OPEN YOUR EYES TO LITTER – VOLUME 5
KEEPING OUR GREENWAYS CLEAN
A TEACHER'S GUIDE

KEEP PENNSYLVANIA Beautiful
KEEP AMERICA BEAUTIFUL AFFILIATE

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Empowering Pennsylvanians to keep
our communities clean and Beautiful.

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KEEPING OUR GREENWAYS CLEAN

OPEN YOUR EYES TO LITTER - VOL. 5

A TEACHER'S GUIDE

After completing this booklet and suggested activities, students will be able to:

- Know the definition of a greenway.
- List how greenways are used by people and animals.
- Identify where Pennsylvania's greenways are located.
- List and understand the functions of greenways and how they benefit the environment.
- Identify how people positively and negatively impact greenways.
- Choose a way they can individually or as a group positively impact a greenway near them.

These projects address PA Department of Education Academic Standards for:

Environment & Ecology

4.2.4 Renewable and Nonrenewable Resources (A&D)
4.3.4 Environmental Health (A, B &C)
4.8.4 Humans and the Environment (A, B, C & D)
4.9.4 Environmental Laws and Regulations (A)

Geography

7.1.3 Basic Geography Literacy (A & B)
7.2.3 The Physical Characteristics of Places & Regions (A)
7.3.3 The Human Characteristics of Places & Regions (C)
7.4.3 The Interactions Between People & Places (B)

This fifth volume of **OPEN YOUR EYES TO LITTER – KEEPING OUR GREENWAYS CLEAN** provides students and teachers with the knowledge of:

- What is a greenway.
- Where Pennsylvania's greenways are located.
- How greenways help the environment.
- How people impact greenways.
- Ways students can make a difference in a greenway near them.

We have designed this teacher's guide as a tool to address this topic as simply or as in depth as your interest and time allow. The projects can be incorporated with reading,

research, social studies, vocabulary, map skills, Internet skills, public speaking, interviewing skills, geography, and history.

We encourage you to review **Suggested Strategies and How to Get Started** and decide how to involve your class with the projects, research, and activities included in this guide. Students can do them individually or in small groups. This guide provides opportunities for students to choose what they want to explore further and to then teach each other. In the process they will not only discover what is actually happening in the area around them but to also have the opportunity to make a difference by being conscious of their own decisions and choices.

Our experience shows that the more hands-on, real life activities students get involved in; the more they integrate their own personal connection with the environment and understand how one person **can** make a difference. We have offered several opportunities for this to happen easily in your classroom.

We suggest that after reading **Keeping Our Greenways Clean** you brainstorm what students already know and also some questions they might have. Keep these available in the room to make additions to as you progress through the unit. Display the project/activity options on a bulletin board and let students choose one they would like to work on alone or in a small group. They are:

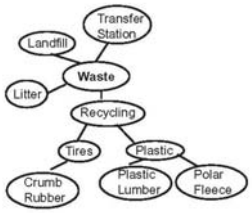
1. Make a Model of a Greenway
2. Map and Research a Greenway
3. Map Your County
4. Investigate Litter and Waste in your Community/Municipality
5. Conduct a Litter Survey of Your School and School Grounds
6. Research How Trash is Handled in Different Parts of Our Country or Worldwide
7. How was Waste and Litter Handled Throughout History
8. Recycling: Follow the Life of an Object
9. Plan and Take a Field Trip
10. Invite a Speaker to Share with your Class

We have also included Possible Research Topics and some questions to get your students started. Remember, these topics are just suggestions to spark their interest in learning more and can be adjusted to suit your class size, amount of time you want to spend on the topic, and how many subject areas you would like to include to maximize your teaching and your students' learning.

Suggested Strategies

Regardless of the age group with which you are working, we suggest beginning your study of greenways with a **K-W-L activity**. Using three large sheets of chart paper, label one, Things We **KNOW,** the next, Things We **WANT** to Know, and the third, Things We **LEARNED**. Use the first two lists at the very start of your theme. This will make you aware of the knowledge your students bring to this study, so that you aren't needlessly re-teaching and you learn which students have knowledge that they could present as a mini-lesson. The second list helps you and the students focus on the specific questions they have and the direction your student's research will take. This will be valuable information to use when locating resource materials, speakers, and special projects. It can also be added to, as your theme progresses. The third list can be used as a culminating activity that brings together all the knowledge that each student, small group, and speaker brought to the learning experience.

WEBBING - Another valuable technique which works well with all age groups is to **create a Web at the beginning of your theme**. Draw a circle on chart paper or the blackboard and write your theme title in the middle. Encourage the children to brainstorm related topics or questions they have about the theme and add them as arms to the web. Use straight lines radiating out from the center circle with the related word in a circle, just like the one in the center. Group connected topics together as fingers off the arms, such as all map-oriented items, all litter and recycling research projects, and all community outreach or social studies areas. This can be displayed and added to throughout your study. Guiding your students through this learning process helps them to make connections between topics and understand that real-life learning isn't separated into "courses".



Keep Pennsylvania Beautiful recommends **student research and sharing** as the primary learning strategy**.** We have included ten activities and encourage you to let students work in small groups or pairs to select a couple of topics that interest them (or the teacher may assign one and let students pick one) and prepare presentations to the rest of the class. In our research for both the book and the teachers guide, the "things we learned along the way" were equally as important as the "topic" we were researching.

The **Community Investigation, Litter Survey and Trash Timeline** are here to complement your own classroom's research and exploration. They can be taken out of this guide, copied, and used as a teaching tool or as a beginning point for student research. Use the Internet to find invaluable municipal and state agencies and other resources. Creating a glossary as you go or using ours as a guide will give you a working vocabulary and source for spelling words and writing assignments.

We suggest you use outside speakers and local experts whenever possible. Individuals who can share first-hand experiences can make a huge impact on kids. Vendors, landfill representatives, waste haulers, state park or greenway personnel, county recycling coordinators, Rails-to-Trails representatives, etc., can make a lasting impression on our youth when they are asked to make a presentation.

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For these additional resources contact Keep Pennsylvania Beautiful
Open Your Eyes To Litter; Supplementary Teacher's Guide
Open Your Eyes To Litter – Our Littered Past; Supplementary Teacher's Guide
Open Your Eyes To Litter – Think Before You Toss; Supplementary Teacher's Guide
Open Your Eyes To Litter – In A Watershed
Open Your Eyes To Litter – Keeping Our Greenways Clean; Supplementary Teacher's Guide
Project Trash

How to Get Started

- Collect and display a variety of maps
    - County
    - State
    - USA
    - World
    - Greenways (search Department of Conservation and Natural Resources Major Greenways Map)

- Explain the different types of maps
    - Topographical
    - Climate
    - Environmental
    - Political
    - Economic or resource

- Read *Open Your Eyes to Litter - Keeping Our Greenways Clean*

- K-W-L Activity

- Webbing

- Have students choose projects

- Create an ongoing vocabulary list

- Create a list of questions that arise. Brainstorm possible answers and then research to find out!

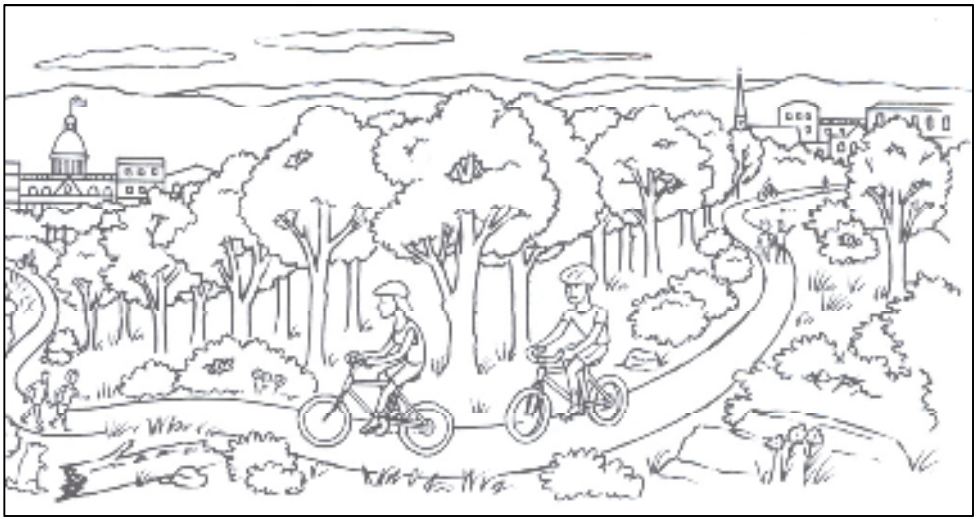
- Have students teach each other what they have learned from their projects

- Try to have a field trip

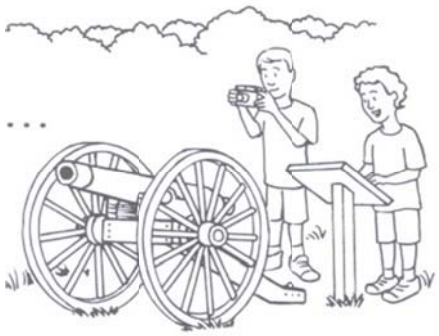
- Learn from outside speakers

Make a Model of a Greenway

- Use paper mache, clay, crumpled foil or and sponges to create the state of Pennsylvania (or your county) on a tray or board (Be creative!)
- Form the mountains and rivers
- Use twigs, greens, etc. and paint to create the greenways
- Use sponges for wetlands
- Add animals who live in the greenway and people using them for recreation
- Add cities and towns (identify any trail towns)
- Use this model as a tool to identity the different greenways and explain the way each one helps the environment
- Explain how each function helps the environment (see pages 11 & 12 of Keeping Our Greenways Clean)
  - Habitat
  - Source
  - Filter
  - Travel
  - Buffer
  - Sink



