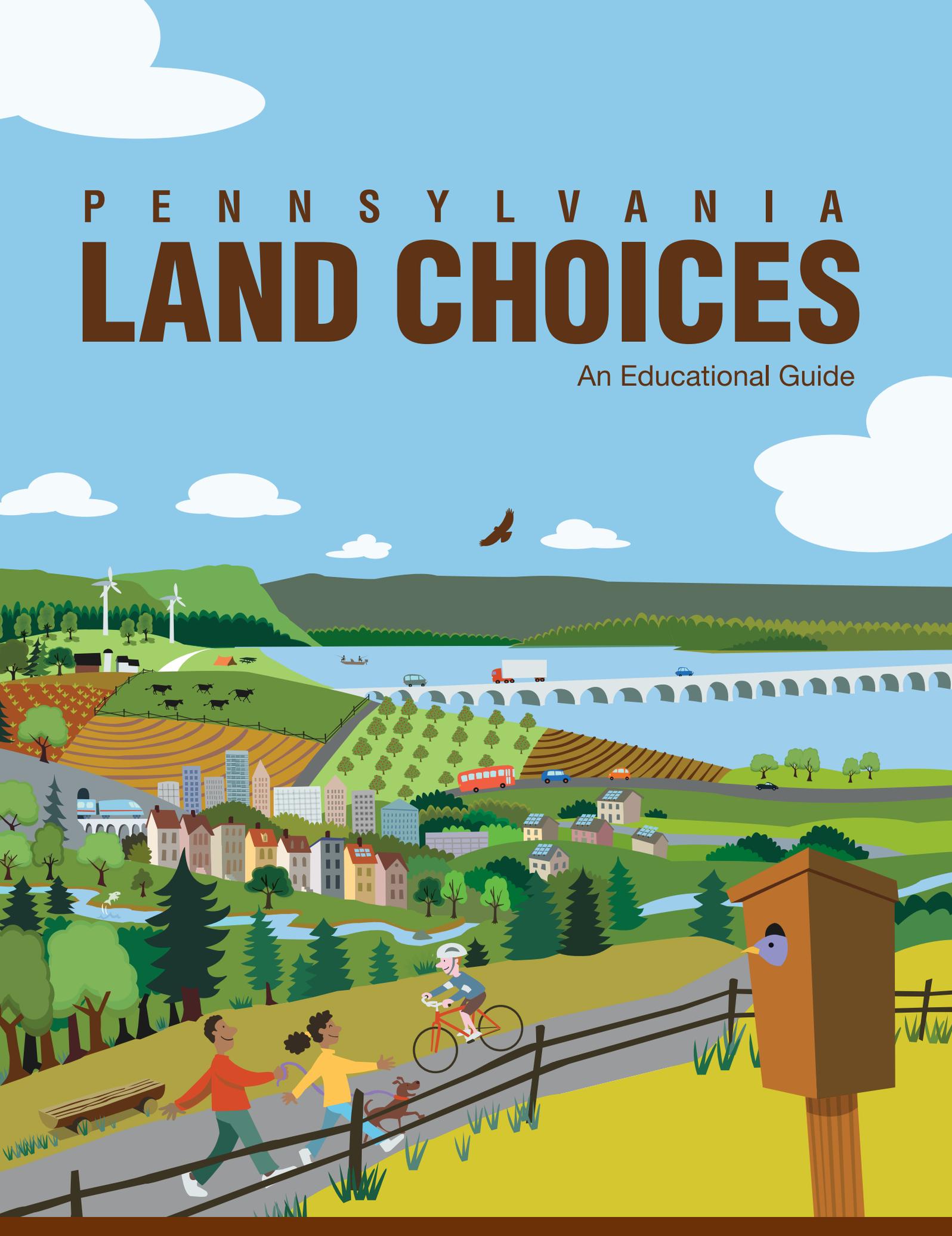


P E N N S Y L V A N I A LAND CHOICES

An Educational Guide



Dear Citizen,

Thank you for your interest and participation in Pennsylvania Land Choices. Whether you are a civic leader, an educator or a planner, this program will provide a model for educating others about the places we live and the choices we make.

Pennsylvania communities are changing. Each person has an opportunity to help shape the future of their community, a responsibility in shaping the characteristics and features that make their community a special place to live. Perhaps you would like to protect a local woodlot, provide safe biking paths, improve a dangerous intersection or advance statewide land conservation. As a citizen, we have the power to direct change. By understanding the system, the process and the tools, we become empowered to make changes and influence the direction of community growth.

PA Land Choices has been developed to provide participants with a basic understanding of community government and the powerful role of citizens who work toward common goals. The engaging activities in the manual provide opportunities to work collectively in teams, gaining knowledge and skills that will be useful for a lifetime. Workshops involve professional planners and other experts to help participants create, sustain and protect the special character of their neighborhoods. It is a lesson on citizenship and the democratic process practiced at one of the most important levels...right in your home town.

Take the challenge and get involved in your local communities. Attend municipal meetings. Join a conservation organization or land trust. Coordinate a community project such as a citizen awareness day or develop a walking trail. We hope PA Land Choices will provide background information and valuable skills to engage participants of all ages to become involved in shaping the future of their community.

Please share this information with others. When using the materials, we ask that you provide us with your feedback. Your input is very valuable and appreciated. Thank you for thinking and acting not only for yourself and your grandchildren but for all the future generations who will look back with appreciation to those who protected this Pennsylvania heritage, grateful for enabling them to share in the dreams of the future.

Sincerely,



Estelle Ruppert, *PA Land Choices Coordinator*

March 2009

P E N N S Y L V A N I A



LAND CHOICES

An Educational Guide

Pennsylvania Land Choices seeks to build connections to natural resources, communities and the planning process. For more information, please visit www.palandchoices.org.



pennsylvania
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES

in partnership with



The Pennsylvania Department of Conservation and Natural Resources (DCNR) conserves and sustains Pennsylvania's natural resources for present and future generations' use and enjoyment. Through its programs and services, it strives to improve stewardship and management of state parks and forests; promote statewide land conservation; build and maintain sustainable and attractive communities; and create outdoor connections for citizens and visitors.

DCNR's Bureau of State Parks' Outdoor Programming Services coordinated the development of PA Land Choices with support from the Pennsylvania Land Trust Association, DCNR's Bureau of Recreation and Conservation and other bureaus, educators, geologists and planning professionals.

This project was financed in part by a grant from the Community Conservation Partnerships Program, Environmental Stewardship Fund, under the administration of the Pennsylvania Department of Conservation and Natural Resources, Bureau of Recreation and Conservation. For copies and information about workshops, contact DCNR Bureau of State Parks at 717-783-4356 or www.dcnr.state.pa.us. Materials may be duplicated for educational purposes by notifying: Bureau of State Parks, PA Land Choices Coordinator, palandchoices@state.pa.us.

A sincere thanks to Pennsylvania DCNR and PALTA for their support of PA Land Choices

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*Drawing entitled "The Last Straw," by Bruce Johnson used with permission of the artist.
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Using PA Land Choices

PA Land Choices is a comprehensive program about community character, civic responsibility, and conservation of natural resources. It is administered by the Department of Conservation and Natural Resources (DCNR), Bureau of State Parks and supported by The Pennsylvania Land Trust Association and DCNR's Bureau of Recreation and Conservation.

About Land Choices

PA Land Choices began as a pilot project in 1998 as DCNR recognized the growing issues related to changing communities, increasing land development and the need for natural resource awareness and protection. Over 40 teachers, community leaders, and education specialists came to Lancaster for a week-long workshop led by the Bureau of State Parks, Pennsylvania Environmental Council, Thomas Hylton and Lancaster County Planning Commission. Following the workshop, a series of trainings and advancements lead to the development of a manual of activities to help teach about the impacts of land choices and civic leadership needed to shape a changing community and a changing commonwealth.

PA Land Choices has been shared with educators, planners and citizen groups throughout Pennsylvania and presented to national and state audiences. It led the way for land education and has been a model for other state and national education initiatives.

PA Land Choices is About YOU!

PA Land Choices is about you, your community and its resources. It is about your role and your right to participate in your local government...a democratic process that impacts the places you know best...your neighborhoods and communities. The purpose of the program is to empower you as a citizen—young or old, teacher or community leader, student or parent – to become

involved in the choices that improve your community character and collectively guide Pennsylvania toward a healthy, sustainable future.

What is PA Land Choices?

PA Land Choices is a collection of sequential activities to educate and motivate participants to become involved in their local community and to conserve their natural resources. The activities are easy to use and available through workshops or downloading on the web. The information is self contained and based on data from a variety of sources. The concepts are simple. The activities are fun and engaging.

Each activity guides the learner to understand the power of choice by analyzing the forces that create change in their community and region. It challenges the learner to become involved in creating the communities of the future. It reflects the importance of natural resources, green spaces, public lands and public spaces. It promotes civic responsibility through place-based education and service-learning.

PA Land Choices is based on the following goals:

- To increase citizen involvement in shaping the future of our communities and the Commonwealth;
- To promote conservation of natural and historic resources, the value of public land and the responsibility of land ownership;

- To encourage citizens in defining and promoting healthy, sustainable communities; and
- To understand the role of local government and the tools available for guiding growth, protecting regional character and promoting resources.

DCNR Goals Addressed by PA Land Choices:

- Build and Maintain Sustainable and Attractive Communities
- Promote Statewide Land Conservation
- Improve Stewardship and Management of Public Lands
- Create Outdoor Connections for Citizens and Visitors

PA Land Choices is for all Citizens

PA Land Choices is a collection of original activities developed for use by educators and community leaders to help teach citizens – young and old – about the importance of personal involvement, understanding our civic responsibility to local government and the power of our choices in a changing environment. Programs are directed and implemented locally and address local investigations and local service opportunities.

You may be a municipal official, a college professor, a community forester or a county planner. PA Land Choices provides engaging group activities taking participants through a step by step process; first examining the changes in Pennsylvania’s past and present, then focusing on the personal involvement of each citizen in community projects, local government, and the protection of natural resources and important ecological lands. Citizen programs can be delivered in a variety of circumstances and length of time deemed appropriate for the audience. To request a PA Land Choices program for your community or organization, contact the PA Land Choices Coordinator or a state park educator.

Celebrate Communities and Local Government!

PA Land Choices is a celebration of the people of Pennsylvania represented by the communities in which they live. Because these communities are distinct in character and leadership, this curriculum is easily adapted to suit the uniqueness and flavor of any region.

PA Land Choices recognizes that citizen education is imperative for the success of communities. This curriculum appeals to a diverse audience, including citizens, municipal officials, community leaders and educators. It encourages participation by a variety of community constituents and is most valuable if it involves a diverse representation of the community.

PA Land Choices is adapted for Educators and Administrators

Activities have been aligned to state academic standards in Social Studies and Environment and Ecology for application in public school programs in grades 6–12. It has been utilized successfully for college courses and adapted for younger grades. PA Land Choices is offered through teacher workshops which have been granted Act 48 status by the Pennsylvania Department of Education. Act 48 teacher workshops require a minimum of 16 hours. Workshops have been endorsed at the Governor’s Institute for Social Studies and the Governor’s Institute for Environment and Ecology.

For classrooms, it is a model for place-based education, focusing student learning on communities and familiar places, addressing standards in civics and geography. It encourages citizenship through public stewardship and service learning. It provides students with connections to projects in their community and on public lands throughout the Commonwealth. The educational activities can be applied in a week-long social studies unit or during a series of class periods teaching about

local environmental responsibility. It can be scheduled as a one day experience or applied in an integrated program of multidisciplinary education.

It could be used in classrooms conducting Project Citizen or with Project Learning Tree.

The following five concepts justify PA Land Choices as a valuable tool for public education.

Democratic Deliberation through Group Problem Solving:

The activities involve opportunities for small groups of students to analyze issues, distinguish fact from opinion and work together to solve problems. Group dynamics engage students in developing confidence and leadership skills that foster responsible action. Individuals become aware of their role in society—developing faith in the group process, the importance of sharing information through public dialogue and the role of compromise to advance an agenda. The educational process does not intend to advocate a particular viewpoint but encourages the learner to make their own choices and chart their own course of action.

Alignment to Pennsylvania Academic Standards:

Activities are aligned to Pennsylvania academic standards focusing on social studies and environment and ecology while including such standards as mathematics and language arts. It is a multidisciplinary approach to learning that is valuable to public education. www.pde.state.pa.us

Civic Learning: PA Land Choices reflects the goals established by the National Council for the Social Studies (NCSS): The NCSS goal of Citizen Education is “to help young people develop the ability to make informed and reasoned decisions for the public good.” Our right to participate in governing ourselves in order to protect rights and promote common welfare carries certain responsibilities.

Citizens must develop knowledge and skills to participate intelligently and work together to make our communities a better place to live. www.civiced.org; www.penncord.org; www.socialstudies.org

Place-based Education: According to David Sobel, 2004, *Place-Based Education Connecting Classrooms and Communities*, place-based education is the process of using the local community and environment as a starting point to teach concepts in language arts, math, social studies and science. Emphasizing hands-on, real-world learning experiences, this approach has been determined to increase student academic achievement, building strong ties to community and a heightened commitment to serving as active citizens. www.promiseofplace.org; www.anei.org

Service Learning: Service learning combines service objectives with learning objectives with the intent that the activity changes the recipient and the provider. According to the report developed by the National Commission on Service Learning, “Learning in Deed, The Power of Service Learning for American Schools,” service learning is different from volunteerism—teaching and learning by integrating community service with academic studies to teach civic responsibility and strengthen the community. It links the task to self reflection, self discovery and the acquisition and comprehension of values, skills and knowledge. www.servicelearning.org; www.learnandserve.gov

How is it Administered?

