main ideas in the book is followed by page numbers that tell you where to go in the book to find that main idea.