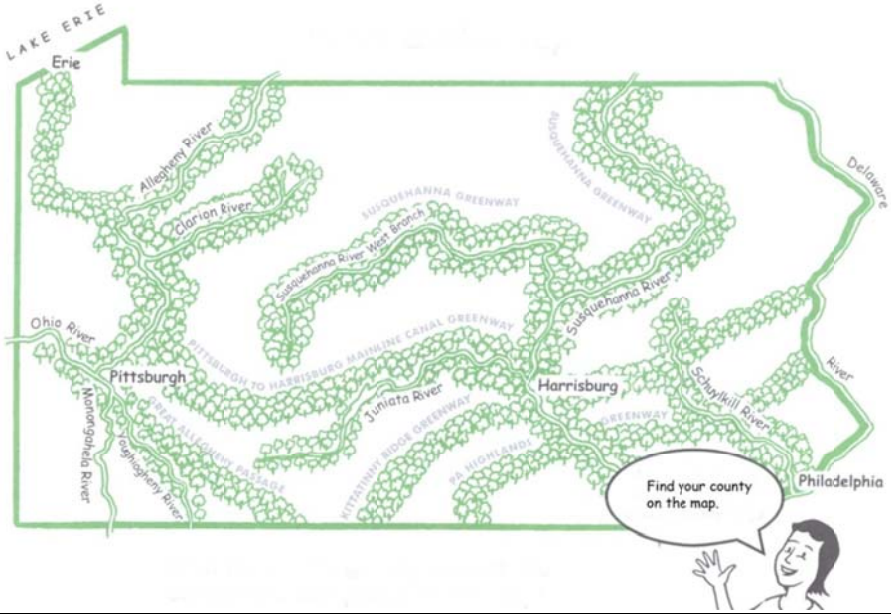
Map & Research a Greenway



- Create a map of a greenway that interests you.
- Research –
  - Tourism it attracts and why?
  - What recreation activities are available?
  - Explore any trail towns and how they have grown – what is available for visitors?
  - What industry is nearby – how does it impact the greenway?
- Invite a speaker in or interview someone connected with the greenway (trail town shop keeper, watershed specialist, etc).
- Present what you have learned to your class.
- Make a short quiz for them to answer.
- Make a crossword puzzle with the info collected.

Map Your County

- Using big poster or chart paper make a map of your county.
- Include:
  - o Waterways
  - o Greenways
  - o Trail towns
  - o Major cities and towns
  - o State parks and forests
  - o National parks and forests
- Add a legend to show what the different colors or symbols on the map mean.
- Research who or what agency is responsible for each area (to maintain roads, trails, parks, litter, waterways, etc.).
- Research how one of these areas was developed and if it is protected from development or improper use.
- Present what you have learned to your class.



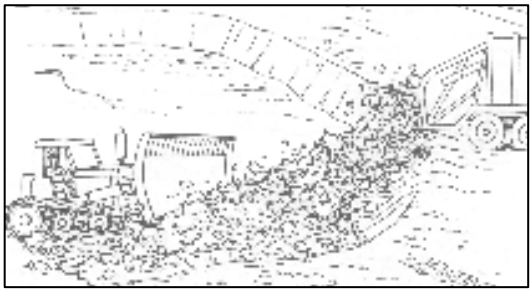
ACTIVITY 4

Investigate Litter and Waste In Your Municipality/Community

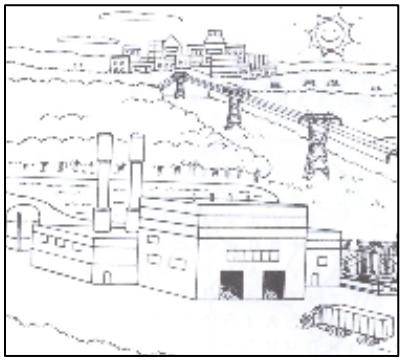
See the Community Investigation on page 15.

- What happens to the garbage your family throws away?
- Does your community have mandatory trash collection?
- Who are the local or municipal waste haulers?
- Is there a landfill/transfer station/resource recovery facility/incinerator in your area? Plan a field trip to one of them or invite a representative to speak to the class.
- Does your community have curbside recycling?
  - What items are collected?
  - Research Act 101 and explain the law to your class
- Are there any places to take or buy reused building supplies (ex. Construction Junction or Habitat for Humanity Restores).
- Where is litter a problem?
- Can streets, parks, or trails be adopted?
- Make a poster to show where trash goes and present it to the class.

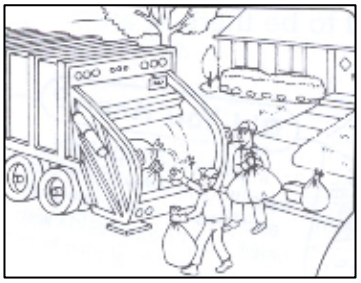
Landfill



Resource Recovery Facility



Curbside Trash



ACTIVITY 5

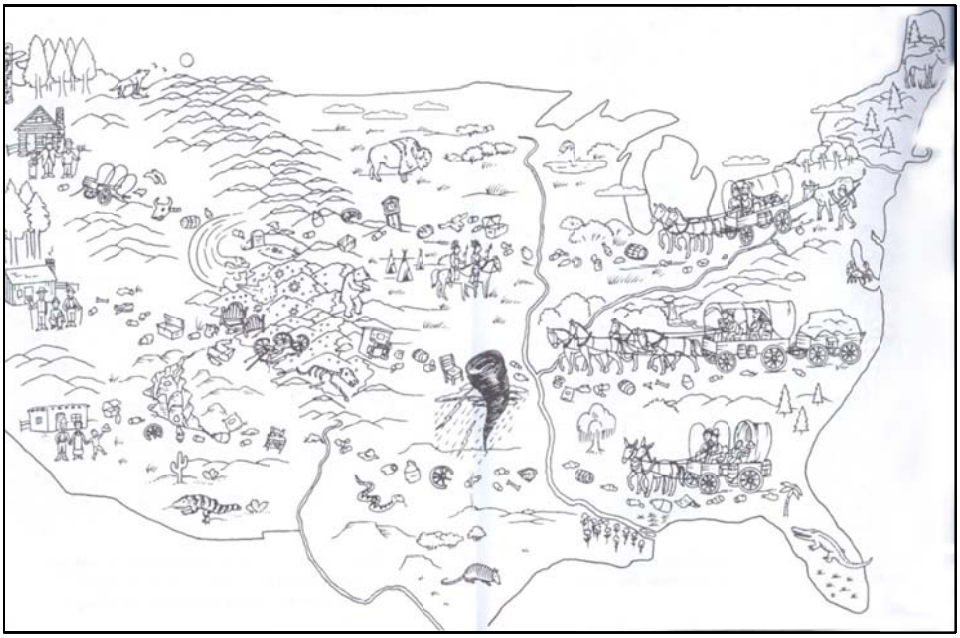
Conduct a Litter Survey of Your School and School Grounds

See the Litter Survey on page 19.

- Do a litter survey – tally the different types of litter you find.
- What litter is inside? What litter is outside?
- Make a graph showing the amounts of different kinds of litter or make a collage of the litter.
- Talk to school personnel about the cost of staff time and disposal for cleaning up litter in and around the school. (i.e., parking lots, sports facilities, cafeterias)
- Discuss why people litter intentionally and how they litter accidentally.
- What are your plans for taking action?
    - Develop and carry out a detailed plan
        - School wide litter pick up
        - Adoption of school grounds (research the Keep Pennsylvania Beautiful Adoption Program and the Litter Free School Zone)
        - Educating students and visitors
        - Beautification (planting trees/flowers)
- Research local anti-littering organizations such as Keep Pennsylvania Beautiful.
- Present your findings to the group.

Research How Trash is Handled In Different Parts of Our Country or Worldwide

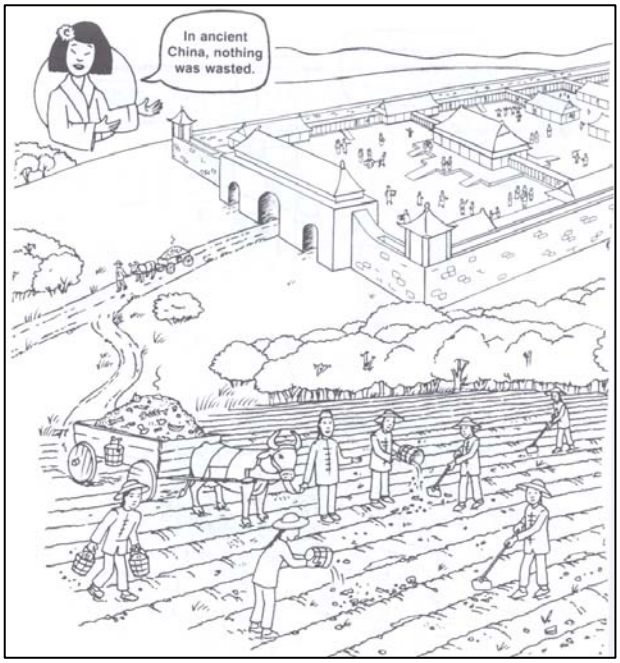
- Compare how trash is handled in two different states such as Vermont and Texas or Alaska and Hawaii.
- Research the waste laws in countries such as Japan, India, Brazil or Sweden.
- Learn how waste is handled. Do they have the same options as we do?
- How does this culture/society view litter?
- What kinds of laws exist regarding litter and illegally dumped trash?
- Has litter always been viewed the same or have attitudes changed over time?
- How have they changed and why?
- Create a poster or visual and present it to the class.