PA Land Choices has been developed by the Department of Conservation and Natural Resources in partnership with the Pennsylvania Land Trust Association. The Bureau of State Parks has trained education staff to help facilitate, coordinate and deliver workshops in partnership with other community based

officials and leaders. There are workshops offered throughout the year. PA Land Choices is coordinated through the Division of Outdoor Programming Services within the Bureau of State Parks.

Professional Development Workshops and Citizen Academies

To receive a copy of PA Land Choices, educators and community leaders are encouraged to attend a training workshop. The training is intended to provide participants with the basic knowledge of the course objectives and resources as well as an opportunity to network and gain confidence in using the materials.

Many State Park educators are certified facilitators for PA Land Choices and can provide regional training opportunities. Visit the state park web site at www.dcnr.state.pa.us/stateparks for a list of workshops offered through state parks. Contact your local state park to inquire about scheduling a workshop for your group or contact the PA Land Choices Coordinator, Bureau of State Parks at 717-783-4356.

We request that anyone conducting workshops or utilizing the materials provide feedback to the PA Land Choices coordinator to assess the materials and solicit recommendations for improvement. Evaluation forms are included with the materials or can be downloaded from the website, www.palandchoices.org.

If you are interested in becoming a certified facilitator for PA Land Choices, contact the PA Land Choices Coordinator in the Bureau of State Parks.

Partnership for P.L.A.C.E. (Pennsylvania Land and Community Education)

To advance citizen land education, planning and conservation, an education committee was developed called the Partnership for P.L.A.C.E. The partnership con-

sists of representation from citizen groups, planners, municipal officials, land trusts, educators and government. The role of the partnership is for networking and advancing land education for citizens in Pennsylvania.

Workshops may be marketed by using the title P.L.A.C.E. which is the acronym for "Pennsylvania Land and Community Education." P.L.A.C.E. is the umbrella that encompasses additional materials and resources. Workshops are conducted in partnership with local planners and municipal officials.

PLACE workshops may include the following resources:

- Pennsylvania Land Choices
- *Save Our Land, Save Our Towns*, book and video by Thomas Hylton. Select copies have been donated for participants in education workshops.
- *Exploring Environmental Issues: Places We Live*, by Project Learning Tree through PA Department of Education Curriculum Advisor for Environment and Ecology.
- *Project Citizen*, Center for Civic Education, National Conference of State Legislatures
- *Community of Choices*, CD Narrated by Edward T. McMahon, The Dunn Foundation, The Conservation Fund
- *In Their Own Words: Fifteen Stories of Conservation and Inspiration*, Pennsylvania Land Trust Association, www.conserveland.org
- Maps from PA Geologic Survey
- *Better Models for Development in Pennsylvania*, Edward T. McMahon and Shelley S. Mastran
- DCED Governor's Center for Local Government Services reports and resources

Web Resources

PA Land Choices and other valuable resources can be downloaded at www.palandchoices.org.

To learn what you can do for conservation, visit www.iConservePA.org.

Visit www.dcnr.state.pa.us for additional resources and publications.

Visit www.conservationtools.org to learn more about specific tools available for conservation and community planning.

Contact

PA Land Choices Coordinator
DCNR, Bureau of State Parks
E-mail: palandchoices@state.pa.us
Phone: 717-783-4356

Pennsylvania Land Choices Highlights

Educational initiative that includes a manual of information and activities for teaching citizens about responsible choices that promote resource conservation, stewardship and community character.

Aligned to promote DCNR goals and the value of public lands such as state parks and state forests.

Encourages partnerships between educators, planners and municipal officials to deliver workshops.

Focuses on place-based educational concepts.

Involves outdoor and community exploration.

Encourages stewardship and service-learning initiatives that benefit our natural resources and communities.

Condensed information accumulated in one resource.

A well-designed process for teaching about land use and conservation.

Promoted through the Partnership for PLACE Pennsylvania Land and Community Education.

Based on research-based teaching methods and over 30 years of experience.

Connects to a “sense of place” and the importance of community pride.

Recognized by the PA Department of Education.

Aligns to Pennsylvania academic standards for civics, geography, environment and ecology.

Creative group activities are applicable to learners of all ages.

Act 48 accredited.

Provides resources and links to other sources.

Recognized by the National Park Service and presented at *A Trail to Every Classroom* workshops.



Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories for Grades 6-12

- Civics and Government
- Environment and Ecology
- Geography
- Service Learning

Standard Statements for Grades 6-12

- 4.8** Humans and the Environment
- 5.1** Principles and Documents of Government
- 5.3** How Government Works
- 7.1** Basic Geographic Literacy
- 7.3** Human Characteristics of Places and Regions

Content Objectives

- Discuss and compare current articles about land use
- Correlate articles to land use principles
- Share information about communities
- Identify concepts and additional information
- Match vocabulary and definitions
- Discuss citizen responsibility

Instructional Strategies

- Analysis
- Compare and contrast
- Discussion
- Listening
- Matching

Assessment Strategies

- Discussion and review

Materials

Included:

- Land Use Principles: Posters (posted around room)
- Need-to-Know flip chart displayed to the large group
- Concept Map worksheet and display
- Vocabulary word cards and definitions in envelopes for each team
- "Anybody" story worksheet or display

Additional Materials:

- Name tags
- Markers
- Large state map
- Post-it notes
- Name tents or note cards
- Flip charts (at least 3)
- Extra articles
- PA Land Choices PowerPoint

Time

- 1.25 hours

Getting Started...Making Choices

Pennsylvania is a tapestry of communities, rich in character, charm, independence and a strong allegiance to the landscape. The communities are shaped by our rich history, hardworking people and bountiful natural resources. The forests, rivers, mountains, soils, geology, wildlife and weather all are important in defining our communities and shaping our perception of “place.” This is our state. These are our counties. This is our community. People, space and environment are critical in defining our perceptions, attitudes, values and worldviews. We are shaped by our communities. In turn, we have a great responsibility in guiding the future of our communities.

Pennsylvanians stand at a critical crossroad facing unprecedented pressures on the use of our land...the natural, historic and cultural resources of our changing communities. The choices that we make for our communities and our natural resources will ultimately impact the future of Pennsylvania for generations to come. The future is in the hands of citizens who will realize the power and value of local government and the importance of active community leadership and stewardship. It is the responsibility of each citizen to guide their communities toward a sustainable future. It is not only important to educate municipal officials but to focus on opportunities to empower every citizen and educate every student about land conservation and sustainable communities.

Overview

Getting Started...Making Choices includes three activities:

Activity 1: *What Do You Know?*

Activity 2: *How to Speak “Planning”*

Activity 3: *Who is Responsible?*

During the following activities, participants will reflect on their local communities as places that have shaped their lives. This bond between people, environment and community constitutes a “sense of place.” By exploring the media, participants define local issues. Articles abound on topics such as new housing developments, traffic, highway construction, land conservation and community character. The activities in this lesson focus on comparing local news articles from various communities throughout Pennsylvania and aligning them to basic land use principles.

Being a community leader requires an understanding of the vocabulary. It is important to learn the language of “planning”. Participants match vocabulary words and definitions to begin to translate the language. Participants share information about themselves and positive aspects of their community. Participants share objects and artifacts that represent the character of their community as they begin to discuss and define the importance of citizen responsibility.

Activity 1:

What Do You Know?

Summary: Communities are important in shaping our lives. Participants will review local articles on land use. They will relate the articles to land use principles and compare issues with other participants. They will analyze what they know and what they need to know. They will develop a concept map for studying land use.

Activity 1

Questions: How do communities influence our lives? What are the six basic principles of land use planning? How do your local issues relate to the principles? What information do you know and what information do you need to better understand the issues to become more involved?

Preparation

- Provide extra articles from the local papers.
- Place “Land Use Principles” posters around the room (pp 8-13).
- Prepare a flip chart or projection of the “Need to Know” chart (p 7).
- Copy and distribute the Concept Map to each participant and display it on a flip chart (pp 14-15).

Procedure

1. Discuss the importance of the community and “a sense of place.” There is a bond between people and place. Places shape people and vice versa. There is a growing awareness about the importance of people, space and environment in shaping perceptions, attitudes, values and world views. Landscapes act as a teacher in shaping our perception of place. For many people, their community and the region where they live is their “life space.” It is important for citizens to be actively involved in defining their community...their life space...so that it will grow and change in a direction that they want for future generations. Discuss how their communities influenced them.

2. Discuss the changes participants have seen in their communities in the past five years. Summarize and list the issues that are addressed. Participants are invited to bring an article from the local newspaper that addresses a land use issue or examples of changes in their community.

Participants are to read their article and be prepared to share it with others.

There are six land use principles that are included in the curriculum as mini posters.

They are printed and displayed around the room.

Review the six principles that are posted around the room. Participants are to move from poster to poster, selecting the one that best relates to their article.

Participants are to stand by a principle that relates to their article. (Establish a maximum number of people who can stop at any one poster.)

Land is a finite natural resource that provides habitat for much of the living world—including humans.

Land is used for many different purposes. If land is used for one purpose, its use for other purposes is limited. Each use has its consequences.

People have different attitudes and values about land use. Those differences may cause conflicts. Resolution requires cooperation, compromise and careful consideration of all information.

Land use planning is a dynamic process that involves local citizens, community leaders and special interest groups, each having an impact on the future decisions of the community as well as the region. “Not to plan” is a decision just as “planning” is a decision.

It is a civic responsibility for citizens to be involved in community decisions that impact the character, values and resources that are important now and for the future.

Ownership of land means you accept responsibility for the care of that land and follow the laws and regulations, making responsible decisions about the use of the land.

3. In their small groups, participants will summarize their articles to the rest of the small group and relate it to the poster.

One person in the group will be assigned to summarize the articles to the whole group. As each group summarizes the issues, the facilitator will project the issues on a flip chart or projection unit upon which a “Need to Know” table is drawn. Participants will discuss similarities and label the issues as local, regional, national and global.

4. Refer to the “Need to Know” chart. As the articles are discussed, summarize the issues. Fill in the “Need to Know” chart. What do participants know and what do they need to learn? The chart is used as a guide to assess the audience levels of understanding. It can be expanded throughout the training.

5. Copy and distribute the Concept Map to each participant. Prepare Concept Map for display.

Using the Concept Map as a guide, participants are invited to consider important topics about land use and to add concepts as they are addressed throughout the workshop. Review the concept map periodically and expand upon it.

6. Summarize and review the activity.

Activity 2:

How to Speak “Planning”

Summary: Participants will match sets of vocabulary cards with the definitions. Discuss vocabulary about land use. Display words on a flipchart throughout the workshop.

Questions: What are some of the vocabulary words used in conversations about land use? Why is it important to understand vocabulary?

Preparation

- Copy the vocabulary words worksheet (pp 16-17).
- Cut the words and definitions and place in an envelope for each team.

- Write on a flipchart:

“Sprawlsmartgrowthmunicipalityzoningordinancesfeesimpletitleconservationbrownfields.”

Procedure

1. When working on land use issues, there are many new vocabulary words. It’s almost like learning a new language. Invite someone to read this word on the flipchart: “Sprawlsmartgrowthmunicipalityzoningordinancesfeesimpletitleconservationbrownfields.”

(Remember Mary Poppin’s “supercalifragilisticexpialidocious?”)

This is what “land use” sounds like to someone who has not been involved in local government.

2. In order to be informed about land decisions, it is important to become familiar with the language. Ask participants to share vocabulary words used in the articles or in previous discussions and list them on a chart. Distribute envelopes with words and definitions to each group. Ask participants to work in teams to match the words and the definitions. Provide 10 minutes to conduct the matching activity.

Municipalities Planning Code

Legislation that empowers municipalities within the state to enact regulations for the development and preservation of land. It has three main sections:

- (1) The Comprehensive Plan, (2) Zoning, and (3) Subdivision and Land Development.

Municipality

A unit of local government, a political subdivision of a state where a corporation has been established to govern the population concentrated in a defined area such as a county, city, township or borough. The officers make policy decisions, levy taxes, spend money and make decisions on local planning and zoning.

Zoning

It is the act of designating specific types of land use in specific areas within a municipality. Each zone or district allows for a designated type of land use such as residential, agriculture, commercial, industrial or mixed uses. A map is used to indicate the location of the zones.

Sprawl

A condition of development which conjures up a vision of continuous patterns of strip malls, parking lots, traffic and unconnected styles of development creating a need to drive everywhere and leaving a community without character or a sense of place.

Planning

A dynamic process of deciding how best to provide a proper arrangement of land uses, transportation patterns, development, agricultural lands and desirable environmental features for the future.

The Comprehensive Plan

It is a document developed by either a county or municipality that provides recommendations for the growth and changes that are anticipated in the future. A county comprehensive plan provides recommendations for communities within the county but it is not enforceable. It is a document that outlines community or countywide vision, goals and objectives. It includes a land use plan, housing plan, transportation plan, community facilities plan, natural and historic resources plan and water supply plan.

Environmental Advisory Council

An officially constituted municipal board created to advise local governments on environmental issues and policies including recommendations on open space.

Greenways

Corridors of open space that can be land or water-based whose purpose is protecting natural, cultural, and/or scenic resources. Its defining function is its connectivity to other places.

3. *Discuss the definitions in a large group.* Discuss why it is important to understand the language of “planning.” Summarize and review.

Activity 3:

Who is Responsible?

Summary: Participants will review a short story and discuss its meaning. Participants will incorporate previous discussions to define issues and citizen responsibilities as it relates to land use issues.