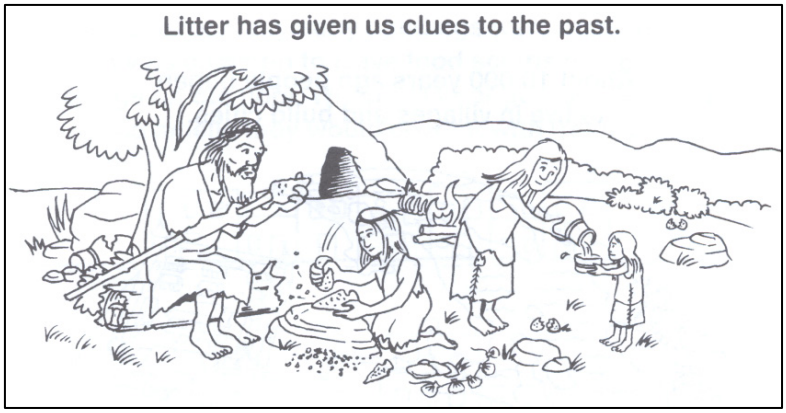


ACTIVITY 7

How Was Waste and Litter Handled Throughout History

- Read **Open Your Eyes to Litter – Our Littered Past Volume 2**, that talks about how trash and litter were handled from prehistoric times to the present.
- Choose an early civilization, native tribe, or a country and research how their waste was handled
- How was early industrial waste handled?
- How was early family waste handled?
- Focus on the impact this had on waterways/early greenways or natural areas.
- How did this impact the quality of life?
- How has this impacted us today?
- Create a poster or model to show what you have learned.
- Present your findings to your classmates.

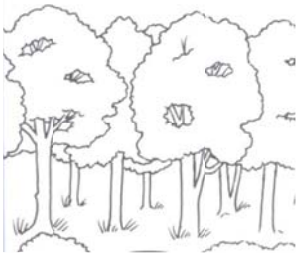




ACTIVITY 8

Recycling:
Follow the Life of an Object

- Choose an everyday object or product (such as a running shoe, pair of pants, piece of furniture, or tire)
- Identify the raw materials used to make the object
  - Are the materials renewable or nonrenewable?
- What part of the world do the raw materials come from?
  - Investigate the cost and energy needed to transport the materials to where they are made into the object.
- Research how long each material takes to decompose if put in a landfill.
- What are other options for this item when you are done with it rather than throwing it away?
- Would it change your decision to buy certain products once you learned more about how they are produced?
- Make a poster showing the life of this item from raw material, production/manufacturing/retail, personal use, to what happens once you are finished with it.



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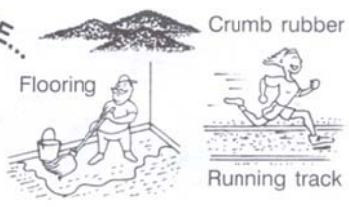


Plan and Take a Field Trip

- Decide where you want to go
- See if a representative of the area will give you a tour or introduce you to the park/area.
- Figure out what you will need to take with you
  - Lunch
  - Paper and pencils
  - Camera
  - Gloves and garbage bags
  - Volunteers/parents
  - ??

Possible places to visit:
Local Park
State or National Park
Nearby Greenway
Nature Trail

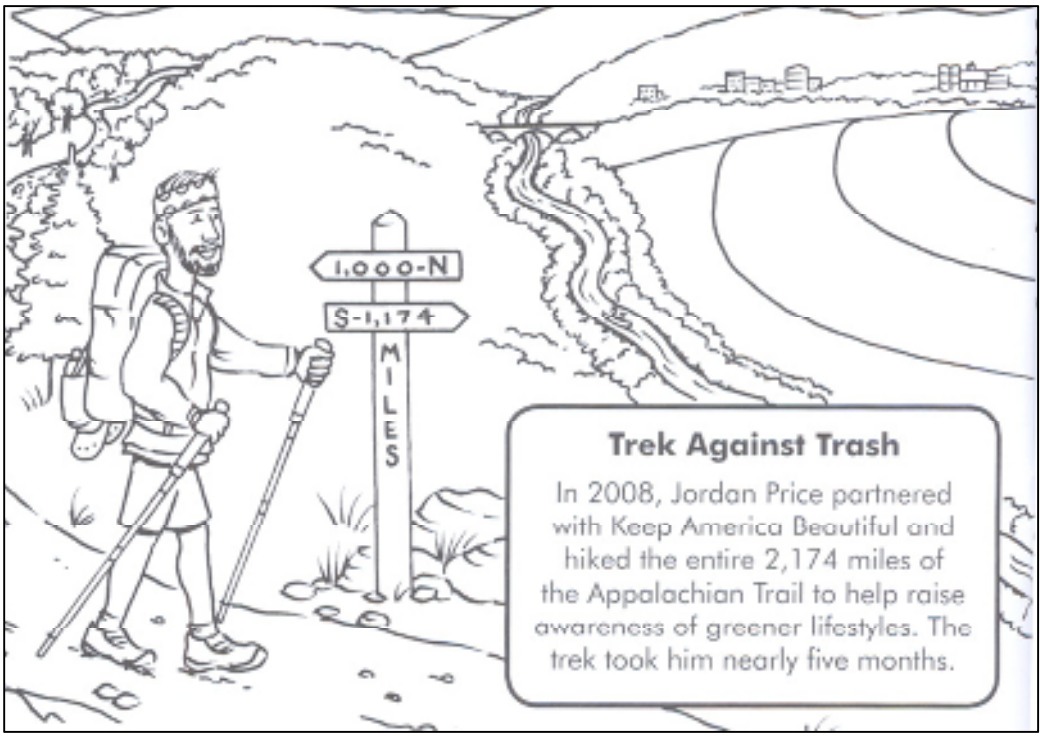
- Before you go, brainstorm what litter you think you might find in the area.
- Conduct a litter survey.
- Pick up the litter you see, if possible.
- When you get back make a graph of the different types of litter you saw or picked up.
- Discuss the impact of that litter on the animals, plants, and people in the area.
- Create posters to help educate the students in your class.

Invite a Speaker to Share with Your Class

- Use the list as a guide to choose a speaker who will give you first-hand experience with greenways (brainstorm others!)
- Use the Internet or phone book to find out how to contact them (some will be in government section)
- Role play what you will say on the phone to invite them
- Brainstorm a list of questions you will ask when they visit
- Have your classmates present completed projects to the speaker
- Send a thank you note!

Potential Speakers

- *Keep Pennsylvania Beautiful representative*
- *Conservation District*
  - *Watershed Specialist*
  - *Education Specialist*
- *State Park or Greenway personnel*
- *Watershed Specialist (from your local Conservation District office)*
- *Storm Drain Manager – from your city/town*
- *Leave No Trace representative*
- *Recycling Coordinator*
- *Landfill Director*
- *Trail town person – from a store/food vendor/bike shop/t-shirt maker, etc.*
- *Jordan Price*
- *Incineration Facility representative*
- *Construction Junction or other building materials recycler in your area*
- *Department of Conservation and Natural Resources*
- *Department of Environmental Protection*
- *Environmental Protection Agency*
- *Transfer Station representative*
- *Rails-to-Trails representative*



Community Investigation

Where Does My Trash Go?

1. Does my community have mandated (required by law) waste pickup? Yes ☐ No ☐

2. Who are the waste haulers in my community? *(Use chart below and include addresses and phone numbers; you might need them later.)*

Indicate whether they are:
Local haulers,
Municipal employees *(work for the municipality),* or are they part of a large
National (or regional) waste hauler.

Do they offer curbside recycling as part of their services?

Identify Waste Haulers

Name	Address	Phone	L, M or N	Recycle? Y or N
•				
•				
•				
•				
•				

3. Is my community mandated to have a recycling program? Yes ☐ No ☐

4. Does my county have a designated recycling coordinator? (*Name, address, telephone #.)*

_____

_____

_____

Community Investigation Continued

5. What does my community collect for recycling? (i.e., *paper, glass, plastic, aluminum and steel cans, newspaper, magazines, etc. Municipalities are usually only mandated to recycle three items; some recycle more.)*

_____

_____

6. Is there a permanent drop-off recycling location and/or annual one-day community collection of hard-to-recycle items at various locations throughout the community? *(i.e., Appliances, batteries, Christmas trees, bulky waste, tires, electronics, etc.)*

_____

_____

7. Where does the hauler take the recycled items? Where are they sent from there?

 plastic _____

 glass _____

 aluminum _____

 steel cans _____

 paper _____

 corrugated cardboard _____

 appliances _____

 batteries _____

 tires _____

 Christmas trees _____

 leaves/yard waste _____

Community Investigation: Continued

8. Do the recycled items generate money? Does it cover the recycling costs?

_____

9. Does my community collect leaves and/or other organic material and compost them?

Yes ☐ No ☐

10. Find out where the trash goes after it is picked up:

- Does it first go to a transfer station?
- To which landfill(s) or waste-to-energy plants?
- What is the cost per ton?
- What items do they take/don't take. (i.e., *tires, metal, paint, leaves, brush, construction waste, household hazardous waste, computers, etc.)*

Transfer Station, Landfill or Waste-to-Energy Plant	Cost per ton	Exceptions (Items they do not take)

_____

_____

11. If your county has a waste-to-energy plant, where does the burned ash go? Are there any special regulations about handling it?

_____

12. How does my community handle the items that are NOT accepted by the landfill or waste-to-energy plant? Any special collections?

_____

_____

13. How many years of landfill space are remaining at landfills used by my county? How has the county planned for additional capacity after that time?

_____

_____

14. If your county has a local solid waste authority, find out who serves on it, when they meet, and the issues they are working on. Attend some meetings and ask your county recycling coordinator or solid waste coordinator how your county plans for solid waste disposal and recycling.

15. Research which businesses, industry, government agencies, and colleges in your community recycle and what they recycle.

_____

_____

Community Investigation: Continued

16. Public schools must recycle if they are in a community. But not all of them do. Find out if YOUR school recycles paper, aluminum cans, or plastic. If your school doesn't recycle, see what you can do to help start a recycling project for even one item.

_____

_____

17. Find out if other organizations (non-profit, youth, watershed groups, environmental, business clubs, etc.) have special collections, support recycling or help communities manage waste. Who are they and how do you contact them?

_____

_____

Litter Survey

Location:

Types of litter:	**TOTAL**	**RECYCLABLE**
Bottles		
Cans		
Cardboard		
Cigarette Butts		
Clothes		
Fast Food Wrappers		
Food (orange peel, apple core, etc.)		
Glass		
Paper		
Plastic bags		
Snack Wrappers (potato chip bags, candy bar wrappers)		
Other		
Other		

Trash Timeline
and
A History of Waste Management

12,000 B.C.
Egyptians use the first **glass**, in the form of beads.

10,000 B.C.
Garbage becomes an issue as people first begin to establish permanent settlements.

1500 B.C.
The first **jars and bottles** are made out of **glass**.

400 B.C.
Athens, Greece, organizes the **first municipal landfill** in the Western world and requires waste disposal at least one mile from city walls. Virtually anything considered unwanted waste is left in the dump.

105 A.D.
Paper is invented in China by Ts'ai Lun.

200
The **first sanitation force** is created by the Romans. Teams of two men walk along the streets, pick up garbage, and throw it into a wagon.

1000-1400 A.D.

Parisians cast garbage out their windows. Although several attempts are made at effective collection and disposal, eventually the waste grows so high beyond the city gate that it becomes an impediment to Paris' defense. In general, people slowly become aware of waste as a health hazard. Public resistance to new regulations is strong, however, and primitive collection and disposal methods dominate.

About A.D. 1000
People in Turkey recycle marble building facings into cemetery headstones.

1031
The Japanese use wastepaper to make new paper — the first recorded occurrence of **paper recycling**. The Chinese probably employed the process earlier.

1131
Paris prohibits swine (pigs) from running loose in the streets.

American Waste Statistics

Municipal Waste Generated
- 1997 - 340 million tons
- 1999 - 390 million tons

That is nearly a 50 million ton increase in two years!!

Source: Biocycle "*The State of Garbage in America"* JG Press, Emmaus, PA

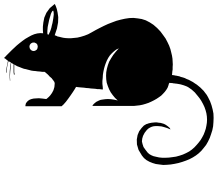
PA Imports Trash!!

Pennsylvania imports more trash than any other state in the U.S. — almost 8 million tons in 1999.

Source: Biocycle "*The State of Garbage in America"* JG Press, Emmaus, PA

About 1150
The **first European paper** probably is manufactured in Spain. Recycled rags are used as virtually the only source of paper fiber for the next 700 years in the West.

1348
The **Black Death** epidemic reaches Europe from Asia, caused in part by garbage tossed into unpaved streets and vacant spaces which attracted rats. Fleas that traveled on the backs of infected rats quickly spread the disease to humans. Millions of people died.



1388
Reacting to waste disposal methods that involve simply throwing garbage out of windows and doors, the **English Parliament bans waste disposal in public waterways and ditches**.

Laws are developed requiring that garbage be taken outside of the city gates, but 12 years later in Paris, **garbage** has piled up so high outside the gate that it actually **interferes with the defense of the city**.

1400-1750

People generally throw away garbage in random, unorganized ways. Cities pass laws against the most unsanitary practices, but it does little good.

1400
The **waste** from Paris is piled so high outside the city gates that it **interferes with the city's defenses**.

A new regulation in Paris requires anyone who brings a cart of sand, earth, or gravel into the city to leave with a load of mud or refuse.

1551
The **first recorded use of packaging**: German papermaker Andreas Bernhart begins placing his paper in wrappers labeled with his name and address.

1608
Glass was part of the first cargo ever shipped from the American shores, and a **glass factory was established in Jamestown, Virginia.** Not only was it America's first factory, but glass was America's first industry--created a dozen years before the arrival of the Pilgrims in 1620.

1642
Scrap use comes to North America as the **first iron furnace** is built in Saugus, MA.

1646
Jenks Iron Works in Lynn, Massachusetts, receives permission to buy the colony's guns and melt them down.

1657
Residents of New Amsterdam (New York) are among the first to **pass laws prohibiting the throwing of trash into the streets,** but street conditions remain the homeowners' responsibility.

1690
The Rittenhouse family establishes America's **first paper mill** on the banks of Wissahickon Creek near Philadelphia. It makes paper from recycled cotton and linen as well as used paper.

1750-1870

The Industrial Revolution begins in England. It represents a landmark increase in the amount of waste generated. Waste collection first emerges as a city service, although collection occurs largely by scavenging. In the United States, cities are smaller and space and natural resources are more plentiful. But Americans have the same habit as the English of throwing garbage into the streets. The streets reek of waste. By the mid-19th century, several cities pass ordinances against indiscriminate dumping of refuse and the free roaming of animals, but those measures aren't enough to curb the waste problem. Waste collection and disposal methods remain primitive.

American colonists declare their independence from England and they turn to recycling for materials to support the Revolutionary War effort.

Late 1700's
Ragpickers, men with horse-drawn carts, make trips into rural areas to barter for worn-out farm implements and other items, including rags and bones, that have resale value.

1757
Benjamin Franklin starts the **first street cleaning program** in North America in Philadelphia.

1776
The **first metal recycling** occurs **in America** when patriots in New York City melt down a statue of King George III and make it into 42,088 bullets.

There has always been garbage…..

"...the feast of fat things that come reeking under one's nose at each special puddle of festering filth that Center Street provided in its reeking, fermenting, putrefying, pestilential gutter! I thought I should have died of the stink, rage and headache before I got to 21st Street."

- a journal description of a New York City street, 1852

1785
The **first cardboard box** made **in America** is manufactured in Philadelphia by Frederick Newman.

1792
Benjamin Franklin uses slaves to carry Philadelphia's waste downstream.

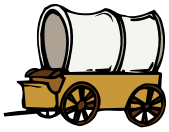
1800
Matthias Koops obtains a patent in England for a paper de-inking process. The following year, Koops builds the first commercial mill in the West to use materials other than cotton and linen rags to make paper.

1810
The **tin can** is patented in London by Peter Durand.

1834
Charleston, WV, enacts a **law protecting garbage-eating vultures** from hunters.

1840's
Peddlers in America, primarily immigrants, **begin collecting and recycling** anything with resale value.

1850's
Pioneers heading west abandon personal belongings along the way and junk dealers scavenge the materials along the trails.



1858
The **Mason jar** is invented, allowing fruits and vegetables to be preserved.

1860
More than 500 paper mills are operating in the U.S., using cloth rags as their primary source of fiber.

Private scavenging companies and municipal crews begin working together to clean up New York. They **remove 15,000 horse carcasses from the city streets** (city horses have rough lives pulling street cars; their average life expectancy is only two years!)

1861-1865
During the Civil War, both the North and South urge citizens to donate all old metal objects. In the South, this need is critical due to the North's control of iron making.

1865
Newspapers begin to describe the availability and price of scrap.

RECYCLING FACTS

- Recycling reduces the risks of air and water pollution from manufacturing processes. Recycling paper cuts air pollution by about 75%. Substituting steel scrap for virgin ore reduces air emissions by 85% and water pollution by 76%.
- Every ton of recycled steel saves 2,500 pounds of iron ore, 1,000 pounds of coal, and 40 pounds of limestone.
- Every pound of steel recycled save 5,450 BTU's of energy, enough to light a 60-watt bulb for over 26 hours.
- Recycling a ton of glass saves the equivalent of nine gallons of fuel oil.
- Recycling used aluminum cans requires only about 5% of the energy needed to produce aluminum from bauxite. Recycling just 1 can saves enough electricity to light a 100-watt bulb for 3 1/2 hours.
- A ton of paper made from 100 percent recycled paper saves the equivalent of 4100 KWH energy, 7000 gallons of water, 60 pounds of air emissions, and 3 cubic yards of landfill space.

Source: PA Department of Environmental Protection Agency, 2000.

An **estimated 10,000 hogs roam the streets of New York City**, gorging on garbage.

1866
New York City's Metropolitan Board of Health declares war on trash, forbidding the throwing of dead animals, garbage or ashes into the streets.