Questions: In your community, who is responsible for planning? Who is responsible for finding solutions to community problems? What are problems in your community and who solves them?

Preparation

- Distribute or display the “Anybody” story on a flip chart or screen (p 18).

Procedure

1. *Read aloud the story about ‘Anybody, Somebody, Nobody and Everybody.’*

2. *Discuss the story by referring to the questions related to the activity.*

- Who are the people responsible for deciding the future of the community?
- What organizations, individuals and groups work toward improvements in your community?
- What is the role of each citizen?
- What are conservation measures that could help a community?
- Why are more people not involved?
- What motivates citizens to become involved?

3. *Summarize and review.*

Assessment and Review

1. *Summarize and categorize the types of news stories related to land use. What are common themes? Who are common players?*
2. *Review vocabulary related to land use. Expand the list to include new vocabulary throughout the workshop.*
3. *Discuss the role of leaders in a community and leadership traits. How can we become leaders in our community?*

The problem, *then is how to bring about a striving for harmony with land among a people, many of whom have forgotten there is any such thing as land, among whom education and culture have become almost synonymous with landlessness. This is the problem of ‘conservation education’.*

Aldo Leopold (Naturalist/Conservation Advocate)

Activity 1: *Need to Know Chart*

What do you know about land use? What issues are in the news?	What more do you need to know?	How can we find out?

Land is a finite natural resource

**that provides habitat for
much of the living world—
including humans.**

If land is used for one purpose, its use for other purposes is limited.

Each use has its consequences.

People have different attitudes and values about land use.

Those differences may cause conflicts. Resolution requires cooperation, compromise and careful consideration of all information.

Land use planning is a dynamic process

**that involves local citizens,
community leaders and special
interest groups, each having an
impact on the future decisions of the
community as well as the region.
“Not to plan” is a decision just as
“planning” is a decision.**

It is a civic responsibility

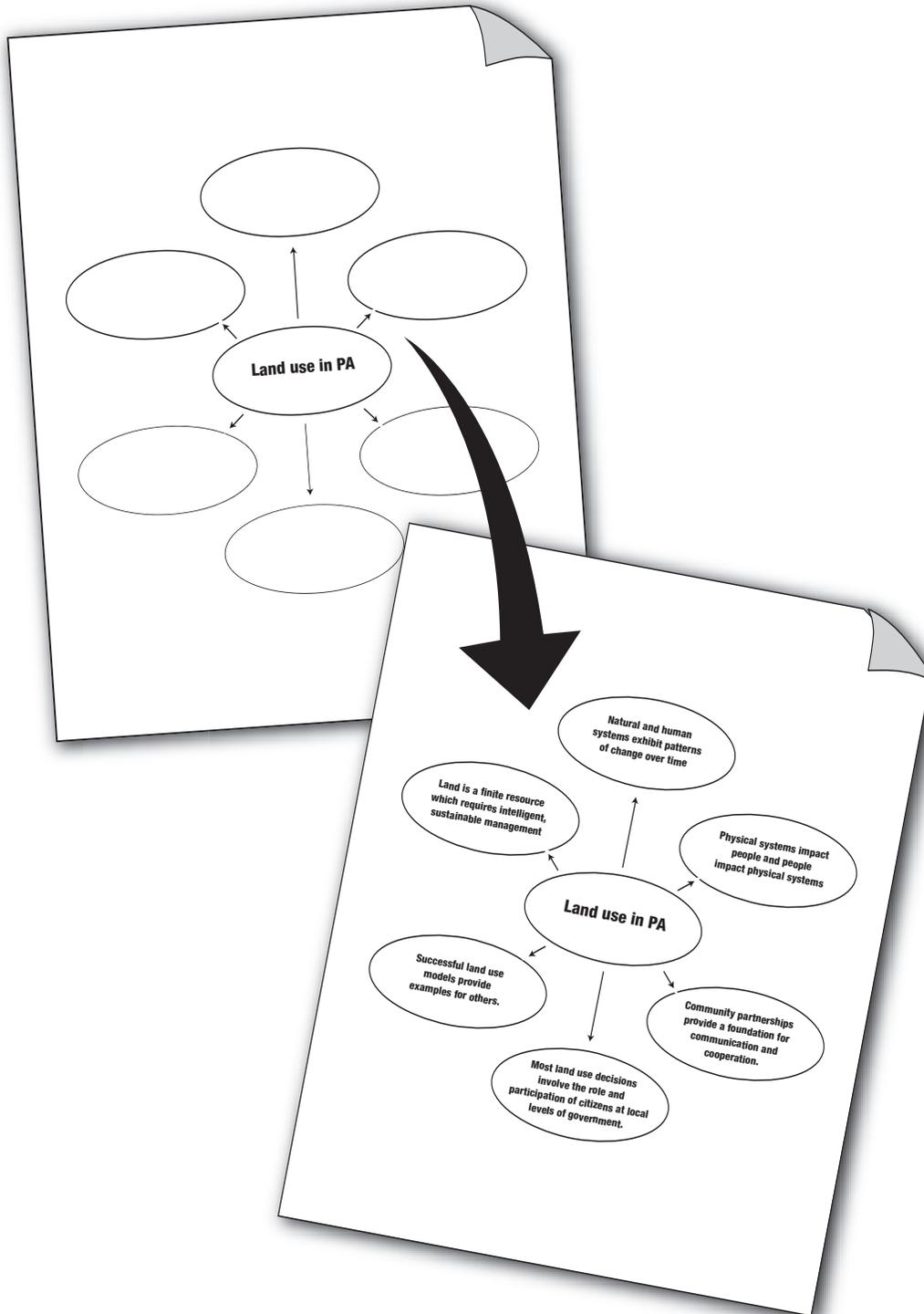
**for citizens to be involved in
community decisions that
impact the character, values and
resources that are important
now and for the future.**

Ownership of land means you accept responsibility

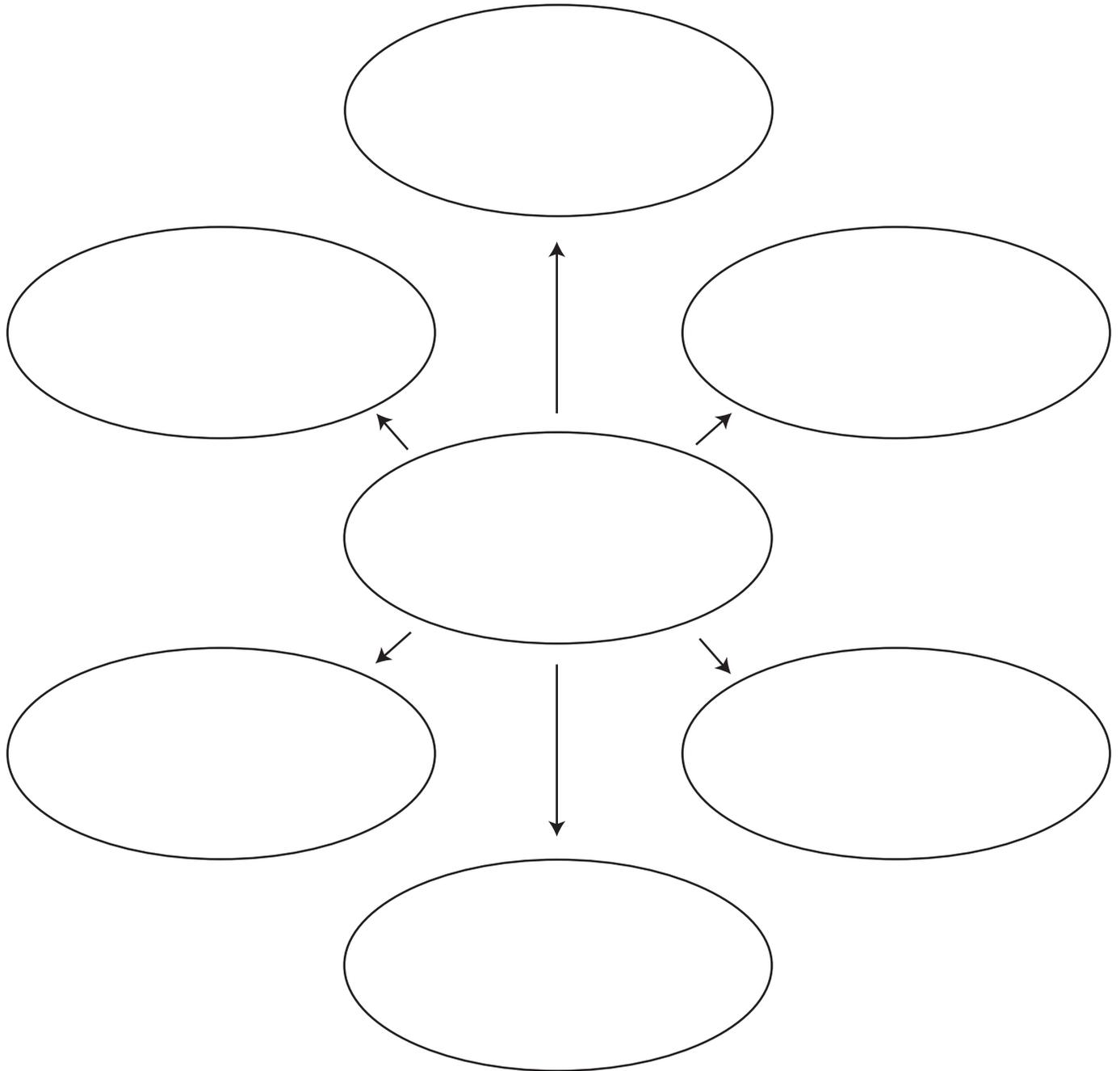
**for the care of that land and
follow the laws and regulations,
making responsible decisions
about the use of the land.**

Activity 1: Sample Concept Map - Front (1/2)

Write the problem in the middle circle. In the other circles, show a web of relationships connected to the central focus. Expand the concept web to include as many aspects of the issue. Categorize the examples.



Activity 1: *Sample Concept Map - Back (2/2)*



Municipalities Planning Code ▶

Municipality ▶

Zoning ▶

Sprawl ▶

Planning ▶

The Comprehensive Plan ▶

Environmental Advisory Council ▶

Greenways ▶

Activity 2: *Land Use Definitions - Page 2 (2/2)*

<p>Legislation that empowers municipalities within the state to enact regulations for the development and preservation of land. It has three main sections: (1) The Comprehensive Plan, (2) Zoning, and (3) Subdivision and Land Development.</p>
<p>A unit of local government, a political subdivision of a state where a corporation has been established to govern the population concentrated in a defined area such as a county, city, township or borough. The officers make policy decisions, levy taxes, spend money and make decisions on local planning and zoning.</p>
<p>It is the act of designating specific types of land use in specific areas within a municipality. Each zone or district allows for a designated type of land use such as residential, agriculture, commercial, industrial or mixed uses. A map is used to indicate the location of the zones.</p>
<p>A condition of development which conjures up a vision of continuous patterns of strip malls, parking lots, traffic and unconnected styles of development creating a need to drive everywhere and leaving a community without character or a sense of place.</p>
<p>A dynamic process of deciding how best to provide a proper arrangement of land uses, transportation patterns, development, agricultural lands and desirable environmental features for the future.</p>
<p>It is a document developed by either a county or municipality that provides recommendations for the growth and changes that are anticipated in the future. A county comprehensive plan provides recommendations for communities within the county but it is not enforceable. It is a document that outlines community or countywide vision, goals and objectives. It includes a land use plan, housing plan, transportation plan, community facilities plan, natural and historic resources plan and water supply plan.</p>
<p>An officially constituted municipal board created to advise local governments on environmental issues and policies including recommendations on open space.</p>
<p>Corridors of open space that can be land or water-based whose purpose is protecting natural, cultural, and/or scenic resources. Its defining function is its connectivity to other places.</p>

Activity 3: Anybody, Somebody, Nobody and Everybody

This is a story by an unknown author about four people named “Everybody,” “Anybody,” “Somebody” and “Nobody” with an important job to do. Read the story, then discuss using the questions below.

There was an important job to be done and Everybody was sure that Somebody would do it. Anybody could have done it but Nobody did it. Somebody got angry because it was Everybody’s job. Everybody thought Anybody could do it, but Nobody realized that Everybody wouldn’t do it. The result was Everybody blamed Somebody, when Nobody did what Anybody could have done.

Questions

1. *Who are the main characters of the story?*
2. *What is the author trying to say by using indefinite pronouns in this way?*
3. *How would you summarize what happened in the story?*
4. *How does this story relate to your community?*
5. *Explain a situation or incident in your community, school or life that relates to the story.*
6. *What are some of the “important jobs” in a community or at school that people expect others to accomplish and then complain (or blame someone) if nobody does them?*
7. *Select one or more of the following examples of “important jobs to be done.” Read the story again with one of the following as the “important job.” (picking up litter in your community, cleaning up a polluted stream, removing unwanted trash from a public park, turning off lights when leaving a room, reducing traffic problems, saving an historic building from being demolished, protecting a local woodland, constructing a biking/hiking trail from your neighborhood to the shopping area or school, planting trees to shade a parking lot, constructing a corner playground or garden on an empty lot).*
8. *What is the moral of the story?*
9. *Who is responsible for making things happen in your community?*
10. *Why is it important to learn about your role in local government?*
11. *Explain the quote “Democracy only works when you participate.”*
12. *What are some actions you can take to improve your community?*

Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Environment and Ecology
- Civics and Government
- Geography
- Mathematics

Standard Statements

2.5 Mathematical Problem Solving

2.6 Statistics and Data Analysis

4.2 Renewable and Nonrenewable Resources

4.8 Humans and the Environment

5.1 Principles and Documents of Government

5.3 How Government Works

7.1 Basic Geographic Literacy

7.3 Human Characteristics of Places and Regions

Content Objectives

- Use measurement skills to compare and contrast aerial photographs of an area, evaluating factors that affect land resources
- Interpret and compare the effects of change in land uses over time and how development relates to the environment
- Organize a timeline of land use events and explain how they affected development over time
- Describe three events that historically encouraged Pennsylvania land use patterns
- Analyze population and settlement patterns and changes, determining the relationship between growth and resource changes by reading graphs and maps
- Discuss needs for land use planning in Pennsylvania

Instructional Strategies

- Analysis
- Compare and Contrast
- Discussion
- Lecture
- Listening
- Map Reading
- Graph Analysis
- Organizing
- Reading Research
- Small Group Work

Assessment Strategies

- Participation in discussions, and completion of tasks, worksheets and presentations

Materials

Included:

- Aerial Photographs
- Transparency Grid
- Aerial Photograph Worksheet
- Pennsylvania Maps
- Historical Timeline
- Historical Photos
- Historical Milestone Cards
- Digital Shaded-Relief Map
- PA Land Cover Map
- PA Geologic Map
- Physiographic Regions Cards and Photos
- PA Counties Map and Watershed Map
- Population Change in PA Worksheet
- Trends Worksheets
- Set of Maps and Charts for Each Trends Team

Additional Materials:

- Erasable Markers for Transparencies
- Rulers
- Mylar Sheets

Time

- 3.0 hours (One hour per each activity)

Look around you. Pennsylvania communities are changing. There are more cars, more malls, more roads and more people. There are also fewer farms, fewer children walking to school, fewer corner

The Changing Face of Pennsylvania

stores and less open space. Changes in lifestyles have created pressures on land use. The evolution of communities is influenced by many factors—population, economics, natural resources, culture and technology.

Planning for change that enhances community character provides a valuable road map to guide land use decisions.

Understanding the changes of the past is important for making sound decisions for the future. This lesson provides opportunities to compare and contrast changes over time and to analyze historical events that impacted land use patterns. It involves skill development in using mapping tools, charts, graphs and data to trace patterns of land use in Pennsylvania, to analyze trends and predict future change.

Overview

The Changing Face of Pennsylvania includes three activities:

Activity 1: *Learning from Aerial Photographs*

Activity 2: *Historic Timeline*

Activity 3: *Learning About Pennsylvania*

The activities involve skills in using maps, aerial photographs and data to help understand trends and changes. These tools are utilized to communicate graphic interpretation of information through a one-to-one correspondence between places, events and data—portraying them through a visual representation. Graphs, charts and tables of information on population, growth and land use help participants to visualize trends that impact communities, counties and the state.

Understanding the trends helps citizens in formulating future actions and decisions.

A series of aerial photographs taken at intervals of 10 or more years of the same location provides an account of changes in the landscape over time. Participants will observe and document the changes caused by growth and development. They can determine the percent of change in developed land and project the possible growth that will occur in the future. Introducing geographic information systems technology (GIS) enhances the activity.

By examining maps of Pennsylvania and of their communities, participants gain an understanding of features of physiographic regions such as geology, topography, land cover, etc. that influence growth and development patterns.

Students develop skills such as observation of a physical space, integrating observations into a unified whole, orienting a consistent viewpoint, scaling (ratio and proportion), using symbols, evaluating content and making predictions.

Activity 1

Activity 1:

Learning from Aerial Photographs

Summary: Participants review aerial maps taken over time to assess changes in growth and development.

Based on the aerial photographs, participants measure and determine how the changes affect natural and human resources.

Aerial photographs of state parks, schools and communities may be available through the Bureau of Topographic and Geologic Survey at www.dcnr.state.pa.us/topogeo. A set of aerial photographs of the city of Lancaster in Lancaster County is provided and may be used for this activity.

Questions: What tools are available to assess land changes and help us make sound land decisions? How does growth and development impact natural resources? Why is it important to protect natural resources and natural spaces? What factors influence the location of development? What can you predict about future growth patterns?

Preparation

- Copy and prepare aerial photograph sets of different years for each group (pp 31-36).
- Cover dates with a removable piece of paper prior to distribution.
- Prepare a transparency of the grid for each group (p 38).
- Prepare Aerial Photograph Worksheet (p 37).
- Provide each group with erasable markers, a map, and question sheet.

Optional: Land cover maps, geology maps and topographic maps could be distributed to each group and used to enhance the lesson.

Procedure

Aerial photographs, geologic maps and topographic maps are helpful tools used in making environmentally and economically sound land use and planning decisions. The first aerial balloon surveys conducted in 1858 introduced a dimension to mapping that provided a map-like view of terrain without cumbersome surveying.

As early as the 1930s, land use planners used aerial photography to assist in mapmaking. Specially equipped airplanes fly identical routes over several years. These photographs are compared over time and provide very useful information on land use trends.

1. *Divide participants into four or five teams.* Discuss the procedures for working in cooperative groups. Each team receives a set of aerial photographs, maps, grid and question sheet.
2. *Participants examine one aerial photo.* Determine the different colors (shades), figures, shapes and lines indicated on the map. Review the map features. How do you identify farmland, cities, trees, rivers, railroads, small roads, main roads, houses, cemeteries, airports, ball fields/tracks, quarries, parks and suburban housing developments?
3. *Ask participants to examine the photographs and place them in chronological order.* Assess their progress by asking each group to share clues they are using to determine the chronological order of the maps.
4. *When groups have completed their task, have them remove the paper covers over the dates and self assess their success.* Reorder their maps if needed.
5. *Compare the most current photo with a state or county map and determine the location of the aerial photograph based on the major highways.* View available maps and discuss why people settled in areas and why uses occurred where they did.
6. *Distribute an Aerial Photograph Worksheet to each group.* Place the grid transparency over the earliest or oldest aerial photograph (1947) aligning the grid with the southeastern corner of the photograph. Using wipeable markers, outline and color the built or “paved” areas where houses, roads or industries are located.
7. *How many squares are “built?”* How many squares are green space or open space? Compare the number of squares that are developed to the number of squares that are farms or open space. Determine percentages for agricultural lands, built/paved lands and natural lands based on the number of squares for each land use.
8. *Using the same transparency and a different color marker, select a map about 30 years later (1971) and repeat procedures as indicated in the previous paragraph.* Determine percentages of built lands, agricultural lands and natural lands.
9. *Select a map about 50 years later (1999) and repeat procedures with a different color.*
10. *Once land is developed, could it ever revert to natural lands or does it remain as developed land?* Discuss when that might happen.
11. *Compare and contrast the three or more aerial photos.* Grids can be projected on an overhead.
12. *Using a different color marker, outline areas where you predict development will occur in the next 10 years.* Explain your reasoning. Make three recommendations for the future of this community.

Assessment and Review

1. *How did the periods compare?*
2. *What changes occurred over the years?*
3. *Why did development occur in certain areas?*
4. *What services and infrastructure are associated with development? (Discuss roads, highways, housing developments, wastewater treatment plants.) What are some of the problems expanding communities create? Why did the changes occur in those locations?*
5. *What impact does development have on natural resources such as land for wildlife habitat, surface water resources, groundwater resources, stormwater, erosion and air?*
6. *What actions can be implemented to conserve natural resources?*
7. *Many land uses alter wildlife habitat. Discuss how changes in habitats can cause changes in wildlife. Some changes destroy habitats such as filling of wetlands. Some changes create new habitat for wildlife, such as the increase in bird species at backyard feeders or increase in deer in suburban edges. Explain.*

Discuss if participants are aware of changes in their own communities? If you could have planned before the changes occurred, what would you have done differently? What trends would you like to implement?

Activity 2: Historic Timeline

Summary: Participants will develop a historic timeline of events that influenced land use practices. They will discuss past and future trends.

Question: What are the policies, technology and events that have influenced development and other land use patterns historically and presently?

Activity 2

Preparation

- Prior to the activity, prepare the timeline (p 39) on overheads or a flip chart.
- Prepare historical photos (p 40).
- Prepare sets of Historical Milestone cards for each group (pp 41-46).
- Prepare copies of Historical Timeline Worksheet for each group (p 47).

Procedure

In the previous activity we determined that communities change over time. Historically, there are periods of land use development that have been created by political, societal and population changes.

Certain government policies encouraged growth patterns. Such policies as the GI Bill of 1944 provided tuition assistance and mortgage subsidies to returning servicemen after World War II enabling American families to leave the cities to establish life in the suburbs. Levittown in Bucks County is one example of such a community.

The Federal Highway Transportation Act of 1956 created the interstate highway system. Federal and state governments poured millions into new highways that encouraged the outward movement of residents and industries from the cities yet they failed to put substantial funds into public transportation. People needed cars for transportation.

In the 1960s, the federal government promoted funding for low income public housing projects in cities. “Urban renewal” projects did not help old neighborhoods in cities like Erie, Reading and Altoona. The housing projects were measured as “successful” in renewing the quality of life in the cities, but in retrospect, instead of solving the

urban crisis, many housing projects contributed to urban deterioration.

1. Divide participants into four or five teams and discuss the procedures for working in cooperative groups.

2. Each team receives a set of historical event cards.

Participants are to read the cards and place the cards in chronological order from past to present. Participants discuss the impact each event has on land use trends. (*Not all cards need to be given to each group.*)

3. Instructor displays the list of key events and milestones for historical land use. Participants assess and correct their card order as each event is reviewed.

4. Participants complete the Historic Timeline worksheet in a small group. Large group discussions review the worksheet and focus on how events impact changes in land use patterns and why.

Assessment and Review

What events, trends and technology will impact development in the future? What changes in land use are occurring in your neighborhood or community? Is there a new store, a greenway or a new park? Is there a new intersection, stop sign or traffic light? Is there a new development or is someone fixing an older home? What impact will these changes have on your community?

Activity 3:

Learning about Pennsylvania

Summary: This activity involves three parts. The first part participants explore information about Pennsylvania through a variety of maps to define physiographic regions and how the features of each region influenced early settlements and development patterns. The second part involves examining population trends

by county to assess the regional differences in community growth and development. In the third part, participants analyze data to determine population and land development trends. Such information provides a platform for predicting future trends.

Question: What are the characteristics of land forms and land cover in Pennsylvania? How do features in the physiographic regions influence community growth and development? How do population trends compare across Pennsylvania? What are some of the past and future trends of growth and development in Pennsylvania?

Preparation

- Participants are to work in groups. Discuss the process of working in groups. Have each group assign a leader, recorder, timekeeper, and presenter.
- Copy and prepare sets of the following and place them at each work station to be used by participants working in groups:
 - Sets of Physiographic Region Cards and Photos (pp 48-49)
 - PA Digital Shaded-relief Map (p 50)
 - PA Geologic Shaded-relief Map (p 51)
 - PA Land-cover Map (p 52)
 - PA Watershed Map (pp 53)
 - Map of Counties (pp 54)
 - Map of Municipalities (pp 55)
 - Large mylar sheet with erasable markers (optional)
 - Post-it notes
 - Standard rulers for each team
 - *Optional:* small toy vehicles
- Prepare copies of the Percent in Population Change Worksheet (p 56) for each team.

- Prepare copies of the Change in Population by County (2000–2002) pages (pp 57–58). For the most current information visit www.pasdc.hbg.psu.edu/.
- Prepare five different sets of graphs and charts along with the appropriate worksheet (pp 59–68). Each team will be given a different set of information. During the lesson each team will be asked to analyze the information and present a summary of their findings to the group.

Procedure

Part 1: Learning from Maps

The first part involves participants in exploring information about Pennsylvania through a variety of maps. Participants will define physiographic regions and how the features of each region influenced early settlements and current development patterns. Maps are provided. Additional maps and information are available from the Department of Conservation and Natural Resources, Topographic and Geologic Survey at www.dcnr.state.pa.us/topogeo.

Mountain ridges, plateaus, ravines, rivers, bogs, and farmland are all components of Pennsylvania’s landscape. Landscape features can be organized and separated by land or water associations within the state. Geology and topography dictate how the landscape is classified into regions or provinces, such as the Ridge and Valley Province.

Natural resources and natural features of Pennsylvania provide the stage for building communities and development patterns in Pennsylvania. For communities to make wise decisions, it is imperative to understand the connection between people and physiographic regions. To understand the diversity of past settlements and future patterns of development, it is important to examine the features of the six distinct physiographic provinces located in Pennsylvania. Starting from the

southeast corner to the northwest corner, they are: the Atlantic Coastal Plain Province, the Piedmont Province, the New England Province, the Ridge and Valley Province, the Appalachian Plateau Province and the Central Lowlands Province.

Physiographic regions are a way to define the Earth’s landforms into distinct areas based on geology and topography in a three-tiered approach of divisions, provinces and sections, first defined in the early 1900s. The basis of each region is its geology which in turn, influences the physical land forms. Other influences include water, climate, vegetation and other non-geological criteria. Each province has its own economic advantages and geologic hazards which play an important role in shaping everyday life in Pennsylvania.

1. Begin an exploration of Pennsylvania by examining the shaded relief map. The first activity is for participants to determine the size of Pennsylvania. Using a ruler and the map scale, participants determine the size and dimensions of Pennsylvania.

Pennsylvania is rectangular in shape. It is about 309 miles long and about 174 miles wide. It consists of 29 million acres of land or about 44,982 square miles. It ranks 33rd in size compared to the other states. It is 1/12 the size of Alaska and 1/6 the size of Texas.