1868


Chemist John Hyatt saves thousands of elephants, which were killed for their ivory tusks, by inventing celluloid for billiard balls. The balls sometimes spark on collision and even explode, requiring a search for improvements that lead to **the invention of plastics**, an industry that Hyatt can be said to have founded.

1870-1902

The industrial city emerges in America, characterized by mounds of putrefying garbage. It lands in the streets and waterways. People dump garbage, slag, ashes and scrap metal on vacant land. Industries dump animal waste in open pits or empty lots. The proliferation of horses leads to an excess of manure and carcasses. By the 1890's the U.S. recognizes "**the garbage problem**." It is considered a health issue, not just a nuisance. Cities debate contracting with private companies or establishing a municipal service.

1874
Concerns about unhealthy sanitary conditions in England prompt a new invention in Nottingham—**"The Destructor" provides the first systematic incineration of municipal solid waste** (MSW). **Curbside recycling begins** for the first time in the United States **in Baltimore**.

Late 1800's
A revolution in the steel making industry takes place as the open hearth furnace gradually replaces the Bessemer process. The advent of the open hearth and later the electric furnace results in a **dramatic rise in demand for scrap**.

1885
The **first garbage incinerator in the U.S. is built on Governor's Island, New York**. By 1914, 300 incinerators are located in the U.S. and Canada.

1887
The **American Public Health Association appoints a Committee on Garbage Disposal**, to determine the extent of the refuse problem in the U.S. The committee spends ten years on its assignment.

PA RECYCLING FACTS

- Curbside and drop-off recycling has become a way of life for 10 million Pennsylvanians.
- In 1999, we achieved a recycling rate of 32.6%, well on our way to our goal of 35% by 2003.
- In PA, 3,247 recycling and reuse businesses employ 81,322, with an annual payroll of $2.9 billion.
- More than 10 million residents, or at least 85% of the state's population, have access to recycling.
- Twelve of the 67 counties exceeded the state's 35% recycling goal in 1999. These counties were responsible for 57% of the state's recycling.

Source: PA Department of Environmental Protection, 2002

1880's-1890's
Garbage often is dumped near "least desirable" neighborhoods. Protests from residents there are largely ignored.

1888-1913
A survey shows selected American cities generate 860 pounds of garbage per capita, compared with 450 pounds for English cities and 319 for German cities.

1890
The **Boston Health Department proclaims burning waste to be the "best and safest" means of disposal**. But because of the high cost of commercial incinerators, the department recommends burning waste in home kitchens.

1890's
Sanitary engineers become more prominent in addressing waste management, **applying a more organized, scientific approach**. Civic organizations increasingly try to raise public consciousness about the refuse problem.

1895
Col. George E. Waring Jr. is appointed street cleaning commissioner of New York City. He develops the first practical, comprehensive system of refuse management in the U.S. Among his other reforms and innovations, he is the first to attempt to separate refuse on a large scale, to allow the city to recover and resell some of the materials and allow street crews to handle them more easily. His plan requires everyone to keep organic waste, rubbish and ashes in separate containers and begins the city's first municipal recycling program. In 1898 he takes over from "scow trimmers," who rummage through dumping scows (headed for the ocean) for materials with resale value, and establishes the first rubbish-sorting plant in the U.S. The city's recycling operation was closed in 1925 due to complaints about odors, and ocean dumping gradually resumed until it was outlawed again in the 1980's.

1895
King C. Gillette, a traveling salesman, tires of sharpening his razor and creates the **disposable razor blade**.

1896
The Vienna or Merz system of **extracting oils and other by-products through the compression of city garbage** is introduced in Buffalo, NY. The reduction process gives cities a disposal method that provides recoverable and resalable materials from waste.

1902-1924

1902
Municipal solid waste collection, i.e. **curbside pickup, becomes the norm in cities**— 79% of the U.S. cities surveyed by the Massachusetts Institute of Technology provide it. Trash is taken to the "town dump."

1903
Corrugated paperboard containers find use commercially.

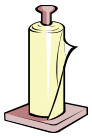
1904
The nation's first major **aluminum recycling plants** open in Chicago and Cleveland.

The U.S. allows permit mail, which opens the door for **direct mail advertising**.

And lastly, at the World's Fair in St. Louis, a gold medal is awarded for the first successful scrap handling magnet. Within two years, **magnets are used throughout the scrap industry**.

1905
The publication Engineering News notes that experiments involving the plowing of waste into the land in and around St. Louis might offer opportunities for the systematic **burying of garbage**.

The **Williamsburg Lighting Plant** is constructed on Manhattan's Lower East Side and **incorporates waste recycling and incineration**.



1907
The **first paper towels** are developed.

1908
Paper cups replace tin around the U.S. in vending machines, in public buildings and on trains. **America also becomes the leading producer of paper and paper products** (about 640,000 tons) **and the leading consumer** (38.6 pounds per capita). To meet increasing demand and the fear of deforestation, the U.S. steps up imports of rags and wastepaper. By 1916 the U.S. produces 15,000 tons of paper per day, using about 5,000 tons of old paper.

Manufacturers develop means to remove printer's ink from old newspapers through a defibering process, while other processes turn old paper into cardboard and pasteboard.

1909
Kraft paper pulp is first made in the U.S.

PA RECYCLES!!

- **PA Act 101** of 1988 requires commercial, institutional and municipal establishments located in Pennsylvania's mandated municipalities to **recycle high-grade office paper, corrugated paper, aluminum, and leaf waste**. In addition, establishments must recycle any other materials included in the municipality's recycling ordinance.
- PA Act 101 encourages municipalities to establish leaf composting programs and provides recycling grants to help offset costs. More than 80 municipal leaf composting facilities are in operation in PA.
- In 1995, volunteers directed a recycling program at Penn State University's Beaver Stadium, and after six home games they recycled 28 tons of paper and other materials, reducing the total waste by 32%.
- 58% of Pennsylvania's 67 counties are working in partnership with Penn State Extension county offices to offer backyard composting bins to residents.

Source: PA Department of Environmental Protection, 2002

1910
A gas cutting torch is first used in a scrap yard in Lebanon, PA.

1912
Cellophane (clear plastic) is invented by Swiss chemist Dr. Jacques Brandenberger, which encourages the use of plastic packaging.

1914
Source reduction of waste is on the wane because people consider it too costly and it affects too little of the waste stream. Incineration also struggles in the U.S. because of problems adapting the English model.

1916
Cities begin **switching from horse-drawn to motorized refuse collection equipment**.

A shortage of rags and wastepaper caused by WW I prompts the U.S. Department of Commerce to encourage citizens to save those materials for mills.

Dr. Thomas Jasperson obtains a U.S. Patent for the production of paper from de-inking recovered fiber around the same time.

1917
Experimentation takes place with turning waste into energy, such as steam, electricity, liquid or solid fuels, alcohol or fuel bricks. The methods have little impact because existing energy sources are cheap. Also, in response to wartime shortages, the **U.S. Government establishes the Waste Reclamation Service**, which stresses the value of waste.

1920's
Population growth begins spreading out; society becomes more **consumer and service-oriented**, and **generates** significantly **more waste**. The U.S. Government becomes more deeply involved in the affairs of the city. Filling in wetlands with garbage, ash and dirt becomes popular.

1924
Farm use (fertilizers, animal feed) is **the most popular form of waste disposal** at 38 percent in a survey of U.S. cities, followed by incineration at 29 percent and dumping at 17 percent.

Municipal collection of waste rises to 63 percent of cities in the U.S. Census, compared with 24 percent in 1880.

In addition, the **Kleenex facial tissue** is introduced.

You and Your School Can Make A Big Difference!!

EPA's WASTEWISE PROGRAM

Alden Central School

Alden Central School, a K-12 school in Alden, NY, implemented a comprehensive waste reduction program at all campus buildings: high school, middle, intermediate and primary education buildings and the grounds department. Students and 250 staff members:

- Eliminated 400 pounds of polystyrene cafeteria trays and dishes by switching to reusable products
- Composted 850 pounds of cafeteria waste and 100 pounds of yard trimmings for use as mulch on building grounds.

WasteWise Accomplishments

- Waste Prevented 2,450 lb.
- Recycling Collection 2,900 lb.
- Recycled-Content Purchases 2,250 lb.

1930-1950

1930's
Enclosed collection vehicles begin replacing horse-drawn waste carts.

1934
Dumping of municipal waste at sea becomes illegal. Industrial and some commercial wastes are immune from the law.

1935
The **first beer can** is produced by Krueger's Cream Ale in Richmond, VA. Over the next six months, company sales increased 550% because customers loved the convenience.

The **first sanitary landfill is built in Fresno, CA**. Closed in 1987, the landfill is now on the Superfund list of the nation's most polluted sites.

1939-45
Wartime shortages **increase the demand for reusing tin, rubber, aluminum, paper, fats and other materials to help the war effort.**

1943
The **aerosol can** is invented by two researchers at the U.S. Department of Agriculture.

1944
Dow Chemical Company invents **Styrofoam**.

1946
Sanitary landfills become a preferred disposal alternative to open dumping.

Late 1940's
The popularity of **electric arc furnaces** for steel production increases. These furnaces produce fewer emissions and much less pollution.

1948
Fresh Kills landfill is opened in Staten Island, NY. It later becomes the world's largest city dump. Fresh Kills and the Great Wall of China are the only man-made objects visible with the naked eye from space.