2. Examine the digital shaded relief map and discuss the land features.

Discuss the following questions:

- 1. Why is it called a relief map? What does it tell us? How do you use the key?*
- 2. Where are the flat lands, ridges, mountains, rivers?*
- 3. Where are the highest areas? Where are the lowest areas?*
- 4. What are the most common features in Pennsylvania?*

5. How would you group the features so that you have five to seven defined areas?

6. Write a description of Pennsylvania land features for an advertisement.

Have participants visualize the “textures” of the relief map by taking an imaginary journey across the state using their hands (or toy vehicle). Moving from the southeast to the northwest corner, participants dramatize the following paragraph as it is read out loud.

“Begin at the Delaware River in the Atlantic Coastal Plain at Philadelphia and rise to the gently rolling hills of the Piedmont Province with its rich, fertile soils. There is a little bump over the small sections of the New England province or the northern tip of the Blue Ridge. Follow the roller-coaster Ridge and Valley Province as we cross the Susquehanna River and ascend to the high rocky Appalachian Plateau rising in the western and northern portions of the state, traveling through the Ohio River drainage basin. The journey ends at the shores of Lake Erie at the Central Lowlands Province”.

3. Review the information by providing teams with a set of descriptions of the physiographic provinces and corresponding photos. Each team is to place the corresponding cards in the appropriate regions. Each team is to discuss the features of each province and how the features would influence settlement patterns. An optional activity would be to place a mylar sheet over the map and draw an outline of each region. Check the information by examining a map of the physiographic regions.

4. Discuss how the geology, water resources and physical features of land influence how Pennsylvania developed. Using Post-it notes or mylar sheets, identify the locations of three early settlements. Where were early settlements located and what role did land features have in the development of early settlements?

Discuss how the different features encourage certain activities. Flat land and rolling hills are used for farming in turn may become prime locations for industry and development. Ridges and areas of high elevation are forested and thus used for lumbering. Valleys with rich soils are used for farming, highways, industry and development. Rivers and the land next to rivers provided transportation routes and influenced industrial development because of water power and transportation. Areas with geologic value are mined and require transportation routes which historically started with rivers, to canals, to rails and highways.

5. *Geology: Determine the types of geologic resources located in the different regions by examining the geologic map.*

Discuss how geology is important to the development of the regions. Rocks and minerals with economic value include anthracite coal, bituminous coal, limestone, Marcellus shale, slate, oil and unconsolidated rock. If possible, examine samples of the actual geologic resources and place them on the map to signify where they are located. Discuss how these resources are important to Pennsylvania. What communities developed because of a geologic resource? How did these resources influence other community development?

6. *Water: Water resources in Pennsylvania are classified into eight distinct river drainage basins and 9,855 different watersheds across the state (Myers et al. 2000).*

Watersheds and drainage basins are defined by the direction of water flow from land into streams and then into rivers or other bodies of water. Ridges define the boundaries of watersheds.

The Stroud Water Research Center defines watersheds on their website: “The area of land that drains into streams, lakes, estuaries or other bodies of water are known as watersheds. They are also known as drainage basins or catchments. As precipitation falls to the ground, the water is

pulled downhill by gravity, which causes it to flow over the landscape or infiltrate through the soil into the groundwater. Topography—the hills, valleys, and other features that define the landscape—determine the boundaries of watersheds.” www.stroudcenter.org

There are six major drainage basins to identify on the watershed map. Elk and Gunpowder watersheds occupy a small area of southern Pennsylvania and are not included in the following list. Examine the watershed map. Using Post-it notes, label the major drainage basins on the shaded digital-relief map. Determine the watershed in which your community is located.

- Delaware River Drainage Basin
- Susquehanna River Drainage Basin (Chesapeake Bay)
- Ohio River Drainage Basin
- Potomac River Drainage Basin
- Great Lakes Drainage Basin (Lake Erie)
- Great Lakes Drainage Basin (Genesee River)

Pennsylvania has more than 83,000 miles of streams and rivers. Historically, rivers have been a primary influence on growth patterns in Pennsylvania. Make a list of all the uses of rivers historically and presently: drinking water, waste treatment, irrigation, transportation of goods and people, water power for mills and steam, water power to generate electricity, industrial uses, aesthetics, recreation (swimming, boating, etc.), food (fishing, gathering, hunting), water for livestock, etc.

How did rivers help shape the growth of communities in Pennsylvania? What impact did historic communities have on water quality and water quantity? What impacts do communities make on water resources today? How do they compare? What do you project will happen in the future as communities grow and more demands are placed on water resources?

Activity 3

7. Landcover: What covers Pennsylvania? Analyze the Land Cover Map of Pennsylvania. Discuss the information provided by the map. This is an important tool to analyze land use based on assigning colors to various types of vegetation and development. The vegetation and built environment are divided into 15 classes which fall into one of five categories: Developed, Forested Upland, Herbaceous Planted/Cultivated, Barren, Water and Wetlands. How much of Pennsylvania is forested (60 percent)? Discuss the amount of Pennsylvania that is agriculture (about 30 percent). What type of land cover is in your county? Where is developed land concentrated? What does that indicate? What do you predict this map will look like in 10 years? 20 Years? 100 years?

8. Based on the maps studied, select your favorite place to live and your favorite place to visit? Discuss your selection. How do they differ and why?

What are some of the advantages and disadvantages in living in certain regions? What characteristics of land and water would you need to consider in making choices? Discuss some physical characteristics to consider before selecting a place to buy a home: water supply, steep slopes, flood zones, stormwater runoff, landslides, road construction, sewage and waste disposal, etc.

Part 2: Studying County Population Trends

1. Do you describe Pennsylvania as urban or rural? How would you define each? What characteristics are associated with rural and urban? There are 67 counties in Pennsylvania, 48 of which are considered rural and 19 considered urban by the calculations developed by the Center for Rural Pennsylvania.

In 2003, the Center for Rural Pennsylvania (www.ruralpa.org) adopted a definition of rural and urban based on population density by dividing the total

population by the total number of square land miles. In 2000, the population density of Pennsylvania was 274 persons per square mile. By using this method of computation, a county or school is considered rural when the number of persons per square mile is less than 274. If the calculation is more than 274 persons per square mile, then it is considered urban.

2. *County population trends are changing.* In 2000, there were 12.2 million people in Pennsylvania. The population of Pennsylvania has maintained a steady population for the past 10 years. However, some counties are experiencing a tremendous growth in population while others are losing population. Some county populations remain stable. Why do you think there is a difference in the population trends of different counties?

3. *Which counties do you predict are growing?* Which counties do you predict are declining? Provide a county map to each team. Ask participants to select three counties they predict are growing and mark them with a “+”. Predict which 3 counties are declining in population and mark them with a “-”. Have participants discuss and share their reasons.

4. *Review the County Population Estimates and the Population Change Worksheet.* Check the information on the counties you selected to determine if your response was correct. By reviewing the chart, have participants list the top eight counties that have increased in population. List the top eight counties that have decreased in population. List counties which remained the same.

5. *Using the map of the counties, color the map with the following color key:*

- Red for counties that have increased in population.
- Blue for counties that have decreased in population.
- Yellow for counties that have remained the same.

6. *Discuss the reasons that county populations are changing.* What pressures are causing population growth and decline? How does that impact the communities? What are some of the problems communities face when populations increase? What are some of the problems communities face when population decreases? How do the trends impact natural resources? What are some strategies that might help declining communities? What are some strategies that will help communities deal with tremendous growth?

7. *Have participants access the U.S. Census Bureau web site at www.census.gov.* Select Pennsylvania. This web site provides accurate and recent data on census information. The foundation of our American democracy is dependent on fair and equitable representation in Congress. In order to achieve accurate assessment of the numbers and location of the people, the U.S. Constitution mandates a census of the population every 10 years. The census population totals determine which states gain or lose representation in Congress. It determines the amount of state and federal funding.

The goal of the 2010 census is to count everyone only once and in the right place. Facts gathered help shape discussions for the rest of the decade about public health, neighborhood improvements, transportation, education, senior services and much more.

In 1790, the first census was taken by U.S. marshals on horseback. They counted 3.9 million people living in the United States. Census 2000 counted more than 281 million people. It is estimated that by 2010 there will be 310 million people living in the United States. Discuss how population growth will impact the communities in the United States. What ways can Pennsylvania plan for projected population changes?

Part 3: Determining trends and patterns

Graphs and maps are located in the Annual Report on Land Use and are used with permission from the Governor's Center for Local Government Services (www.newpa.com).

1. Charts and graphs summarize data, providing a “snapshot” of information that will help visualize changes that have taken place over the past several decades. With this information, you can determine the planning goals and objectives for the future of Pennsylvania. Participants will compare and contrast data presented in the graphs and maps. Participants will answer questions to determine trends in Pennsylvania. They will apply their knowledge in making land use decisions for the future of Pennsylvania.

2. Interpreting data and using information to make decisions is an important skill. Divide participants into five teams. Each team will examine data graphs and maps about their topic, read information and answer questions. Each team will present the information to the class.

- Team One: Population Growth
- Team Two: Land Development
- Team Three: Land Cover and Agricultural Lands
- Team Four: Wetlands, Forests and Parks
- Team Five: Vehicles, Road Miles and Public Transportation

3. Provide 15 minutes for participants to answer the questions. Have each team summarize what they found out about trends in Pennsylvania land use and population.

4. What projections can you make for the future? Based on the research, what trends are positive trends for

Pennsylvania? Discuss your reasons. What land uses do you want to change? How could planning protect the quality of living in Pennsylvania for the future?

Information: During the 1990s, Pennsylvania was the third-slowest growing state in the country. It grew by just 3.4 percent or 400,000 residents.

The population of 12.3 million has grown by just 0.44 percent between 2000 and 2002. This was an improvement from the 1970s and 80s when population was declining.

The startling fact is that even though the state population is barely growing, it has developed land at such a rate that it is the sixth largest “consumer” of land in the country, consuming more farmland and natural space per added resident than every state but Wyoming.

Between 1982 and 1997, Pennsylvania developed some 1.14 million acres of fields, open space and natural land. According to the Brookings Institution's *Urban and Metropolitan Policy, Back to Prosperity*, “...over those 15 years, the state consumed land at a rate equivalent to 209 acres a day, or nine acres an hour, every hour” This took place at a time when the population grew just 2.5 percent.

Pennsylvania's economy is declining. There is a hope that increased development will help the economy. At the same time, it is important to understand the importance of planning and guiding growth while protecting valuable natural resources and creating valuable and appealing places to live. Every citizen should become educated on how land choices are made and understand the consequences of land use decisions. Every citizen should become involved in shaping the future of their community. Land decisions

today will become part of history tomorrow. Planning for the future will help determine a direction for your community and for Pennsylvania.

Assessment and Review

1. *What tools are used to assess land and community changes?*
2. *Predict the land use trends and patterns in 10 and 25 years. What changes could occur? What will the consequences and impacts be to the environment and to wildlife?*

Extension

Geospatial Information System (GIS) is an information technology that allows management of spatial information. It is a toolbox for collecting, storing and retrieving data, and transforming the information onto maps. Counties use GIS extensively to generate reports. It is important for students and other participants to become familiar with this technology. Review the Resources section of this book for additional aerial photos and data resources.

We must not *only protect the countryside and save it from destruction, we must restore what has been destroyed and salvage the beauty and charm of our cities...Once our natural splendor is destroyed, it can never be recaptured. And once man can no longer walk with beauty or wonder at nature, his spirit will wither and his sustenance be wasted.*

Lyndon B. Johnson (Former U.S. President)

Activity 1: *1947 Aerial Map*



1947

Activity 1: *1957 Aerial Map*



1957

Activity 1: 1964 Aerial Map



1964

Activity 1: *1988 Aerial Map*



1988

Activity 1: *1992 Aerial Map*



1992

Activity 1: *1999 Aerial Map*



1999

Activity 1: Aerial Photograph Worksheet

Names of Group Members _____

1. Place the grid transparency over the oldest photograph. Using a wipeable marker, outline the areas that are built or paved.

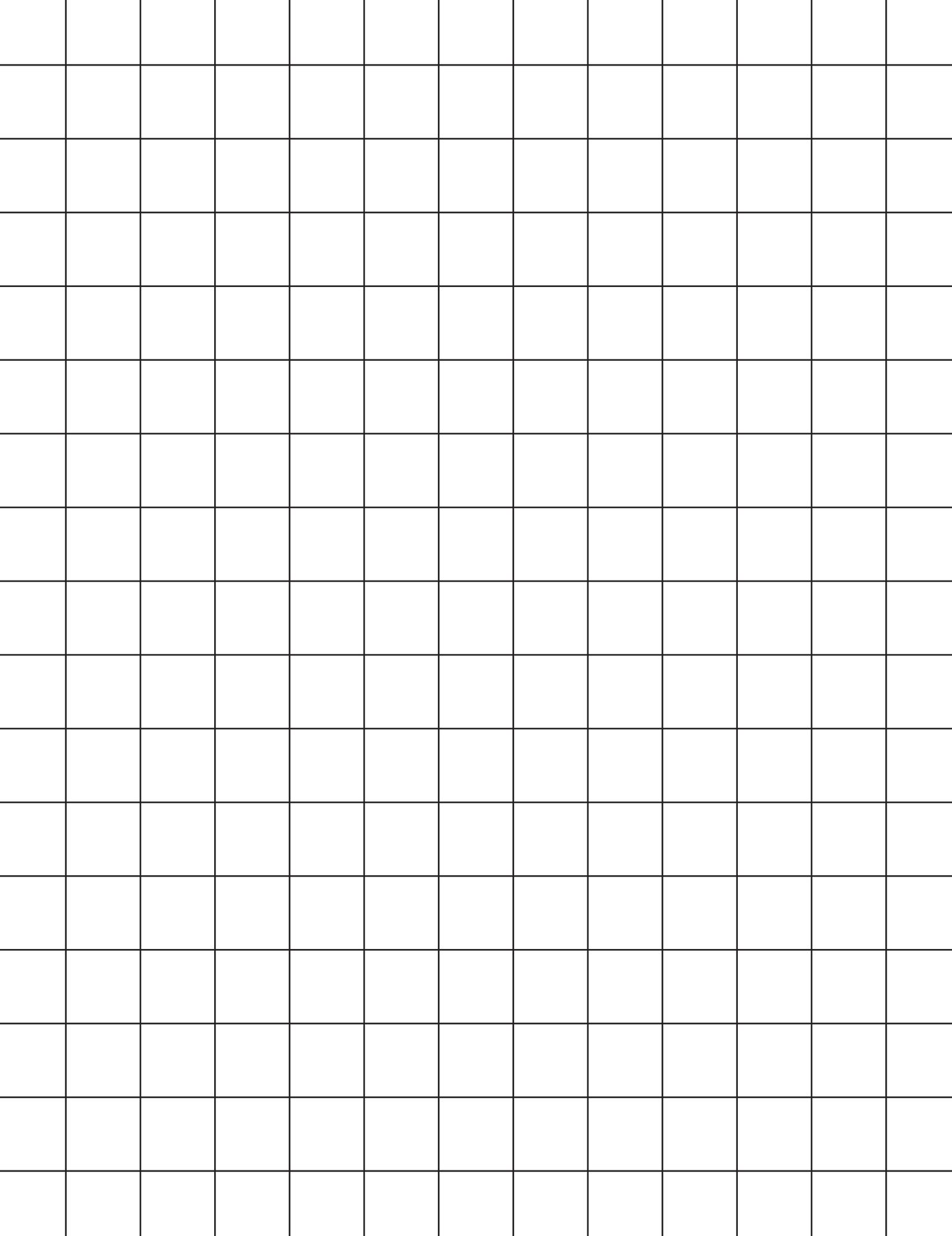
2. Select two different maps. Place the transparency over the next map. Using a different color marker for each map, outline the increase in the developed area for two other photos using the same transparency. Calculate the percent change of developed land from different periods.

3. Using a different color, project where development will occur in 10 years and 25 years. Add or label what might be added to the maps, such as an airport, mall, schools, etc. Where could housing be developed?

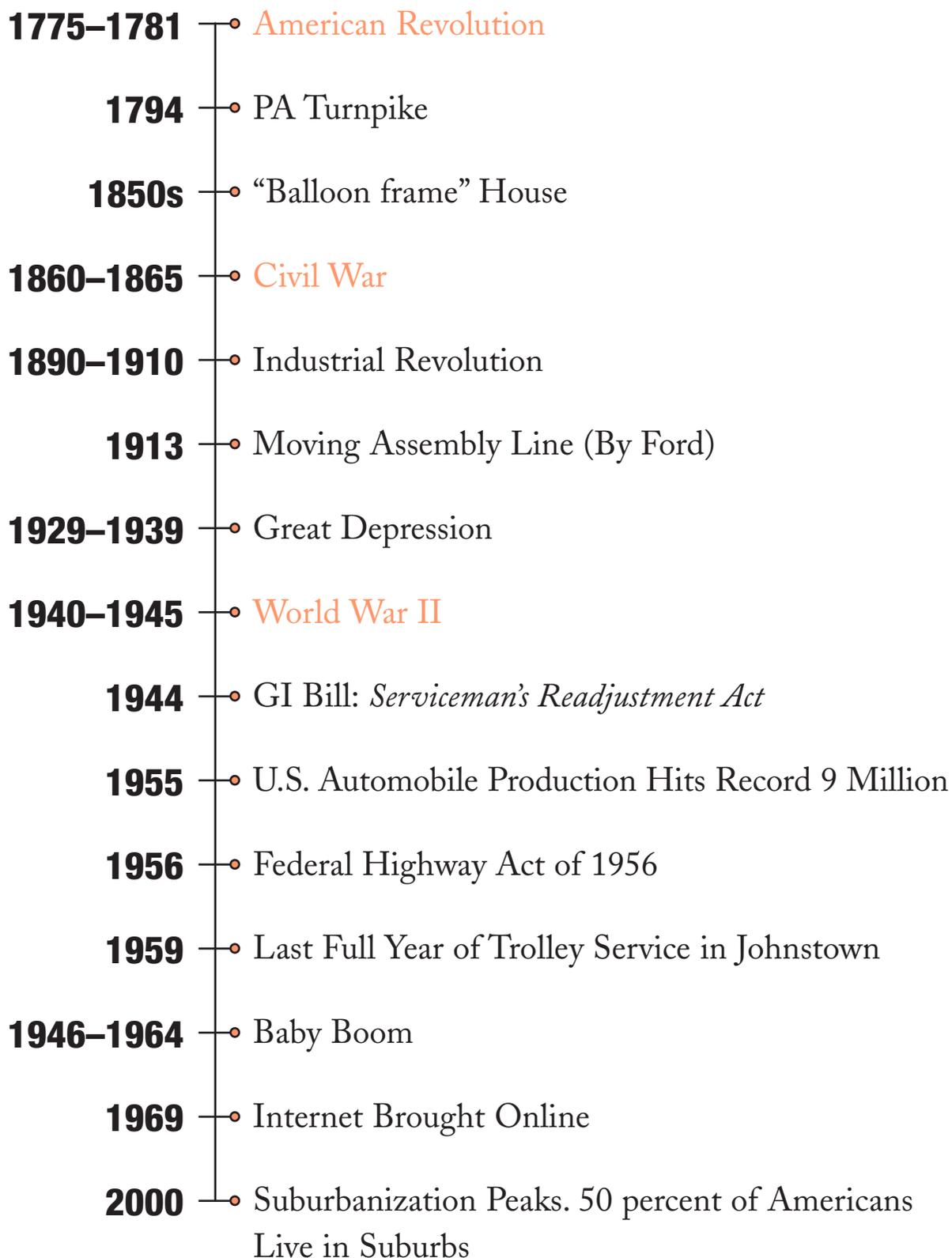
Year	Change in number of built or paved squares	Percent of built or paved change

Questions

1. *Where did growth occur? Why?*
2. *What type of growth occurred?*
3. *How did the periods compare?*
4. *When did the most change occur?*
5. *Why did development occur in certain areas?*
6. *What services and infrastructure are associated with development?*
7. *Why did the changes occur in certain locations?*
8. *What changes in technology encouraged development in these areas?*
9. *What impact does development have on natural resources such as land for wildlife habitat, surface water resources, groundwater resources and air?*
10. *If you could have planned the changes, what would you have done differently?*
11. *What changes or trends would you like to see in the future?*



Activity 2: *Timeline of Key Events and Milestones for Historical Land Use*



Activity 2: *Historic Photos*

Cut into cards and scramble the photos below. Have participants place the cards in chronological order. Discuss the relevance of the photo to historic changes impacting land use.



Activity 2: *Milestone Cards - Page 1 (1/6)*

Copy both sides of the following pages, and cut along the dotted lines. Have participants place events and milestones in chronological order.

<p>Native Americans Live in Cluster Villages</p>	<p>Private Turnpike Begins</p>
<p>French and Indian War</p>	<p>Steam Ferry Service</p>
<p>William Penn's Charter of Rights</p>	<p>Steam Railroad</p>
<p>Revolutionary War</p>	<p>Building and Loan Associations</p>
<p>Steamboat Invented</p>	<p>Shay Locomotive Invented</p>

<p>Private turnpikes provide good roads for personal wagons or vehicles to travel short or long distances.</p>	<p>Native Americans live in small villages scattered throughout Pennsylvania's woodlands and along river and lakeshores.</p>
<p>Steam ferries allow horse and buggies to cross bodies of water easily.</p>	<p>It is part of the "Great War for Empire" between the British and French. Both sides see the importance of Western PA for future trade and expansion.</p>
<p>Steam railroads change the rate and quantity of moving of goods and people by land.</p>	<p>William Penn's Charter of Rights gives the elected assembly the power to initiate bills instead of just approving or rejecting them.</p>
<p>Building and Loan Associations provide the first long term loans for real estate.</p>	<p>The war achieves independence from Great Britain and the new government gives the power to the people.</p>
<p>New engines allow for the cutting of trees on steep slopes.</p>	<p>Steamboats increase ability to move goods and people over rivers and bodies of water.</p>

Activity 2: *Milestone Cards - Page 3 (3/6)*

Balloon Frame Housing	Automobile Produced in the United States
Horse Railway	Moving Assembly Line
Civil War	Federal Road Act of 1916
Industrial Revolution	World War I
Agricultural Depression	Buses Replace Trolleys

<p>The first car is built in America.</p>	<p>New way of building frame houses which is much easier and cheaper to build.</p>
<p>The assembly line makes cars much more affordable.</p>	<p>Horses pull passenger cars in city areas.</p>
<p>Improved funding for roads.</p>	<p>The war between the states sends most males to fight in battle.</p>
<p>The first World War creates a need to build more roads to move goods and services.</p>	<p>The beginning of the period of great growth and industry. Coal, coke and steel make Pennsylvania the heart of the industrial revolution.</p>
<p>Buses become a popular mode of transport as they didn't require a rail.</p>	<p>Prices for food continue to decrease. Cost of farmland is inexpensive.</p>

Activity 2: *Milestone Cards - Page 5 (5/6)*

Federal Housing Administration Created	Railroad Declines
GI Bill	Age of Subdivisions
Trucks Become Popular	Interstate Highway Act
Baby Boom Begins	Company Towns Develop

<p>Trucks begin to replace the railroad</p>	<p>Federal Housing Administration provides loans and reasonable housing for middle to low income families.</p>
<p>Rural areas adjacent to cities begin to develop into suburbs</p>	<p>Enlisted men are provided with money which is used to build new housing.</p>
<p>Highway Act continues to expand interstate highways.</p>	<p>Trucks are more affordable and better roads are developed for hauling goods.</p>
<p>Towns develop around mines and mills. Workers can walk to work and buy all they need at the company store.</p>	<p>Many GIs return from war to start families and need homes to live in.</p>

Activity 2: *Historic Timeline Worksheet*

Team Members _____

1. Describe how three historical events that have occurred in Pennsylvania over the past 100 years changed land use.

1. _____

2. _____

3. _____

2. Describe how three inventions changed Pennsylvania land use and why.

1. _____

2. _____

3. _____

3. List two reasons why people moved out of the city.

1. _____

2. _____

4. What changes in land use are occurring in your neighborhood or community? Is there a new store, a greenway, a bike path or a new park? Is there a new intersection, stop sign or traffic light? Is there a new development or is someone fixing an older home?

5. What do you feel about the changes you see? What do you like and dislike about the changes?

6. What ideas would help your community protect natural habitats and the environment?

Activity 3: Physiographic Region Cards and Photos – Page 1 (1/2)

Cut the cards and photos, scramble them. Participants are to place cards and photos in the appropriate regions of the maps.

The Central Lowlands Province in Pennsylvania is a small section of low relief ridges parallel to Lake Erie. It exists along a glacial escapement adjacent to the lake. Local relief is quite flat, in most places less than 50 feet. Elevation at Lake Erie is 570 feet and rises southward to about 1,000 feet. Presque Isle State Park and Erie Bluffs are outstanding scenic geological features in this section.

The Atlantic Coastal Plain Province is a narrow, flat strip of land with elevations less than 200 feet adjacent to the Delaware River in the easternmost corner of Pennsylvania. It consists of bedrock buried under sand and gravel deposits. Many small tributaries have cut small gorges into the bedrock. It was once home to thousands of acres of fresh water tidal marsh, much of which was filled for industrial and residential development. Philadelphia is located in this province. The area is prone to floods. Neshaminy State Park is located here.

The New England Province has fragmented parts that extend into eastern Pennsylvania as the southern end of the Hudson Highlands from New York and New Jersey. The hills and ridges north and east of Reading are called the Reading Prong and consist of ridges of gneiss and quartzite which project above the softer sedimentary rocks. It occupies sections of Lebanon, Berks, Lehigh and Northampton Counties.

The Piedmont Province located northwest of the Coastal Plain is dominated by gently rolling hills and valleys. It has some of the best farmland in the state (Lancaster and Chester Counties) and some of the most fertile soils in eastern United States. The upland areas contain some of the oldest exposed rocks (Baltimore Gneiss). The lowlands contain limestone, sandstone, shale and a resistant diabase which is best seen at the Gettysburg battlefield. The famous fall line defines the Piedmont from the Coastal Plain. Some of the state parks in this section include Codorus, Marsh Creek and Ridley Creek.

The Appalachian Plateaus Province is the largest province in the state extending from the northeast corner to the entire western part of the state. Most of the rocks are not folded and faulted but remain relatively flat. There are a variety of sections each with their own characteristics. In western Pennsylvania, large bituminous coal fields exist. In glaciated sections, steep canyons developed and erosion created steep gorges. Ricketts Glen State Park contains examples of the escarpment that divides the high plateau. The Grand Canyon of Pennsylvania is in an isolated northern area of deep gorges, some at least 1000 feet deep. The Allegheny Front section includes Blue Knob (3,146 feet) that is an unusual bulge along the ridgeline. The Allegheny Mountain section contains Pennsylvania's highest point, Mount Davis (3,213 feet) near the Maryland border. The Pocono Mountain section is a glaciated part of this province and contains the sedimentary rocks such as sandstones. With elevations from 1,200 feet to 2,300 feet, this section has a few steep hills such as Camelback Mountain. Lackawanna and Promised Land are state parks located here.