It takes 36 two-liter bottles to produce one square yard of carpet.

(Source: www.erie.oh.us/)

One pound of newspaper can be recycled to make six cereal boxes, six egg cartons or 2,000 sheets of writing paper.

(Source: www.erie.oh.us/)

Among the 20 Most Industrially Advanced Nations

The U.S.:

- Ranks only 15th in paper recycling efforts
- 19th in glass recycling
- 96% of U.S. plastic and 50% of its paper goes into landfills
- Mexico recycles more glass than the U.S.

E/The Environmental Magazine March April 97

1950-1970

1950's
In-house garbage disposal units become popular. In some cities, it's estimated that 25-30 percent of all garbage is ground up.

1953
The anti-litter association **Keep America Beautiful** forms.

Also, Swanson's introduces the first successful **TV dinner**. **Convenience food** of all kinds increase rapidly in popularity during the 1950s.

1958
The group that eventually becomes the **National Solid Waste Association** forms.

1959
The American Society of Civil Engineers publishes a **standard guide to sanitary landfilling**. It suggests compacting the refuse and covering it with a daily layer of soil to fight odors and rodents.

1960's
Plastic begins getting extensive use **as packaging**. Pop tops or **pull tabs on beverage cans** become popular.

Municipal collection and disposal increases over private collection in the late 1930s, but begins to lose ground in the 1960s. Private firms become more attractive to replace city services, offering cost savings and improved service. Regional agencies begin to emerge to meet increasingly complex problems.

Interest in waste-to-energy as a diversion alternative develops in the U.S.

1961
A city ordinance in Los Angeles eliminates the sorting of recyclables after Sam Yorty successfully runs for mayor with that as his campaign promise.

The Governmental Refuse Collection and Disposal Association forms. In 1991, the group changes its name to the **Solid Waste Association of North America**.

Proctor & Gamble begins test-marketing the disposable diaper.

1962
Rachel Carson's book **Silent Spring** is published. It carefully

FUN FACTS ABOUT PET

- Recycling a ton of PET containers saves 7.4 cubic yards of landfill space.
- The first PET bottle was recycled in 1977.
- The average household generated 34 pounds of PET bottles in the year 2000.
- Fourteen 20 oz. PET bottles yield enough fiber for an extra large T-shirt.
- It takes 14 20 oz. PET bottles to make one square foot of carpet.
- Half of all polyester carpet manufactured in the U.S. is make from recycled plastic bottles.
- It takes 63 20 oz. PET bottles to make a sweater.
- It takes 85 20 oz. PET bottles to make enough fiberfill for a sleeping bag.
- The PET bottle was patented in 1973 by chemist Nathanial Wyeth (brother of distinguished American painter Andrew Wyeth.)

Source: NAPCOR Corporation
information@napcor.com

outlines the deadly result of using the pesticide DDT and becomes the bible for the environmental movement.

1965
Aluminum cans for beverages are introduced.

The **Solid Waste Disposal Act** (SWDA), the nation's first federal solid waste management law—authorizes research and provides for state grants. It states that while state, regional, and local authorities primarily should be responsible for waste management, the federal government will provide financial and technical assistance. But the act has no regulatory authority.

1968
President Johnson commissions **the first comprehensive survey of solid waste** since cities began keeping garbage records in the early 1900's. Cities collect and dispose of 140 million tons of solid waste.

The U.S. aluminum industry begins **recycling discarded aluminum** products, from beverage cans to window blinds.

1969
Rubber reclaiming drops to 8.8 percent from 19 percent in 1958.

Seattle institutes a **new fee structure for garbage pickup**, which incorporates a base rate and an additional fee for garbage above a certain amount.

Also, a small collection company, American Refuse Systems Inc. merges with equipment distributor Browning-Ferris Machinery Co. to form **Browning-Ferris Industries, Inc**.

1970-1985

1970
The enactment of the **Clean Air Act** leads to the closing of many incinerators.

The **first Earth Day** focuses attention on environmental concerns. Recycling's chasing arrows logo is introduced on that day.

The **U.S. Environmental Protection Agency** (EPA) is created.

Congress passes the **Resource Recovery Act**. It shifts the emphasis of federal involvement from disposal to recycling, resource recovery, and waste-to-energy.

There are an estimated 15,000 authorized land disposal sites,

ANALYZE THIS!

A study at two University of Michigan dining rooms revealed that when napkins came from dispensers at the beginning of the cafeteria line, customers took an average of 3.3 napkins at every meal. When the napkin dispensers were placed on tables in the dining room, each person used an average of only 1.4 napkins per meal.

Source: *Inform Reports, Fall/Winter 1997*

but as many as 10 times that number of unauthorized dumps. A study in the mid-1970s states that **94 percent of the landfills surveyed did not meet the minimum requirement for a sanitary landfill**.

1970's

Resource recovery becomes increasingly popular in some circles, but others say it's not viable because it's not economically profitable. **Compactor trucks** comprise a majority of all collection vehicles.

The **EPA Office of Solid Waste** gets the authority to study solid waste, award grants and publish guidelines.

1971

Oregon passed the **nation's first bottle bill** as an anti-litter law. The law resulted in a dramatic reduction in beverage container litter and gained widespread public support. Four years after implementation, the bottle bill had a public approval rating of 90 percent.

The **U.S. Environmental Protection Agency** is created. It is charged with the mission "to protect human health and to safeguard the natural environment."

Waste Management, Inc. is formed.

1972

The first **buy-back centers for recyclables** are opened in Washington State. They accept beer bottles, aluminum cans, and newspapers.

A **bottle made from PET** (polyethylene terephthalate) is patented by chemist Nathaniel Wyeth (brother of Andrew Wyeth, the American painter).

1973

The **paper recycling rate drops** to 17.6 percent from 35 percent in 1944.

1974

The **number of incinerator plants drops to 160**, from 265 in 1966 and 600-700 in 1938.

The **first city-wide use of curbside recycling bins** occurs in University City, MO, for collecting newspapers.

Mid-1970's

The **EPA** proposes a drastic cutback in the federal solid waste program so the government can **focus on hazardous waste**, but the agency backs off after several public sector groups protest.

A REASON TO COMPOST

Grass, leaves, and other wastes from lawns and backyard gardens account for an estimated 18% of the annual municipal waste stream. The percentage and composition of yard wastes varies widely from season to season. During the summer, grass can comprise up to 50% of municipal waste. Leaf waste can account for as much as 60-80% in the fall.

Using leaves, grass clippings, and other organic matter, you can make a ton of compost at home in an area only four feet square.

Source: PA Department of Environmental Protection, 2002

Recycling one aluminum can saves enough energy to power a television for three hours.

(Source: http://www.cancentral.com/funFacts.cfm)

1975
The number of **private garbage hauling companies increases**. The percent of waste collected by private companies as opposed to municipalities is reported to be 66%.

1976
Congress passes the **Resource Conservation and Recovery Act** (RCRA) which requires all dumps to be replaced with "sanitary landfills." The enforcement of this act will increase the cost of landfill disposal and make resource-conserving options like recycling more appealing. It stands today as the primary piece of federal solid waste legislation and essentially replaced and built upon the Resource Recovery Act.

The **Toxic Substances Control Act** is passed, which helps prevent the dumping of hazardous chemicals in landfills.

Three people from Bartlesville, OK, get a patent on a method for **purifying and reusing lubricating oils**.

1977
PET soda bottles begin replacing glass.

1978
The U.S. Supreme Court rules that garbage is protected by the Interstate Commerce Clause, so **states can't ban shipment of waste from one state to the other**.

Also in 1978, 200 families are relocated from **Love Canal** (they did not begin returning until 1989) after it was determined that Hooker Chemical and Plaster Corp. had put 21,000 tons of chemical waste there 25 years earlier. They covered it up and then sold the property to the Niagara Falls Board of Education, which placed a school and playground on the site. Lawsuits for damages continued into the mid-1990's. The Love Canal incident is cited as a prime cause in the creation of the **Comprehensive Environmental Response and Reliability Act**, also known as **Superfund**, in 1980.

1979
The EPA issues landfill regulations that **prohibit open dumping**.

1980
Per capita production of waste reaches 8 pounds per day, up from 5 pounds in 1970 and 2.75 pounds in 1920.

1984
Reauthorization of RCRA and amendments to the Hazardous and Solid Waste Act call for **tougher federal regulation of landfills**.

that just because we put biodegradable trash in a landfill, doesn't mean it will decompose and become smaller in size. People had thought that as food wastes decomposed in landfills, it would allow us to increase their capacity.

Laws requiring recycling to be an integral part of waste management **have been enacted by 26 states**.

1990
Nationwide, **140 recycling laws have been enacted.**

McDonald's announces plans to stop the use of polystyrene packaging of its food due to consumer protests.

1990's
Consolidators like Recycling Industries Inc., Philip Services Corp. and Metal Management Inc. emerge in the scrap business, changing the face of a family-run industry.

1992
Federal Resource Conservation and Recovery Act (RCRA) establishes minimum standards for landfills, designed to make them safer. These standards include location, facility design and operating criteria, and closure and post closure care requirements, financial assurance, ground water monitoring, and corrective action. Because of the cost of meeting these requirements, 10,000 small municipal landfills are consolidated into an estimated 3,500 new, safer landfills, some of which are "megafills" that can handle up to 10,000 tons of waste a day. The new landfills are outfitted to prevent air and water pollution and limit the spread of disease by scavengers.