The Ridge and Valley Province provides a roller-coaster ride of valleys and steep ridges. It is the second largest province in the state. The rocks are severely folded and contain numerous anticlines and synclines that plunge and fold due to continent collision. The Great Valley is known by three parts: the Lehigh Valley, the Lebanon Valley and Cumberland Valley. It is characterized by valuable carbonate rocks such as limestones and dolostones which are used for cement and fertilizers. The limestone areas are subject to cave-ins due to sinkholes. Blue Mountain, also known as the Kittatinny Ridge contain many water gaps such as the Delaware Water Gap and wind gaps. The anthracite coal fields are located in the northeastern section of the province. Landslides and acid mine drainage are some of the hazards here. Numerous state parks are located here including Beltzville, Greenwood Furnace, Lehigh Gorge, Jacobsburg, and Kings Gap—to name a few. (The northern tip of the Blue Ridge is included in this section but it was grouped as part of a separate province, creating a seventh province in Pennsylvania).

Activity 3: *Physiographic Region Cards and Photos - Page 2 (2/2)*

Cut the cards and photos, scramble them. Participants are to place cards and photos in the appropriate regions of the maps.

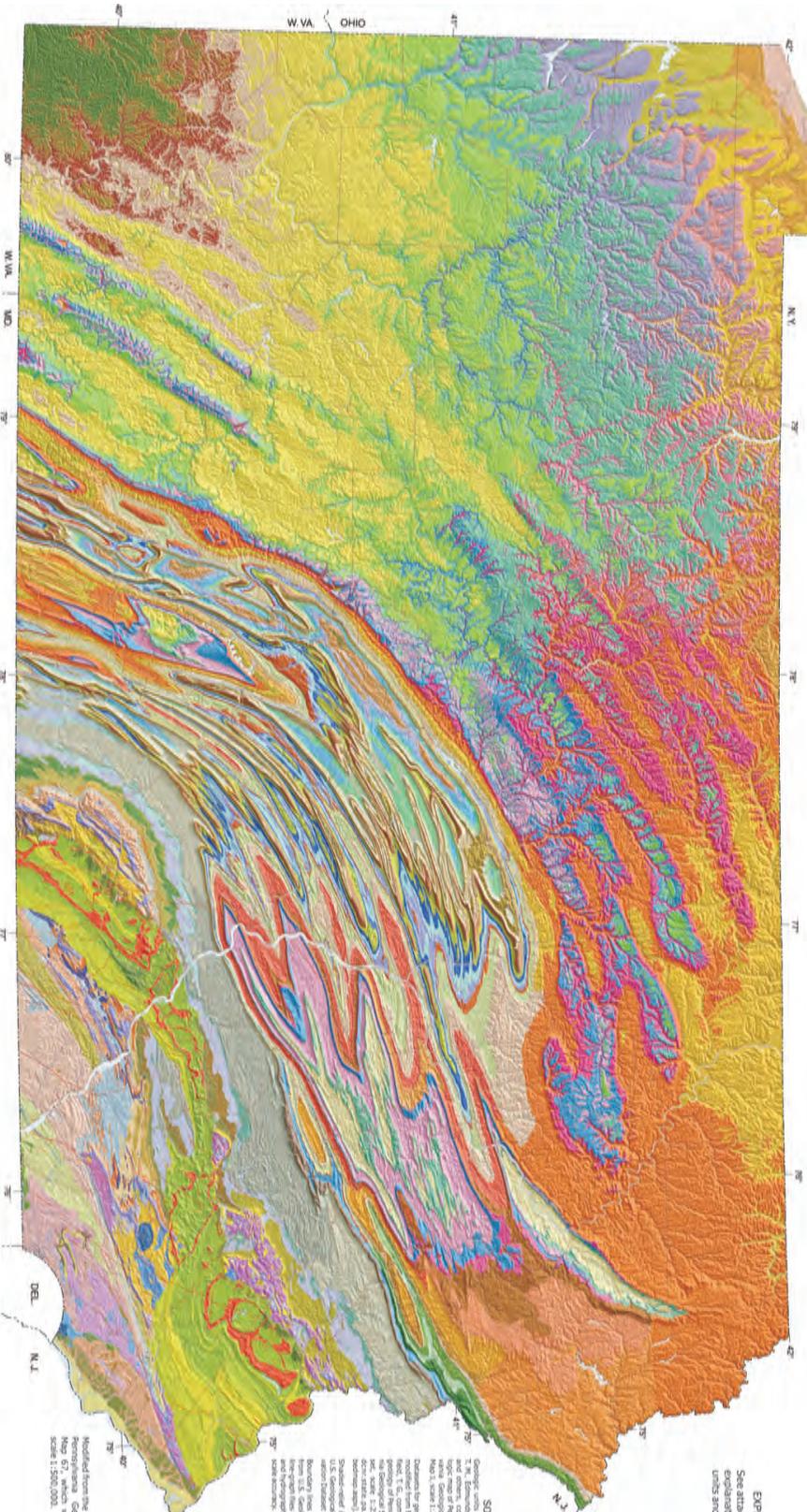


Activity 3: Geologic Shaded-relief Map



GEOLOGIC SHADED-RELIEF MAP OF PENNSYLVANIA

COMPILED BY
CHRISTINE E. MILLES
2003



EXPLANATION
See attached sheets for explanation of geologic units and symbols.

SOURCES
Geological units and topographic data were derived from the following sources:
- National Elevation Dataset (NED) for Pennsylvania, a product of the U.S. Geological Survey that provides regional elevation data for points spaced about every 30 meters, and the dataset for bedrock geology, a product of the U.S. Geological Survey.
- Pennsylvania Department of Environmental Protection (PA DEP) Geologic Map of Pennsylvania (1980 state geologic map). The elevation data were used to generate the shaded-relief maps, which gives the map its three-dimensional appearance. The geologic units were generalized, and the colors of the units were made transparent by digital procedures so that they appear to be "draped" over the relief. The geologic shaded-relief map may be admired simply for its striking combination of colors and bedrock patterns, but users may also see in the map a new perspective on the regional distribution of geologic units and the regional tectonics of the state.

Modified from the original edition of Map 61, which was published at scale 1:500,000.

Full-size map located in back pocket.

Activity 3: Land-cover Map

MAP 66
TUMULOUS EDITION



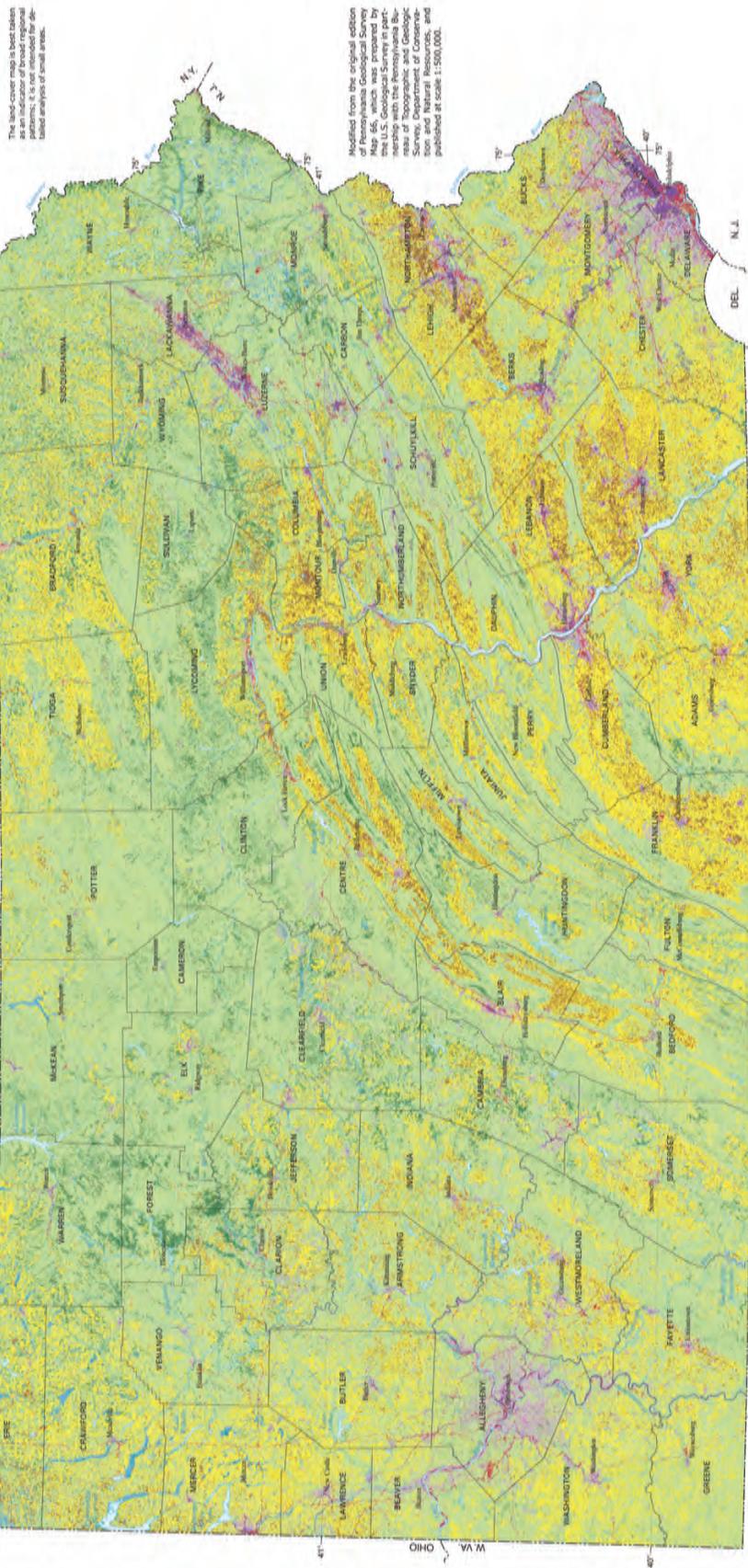
BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

LAND-COVER MAP OF PENNSYLVANIA



DEVELOPED	HERBACEOUS PLANTED/CULTIVATED	BARREN	WATER AND WETLANDS
Low Intensity Residential 3,002 sq km 2.5%	Deciduous Forest 68,969 sq km 51.5%	Bare Rock/Sand/Clay 2 sq km 0.0%	Open Water 2,193 sq km 1.6%
High Intensity Residential 458 sq km 0.3%	Evergreen Forest 5,237 sq km 4.5%	Quarries/Strip Mines/Gravel Pits 394 sq km 0.3%	Woody Wetlands 779 sq km 0.6%
Commercial/Industrial/Transportation 1,317 sq km 1.2%	Mead Forest 9,236 sq km 7.2%	Transitional 267 sq km 0.2%	Emergent Herbaceous Wetlands 273 sq km 0.2%

Total area of Pennsylvania is 117,432 square kilometers.



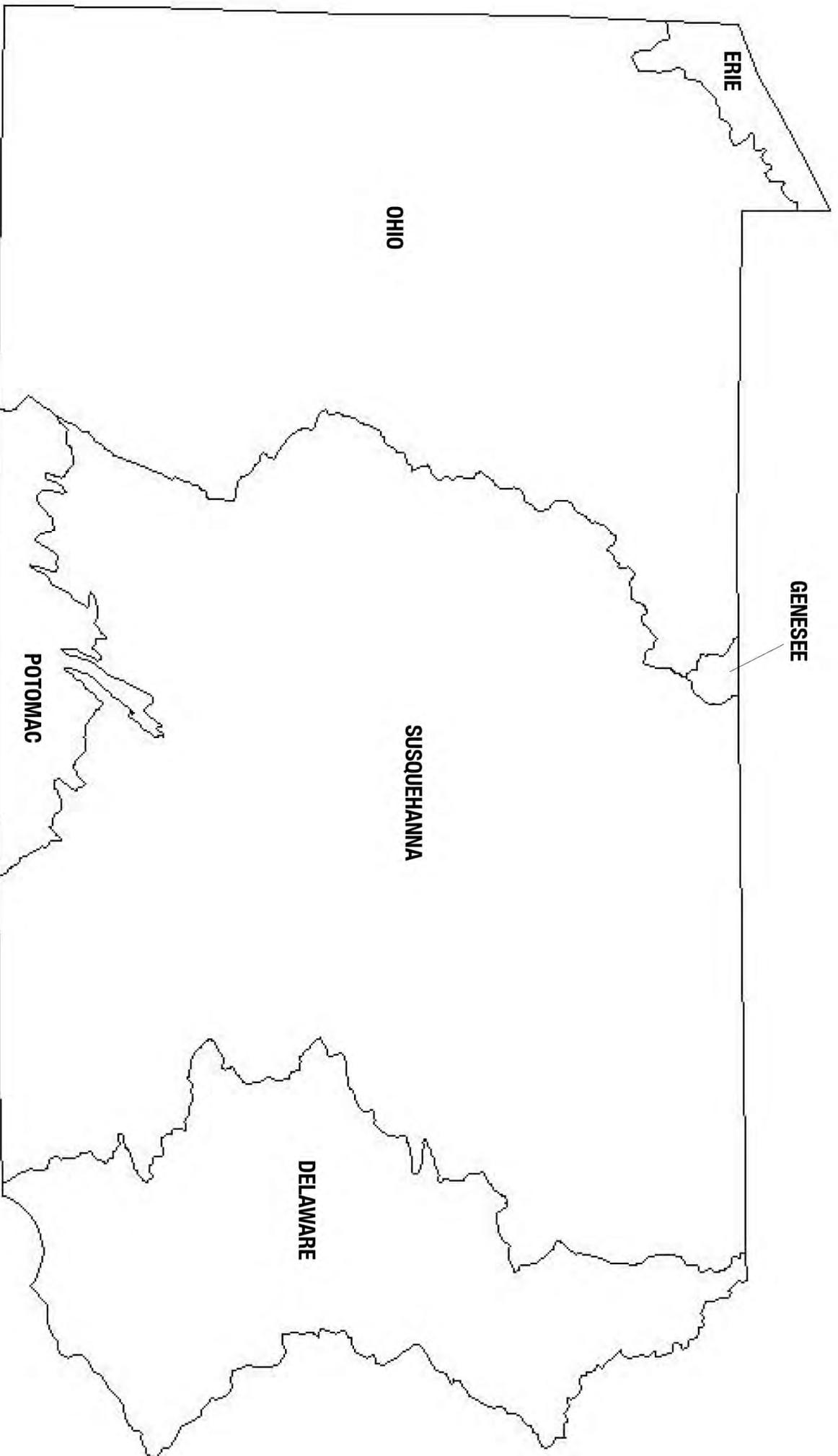
The land-cover map is best taken as an indicator of broad regional patterns. It is not intended for detailed analysis of small areas.