1994
The U.S. Supreme Court holds in its review of C&A Carbone v. Clarkstown, NY, that flow control, **the practice whereby municipalities can direct the disposal of waste to designated facilities, is unconstitutional**.

1995
New York City law officials move to break the mob-controlled waste-hauling cartel in the city with indictments of 17 people, four trade associations and 23 companies.

1996
An attempt to pass a solid waste flow control bill in the U.S. House of Representatives **fails**.

1997
EPA increases America's recycling goal to 35% by 2005.

1998
Seven years of consolidation of solid waste companies

THE U.S.

- Has ***only 5%*** of the world's population, yet generates ***19%*** of its waste
- Uses 20% of the world's metals
- Uses 24% of the world's energy
- Uses 25% of the world's fossil fuels

E/The Environmental Magazine March April 97

DID YOU KNOW?

For each full bag of garbage that we take to the curb, the primary resource industry creates the equivalent of 71 full bags of waste.

OR

1 full bag of household garbage

=

71 full bags of waste produced by the primary resource industry

(Source: Recycling Council of Ontario)

1985-1999

1985
First Adopt-A-Highway program started in Texas to address litter along state-maintained roads.

1986
Rhode Island becomes the first state to pass mandatory recycling laws for aluminum and steel cans, glass, newspaper, and soda bottles (PET) and milk jugs (HDPE) plastic.

The city of **San Francisco meets its goal of recycling 25% of its commercial and residential waste**.

The **Fresh Kills Landfill on Staten Island, NY becomes the largest landfill in the world**.

1987
A Long Island garbage barge known as **Mobro 4000** leaves a New York port on March 22 with 6,000 tons of garbage bound for a southern landfill. The barge is rejected by the states of Louisiana, Alabama, Mississippi, Florida, and New Jersey, as well as Belize and Mexico. After a journey of 173 days, the load, mostly paper, is ultimately incinerated near the Long Island landfill from which it had originally been taken. The trip of the Mobro is followed on television and in newspapers and creates the impression that the U.S. does not have enough places to dump garbage.

The Institute of Scrap Iron and Steel and the National Association of the Recycling Industries merge to create the **Institute of Scrap Recycling Industries**.

1988
The EPA estimates that more than 70 percent, or at least **14,000 of the landfills operating in 1978 have since closed** because they didn't meet new higher landfill standards.

In an effort to divert waste from landfills, Assistant EPA Administrator Winston Porter sets a **U.S. recycling goal of 25%** to be met in the next four years. The goal is met in 1996.

Medical waste washes up on eastern U.S. beaches. One result is the **Medical Waste Tracking Act**, a two-year plan to set up procedures to track these hazardous wastes.

The **Plastic Bottle Institute develops a material-identification code system for plastic bottle manufacturers**. (This is our current #1-6 system.)

1989
Arizona archaeologist **William Rathje recovers corn-on-the-cob intact after 18 years in an Arizona landfill**, indicating

ID Code for Plastics

1 = PET = Polyethylene Teraphthalate
Common uses: soft drink bottles, some fruit juices, alcohol beverage bottles

2 = HDPE = High density polyethylene
Common uses: milk jugs, distilled water, grocery bags, laundry and dish detergent, motor oil, bleach and lotion

3 = V = Vinyl/Polyvinyl Chloride
Common uses: vegetable oil bottles, mouthwash, salad dressings

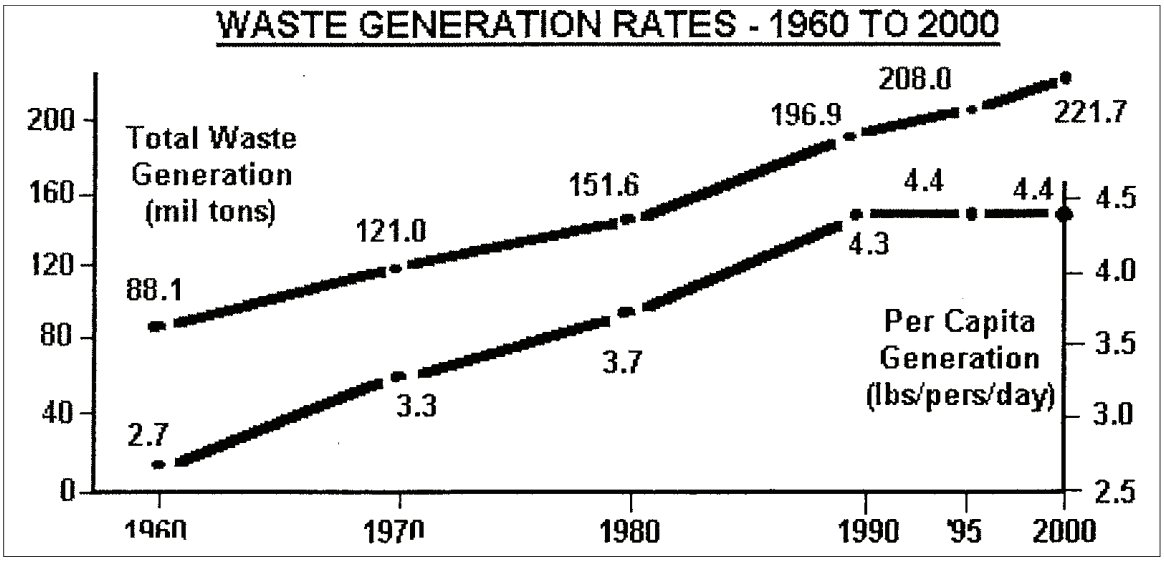
4 = LDPE = Low density Polyethylene
Common uses: bags for dry cleaning, bread, produce and trash and for food storage containers

5 = PP = Polypropylene
Common uses: battery cases, dairy tubs, cereal box liners, bottle caps & lids, disposable diaper linings

6 = PS =polystyrene
Common uses: yogurt cups, clear carryout containers, vitamin bottles, spoons, forks and knives, hot cups, meat and produce trays, egg cartons, clamshell carryout food containers

7 = Other types of plastics
Plastics with a seven (7) are made from a type other than the six most common types listed above or they can be made from multiple layers of different types of plastics.
Common uses: squeezable ketchup bottles, most chip snack bags, juice boxes (individual servings).

reaches its peak when the largest in the U.S., Waste Management, merges with the number three company, USA Waste, whose management takes over the new Waste Management.



2000—2010

1999
The new number three hauler, Allied Waste Industries Inc., agrees to buy the number two company, Browning-Ferris Industries, in a deal worth more than $9 billion.

2000
Biocycle and Zero Waste America, a nonprofit organization, estimate that Americans recycled 33 percent of the waste they generated, and that .66 tons of waste were disposed per person.

2001
Biocycle and Zero Waste America estimate that Americans disposed .98 tons of trash for each citizen and 32 percent of the waste generated was recycled.

2002
The Fresh Kills Landfill on Staten Island was reopened to accept the 1.2 million tons of debris from the World Trade Center following the September 11 terrorist attacks.

2003
In 2003, **recycling and composting diverted more than 72 million tons of waste from being dumped in landfills**.

2004
In 2004, the **Rubber Manufacturers Association estimated that 275**

million tires were in stockpiles. Tires in stockpiles can serve as a breeding ground for mosquitoes and a habitat for rodents. Because they retain heat, these piles easily ignite, creating toxin-emitting, hard-to-extinguish fires that can burn for months.

2005
Biocycle magazine estimated **387.9 million tons of solid waste was generated**.

2005
The US EPA announced a 35% national recycling goal by 2008 (see 1997). This modest goal was set after the EPA determined that America was recovering through recycling or composting about 30% of our municipal solid waste.

2006
The **National Solid Wastes Management Association** (NSWMA), a trade association representing the solid waste and recycling industries, **supports a multi-prong program for managing electronic waste**. This includes:

- Decreasing the hazardous materials used in manufacturing electronics products without compromising product efficiency or safety;
- Making it easier for people to recycle electronics by making them easier to be taken apart and the parts processed,
- Providing financial support for electronics recycling by including a recycling fee in the price or making the manufacturer responsible so that electronic recycling does not fall on the local buyers or the towns they live in;
- Increasing electronics recycling by making the existing solid waste and recycling program better;
- Making sure the environmental, health, and safety standards of collected materials are managed well;
- Supporting programs to develop new processing technologies;
- Supporting programs to develop new end markets, including the possibility of recycled content provisions in new electronics products;
- Using "rates and dates" to ensure accountability of manufacturer responsibility programs are adopted;
- Allowing the disposal of electronics using our current waste management programs until better ways are developed.

2007
The U.S. Supreme Court ruled in **United Haulers Association Inc. v. Oneida-Herkimer Solid Waste Management Authority that in special circumstances local governments are allowed to send some waste to government-owned disposal facilities.**

2008
In 2008, **Americans generated about 250 million tons of trash and recycled and composted 83 million tons** of this material, equivalent to a **33.2 percent recycling rate**. On average, we recycled and composted 1.5 pounds of our individual waste generation of 4.5 pounds per person per day.

2009
America's solid waste industry collected and processed more than 61.3 million tons of recyclables and more than 20.8 million tons of yard and food waste that was composted (EPA Facts and Figures).

2009 - 2010
October 1, 2009 through September 30, 2010, the **Environmental Protection Agency took actions that reduced pollution and ensured that environmental laws are being followed**. New York State requires polluters to pay nearly $2 million in penalties and took actions that will result in the reduction of more than 41 million pounds of pollution.

As of December 2010
Nearly 1.7 million homes received power generated by the gas and electricity produced **through landfill gas to energy processes**.

Sources:

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United States EPA

Waste Age

Waste Equipment Technology Association (WASTEC)

Glossary of Terms

Aluminum	A lightweight, non-rusting metal commonly used to make soda cans, airplane bodies, and frames for lawn chairs.
Accidental Litter	Material that is deposited unintentionally, such as debris from accidents, material that falls from loaded vehicles or flies out of open bed vehicles. Includes items that spill from overloaded or tipped trash cans and items dropped or left behind by people.
American Revolution	The war between the American colonies and Great Britain (1775-1783), leading to the formation of the independent United.
Biodegradable	Able to be broken down by microorganisms and sunlight (photo degradable) into simpler forms.
Buffer (Riparian)	Vegetated areas next to water resources that protect water resources from nonpoint source pollution and provide bank stabilization and aquatic and wildlife habitat.
Community	A group of people living in the same area or a group of people who have close ties and common interests.
Compost	A rich, soil-like mixture that is produced when organic materials, such as yard, garden and kitchen wastes, break down.
Conservation	The wise use of natural resources to minimize their loss and waste.
Commercial Waste	Solid waste coming from businesses such as stores, markets, office buildings, restaurants, shopping centers, and theaters.
Corrugated Cardboard	Cardboard made up of several layers, including a middle layer that is bent into a series of ridges and grooves with air spaces in between.
Decompose	The process of something breaking down. To rot.
Degrade	To break down into simpler forms.
Durable	Made to last a long time.
Deliberate Litter	Materials thrown down, discarded or left behind intentionally in inappropriate locations, including beverage, snack and other convenience food packaging.
Disposable	Meant to be thrown away after a single use or a few uses, rather than to be saved and reused many times.

Disposal	The act of throwing out or away. May happen in approved landfill, ocean dumping or incineration.
Drop Off	Method for collection of recyclable materials in a designated spot.
Dump (Illegal, Open or Fly Dump)	A site used to dispose of solid waste that does not have proper approval and permitting from solid waste regulatory agencies.
Ecological Impact	The effect that a human or nature caused action has on living organisms and their environment.
Ecosystem	A system made up of a community of living things together with their environment.
Enforcement	Actions taken to make sure that federal, state or local environmental laws are being followed. May result in corrective action, fines or criminal charges for violations.
Environmental Protection Agency	The agency of the U.S. federal government responsible for protecting human health and to safeguard the natural environment.
Environmental Revolution	Cultural change involving halting population growth and altering lifestyles, political and economic systems, and the way we treat the environment so that we can help sustain the earth for ourselves and other species.
Essential	Necessary.
Filter	A porous device for removing impurities or solid particles from a liquid or gas passed through it.
Garbage	Solid waste or trash—anything that we throw away.
Glass	A material made by melting silica. Used for making windows, containers, lenses, etc.
Greenway	A long open space that is friendly to the environment and connects one place to another. Greenways can be trails, waterways, or open spaces.
Groundwater	Water beneath the earth's surface that supplies wells and springs.
Habitat	The natural home or environment of an animal, plant, or other organism.
Hauler	Garbage collection company that offers complete refuse removal service; many will also collect recyclables.
Household Hazardous Waste	Hazardous products used and disposed of by residential rather than industrial consumers. Include paints, stains, pesticides, solvents and other materials containing chemicals that can catch fire, react or explode or that are corrosive or toxic.

Household Waste	Solid waste composed of garbage and rubbish which normally originates in a private home or apartment. It may contain a significant amount of toxic or hazardous waste.
Incinerator	A furnace or other unit used for burning.
Incineration	The process of burning waste products.
Industrialist	A person who owns or manages an industry.
Industrial Revolution	A rapid major change in an economy (as in England in the late 18th century) marked by the general introduction of power-driven machinery.
Infectious Waste	Hazardous waste which can cause infections in humans. Includes contaminated animal waste, human blood, and blood products and discarded sharps (needles, scalpels and medical instruments).
Land Disposal of Waste	Involves hauling garbage to an area owned by a community or a private firm. Such areas range from unsanitary *open dumps* to properly operated *sanitary landfills*.
Landfill (also see sanitary landfill)	A place permitted by a solid waste regulatory agency where unwanted materials are deposited, compacted and covered with dirt.
Leachate	Water that percolates through a dump or landfill, picking up pollutants along the way.
Leave No Trace	An organization that promotes outdoor ethics.
Litter	Waste materials carelessly discarded or accidentally deposited in an inappropriate place. Littering is against the law.
Mandatory Recycling	Programs that legally require consumers to separate trash so that some or all recyclables are recycled rather than disposed.
Microorganisms	Tiny living things that can be seen through a microscope.
Municipal Solid Waste	Solid waste from homes. In some states, this includes waste from offices and stores. (The EPA has definitions and rules, states can further define and regulate solid waste.)
Natural Resources	Things in the world around you, such as trees, water, animals, soil and minerals, which are used to make products.
Non-point Source Pollution	Pollution without a single source or origin. Pollutants are generally carried off land by water. Farming, forestry, urban litter, mining, construction and city streets are among the causes. Litter is a non-point source pollutant.

Nutrients	Any substance that nourishes an organism.
Office Paper	High grade papers such as copier paper, computer printouts and stationery. Usually generated in homes, schools, and businesses.
Oil	A substance made by prehistoric decay of organic matter, and currently used to produce many products, including fuels and plastics.
Packaging	Ways of wrapping products to protect them, advertise them, or make them convenient for sale.
Paper	A thin material made from pulp from wood, plants, old paper, or rags. It is used for writing, wrapping, and drawing. Specialty papers include those used in hospitals and for packaging.
Pest	An insect, rodent, fungus, weed or other form of land, water or plant life that is harmful to health or the environment.
Planned Obsolescence	A marketing concept developed to increase production and sales by creating products which must be replaced frequently (either because they have gone out of style or are designed to break easily or be disposed of).
Photo Degradation	The process of breaking down through exposure to sunlight.
Pollutant	Any substance that negatively affects the health of humans, animals, or ecosystems.
Pollution	In our environment, the condition of being dirty or impure, especially as a result of wastes.
Precycling	Reducing the amount of waste generated by avoiding disposables and over-packaged articles. Paper, glass, metals, and some plastics are commonly recycled items.
Product	Something made by working with raw or recycled materials. Usually sold.
Properties	Characteristics.
(RCRA) Resource Conservation & Recovery Act	This 1976 federal act gave EPA the authority to control hazardous waste from the "cradle-to-grave." This includes the generation, transportation, treatment, storage, and disposal of hazardous waste. RCRA also set forth a framework for the management of non-hazardous wastes.
Recyclable	Able to be used instead of raw materials to make a new product.

Recycle	To make materials such as glass, aluminum, paper, steel and plastic into new products.
Reduce	To decrease the amount of waste we produce by buying only what we need, avoiding disposables, and buying products that are not over-packaged.
Refuse	Trash, rubbish, anything thrown away.
Runoff	Rain, snow melt, or irrigation water that runs off the land into streams or other surface water. It can carry pollutants from the air and land into the receiving water.
Renewable Resources	Something we use from nature that can be replenished. For example, trees are a renewable resource; a tree can be planted to take the place of one that has been cut down. Oil is not a renewable resource; it takes millions of years for oil to form.
Residual Waste	Nonhazardous industrial waste. It includes waste material (solid, liquid, or gas) produced by industrial, mining and agricultural operations. It excludes certain coal mining wastes and wastes from normal farming activities.
Reuse	To extend the life of an item by using it again, repairing it, or creating new uses for it.
Salvage	To save materials from destruction. When old houses are torn down, the lumber, bricks, trim boards, and fixtures can be salvaged and reused in other building projects.
Sanitary Landfill (also see landfill)	A place permitted by a solid waste regulatory agency where unwanted materials are deposited, compacted, and covered with dirt. Modern sanitary landfills also have systems for collecting and treating leachate, the polluted water that drains out from the landfill.
Sink	The lowest part of a natural hollow or closed basin. To descend to the bottom.
Solid Waste	The things we throw away: household trash, yard and kitchen wastes, old machinery and equipment, and many agricultural and industrial wastes.
Source	Point of origin.
Storm Sewer	A system of pipes that carries water runoff from buildings and land surfaces.

Surface Water	All water naturally open to the air (rivers, lakes, reservoirs, ponds, streams, and oceans.)
Toxic	Able to cause injury or illness through chemical or biological means.
Tourism	The practice of traveling for pleasure.
Trail Town	Towns located along railroad tracks that have been transformed into recreational tails.
Travel	To go from one place to another.
Uninhabitable	Unable to support life.
Urban Runoff	Storm water from city streets and impermeable surfaces (such as parking lots) that carries pollutants into the sewer systems and receiving waters.
Volunteer	A person who freely offers to undertake a task
Waste Disposal	The process of getting rid of the waste material that people generate. People produce *gaseous waste*, such as carbon monoxide from cars; *liquid waste*, such as sewage; and *solid waste*. The many kinds of solid waste include paper and plastic products, bottles and cans, food scraps, and junked automobiles and appliances.
Wasteland	Desolate land, unable to support life.
Waste Reduction	The process of producing less waste. For example, people can reduce waste by minimizing what they use and by reusing and recycling items.
Watershed	The land that drains into a stream. The watershed for a major river may include a number of smaller watersheds that eventually combine.