Modified from the original edition of Pennsylvania Geological Survey Map 66, which was prepared by the U.S. Geological Survey in partnership with the Pennsylvania Geological Survey, Department of Conservation and Natural Resources, and published at scale 1:500,000.

The land cover shown on this map was produced from the 1992 National Land Cover Data (NLCD) using the National Wetlands Inventory data and the National Wetlands Inventory data. The NLCD may be used for a variety of regional applications, including watershed management, environmental inventories, transportation modeling, fire risk assessment, and land management. For more information on the NLCD, see <http://landcover.usgs.gov/natlcover.php>.

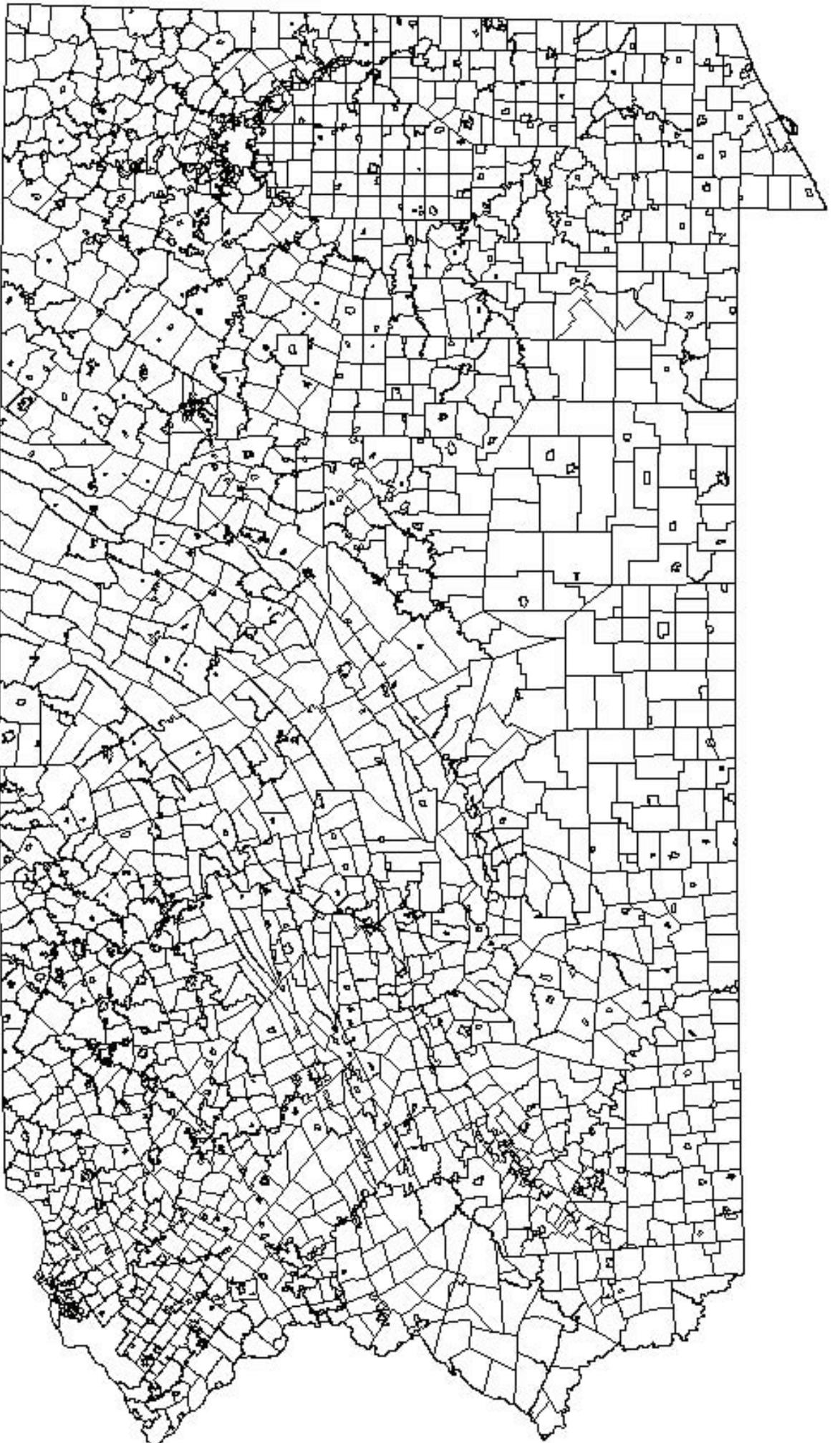


Full-size map located in back pocket.



Pennsylvania Watershed Map

Municipalities of Pennsylvania



Activity 3: Percent of Population Change Worksheet

Team Members _____

How many counties are in Pennsylvania? _____

Top Eight Population Increase

County	Percent	Features
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____

Top Eight Population Decrease

County	Percent	Features
1. _____	_____	_____
2. _____	_____	_____
3. _____	_____	_____
4. _____	_____	_____
5. _____	_____	_____
6. _____	_____	_____
7. _____	_____	_____
8. _____	_____	_____

No Change in Population

County	Features
1. _____	_____
2. _____	_____
3. _____	_____
4. _____	_____

Activity 3: Change in Population 2000-2002 - Page 1 (1/2)

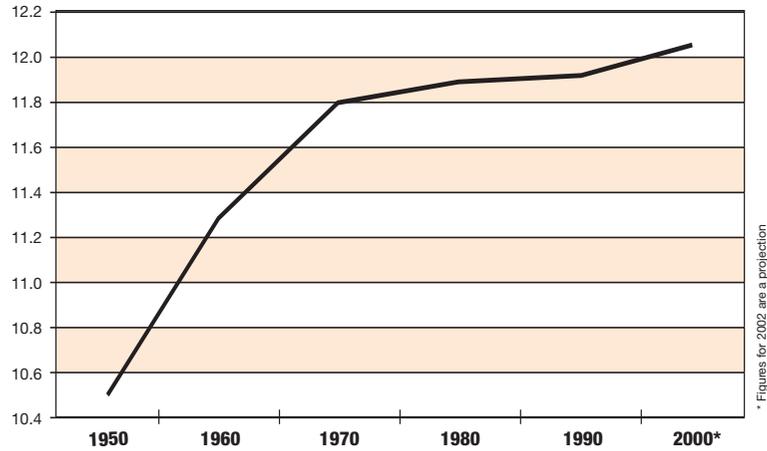
County	Population 7/1/2002 <i>(Estimated)</i>	Population 4/1/2000	Change
Adams	94,437	91,292	+3,145
Allegheny	1,269,904	1,281,666	-11,762
Armstrong	71,673	72,392	-719
Beaver	179,351	181,412	-2,061
Bedford	49,944	49,984	-40
Berks	382,108	373,638	+8,470
Blair	127,840	129,144	-1,304
Bradford	62,810	62,761	+49
Bucks	610,440	597,632	+12,808
Butler	178,078	174,083	+3,995
Cambria	150,452	152,598	-2,146
Cameron	5,843	5,974	-131
Carbon	59,688	58,802	+886
Centre	138,524	135,758	+2,766
Chester	450,160	433,501	+16,659
Clarion	41,316	41,765	-449
Clearfield	83,203	83,382	-179
Clinton	37,680	37,914	-234
Columbia	64,134	64,151	-17
Crawford	89,856	90,366	-510
Cumberland	217,743	213,674	+4,069
Dauphin	252,933	251,798	+1,135
Delaware	553,435	550,864	+2,571
Elk	34,454	35,112	-658
Erie	280,370	280,843	-473
Fayette	146,654	148,644	-1,990
Forest	4,888	4,946	-58
Franklin	131,598	129,313	+2,285
Fulton	14,365	14,261	+104
Greene	40,520	40,672	-152
Huntingdon	45,707	45,586	+121
Indiana	88,780	89,605	-825
Jefferson	45,818	45,932	-114
Juniata	22,760	22,821	-61

Activity 3: Change in Population 2000–2002 – Page 2 (2/2)

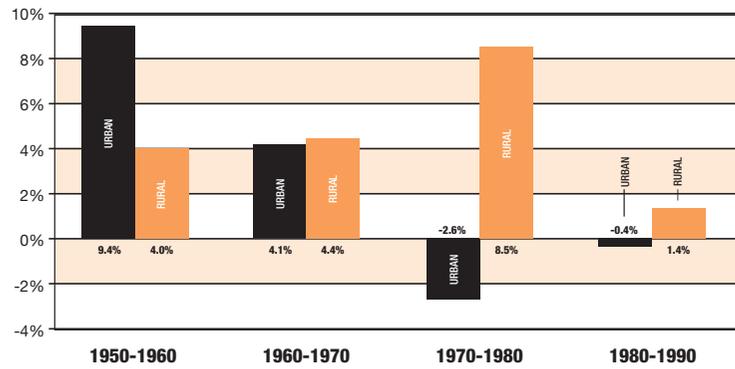
County	Population 7/1/2002 <i>(Estimated)</i>	Population 4/1/2000	Change
Lackawanna	210,711	213,295	-2,584
Lancaster	478,561	470,658	+7,903
Lawrence	94,104	94,643	-539
Lebanon	121,199	120,327	+872
Lehigh	317,533	312,090	+5,443
Luzerne	314,643	319,250	-4,607
Lycoming	119,000	120,044	-1,044
McKean	44,884	45,936	-1,052
Mercer	119,514	120,293	-779
Mifflin	46,435	46,486	-51
Monroe	148,839	138,687	+10,152
Montgomery	766,517	750,097	+16,420
Montour	18,214	18,236	-22
Northampton	273,324	267,069	+6,255
Northumberland	93,371	94,556	-1,185
Perry	43,876	43,602	+274
Philadelphia	1,492,231	1,517,550	-25,319
Pike	50,095	46,302	+3,793
Potter	18,217	18,080	+137
Schuylkill	148,505	150,336	-1,831
Snyder	37,828	37,546	+282
Somerset	79,456	80,023	-567
Sullivan	6,482	6,556	-74
Susquehanna	42,082	42,238	-156
Tioga	41,461	41,373	+88
Union	42,006	41,624	+382
Venango	56,810	57,565	-755
Warren	43,290	43,863	-573
Washington	204,110	202,897	+1,213
Wayne	48,889	47,722	+1,167
Westmoreland	368,428	369,993	-1,565
Wyoming	27,801	28,080	-279
York	389,209	381,751	+7,458

Activity 3: Population Growth Graphs and Charts

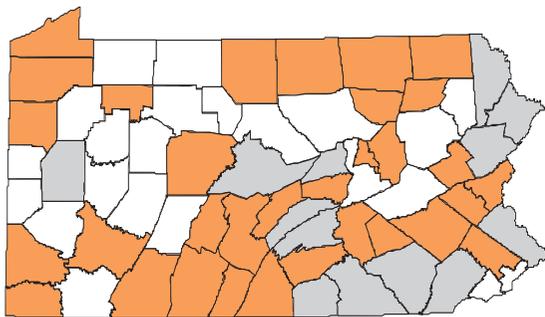
Pennsylvania Population: 1950-2000 (in millions)



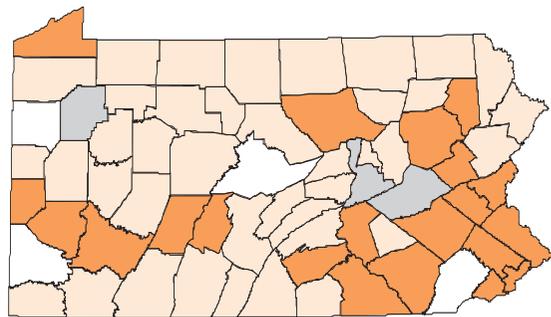
Pennsylvania Urban vs. Rural Growth: 1950-1990



Pennsylvania Population Growth: 1988-1998



Pennsylvania Urban and Rural Counties: 1990



1 Team Members _____

Trends in Pennsylvania. The charts and graphs show changes that have taken place over the past several decades. Charts and graphs summarize data, providing a snapshot of information that will help you identify changes. With this information, you can better determine the planning goals and objectives for the future of Pennsylvania.

1. Using *Pennsylvania Population: 1950–2000* and *Pennsylvania Urban vs. Rural Growth: 1950–1990*, answer the following questions:

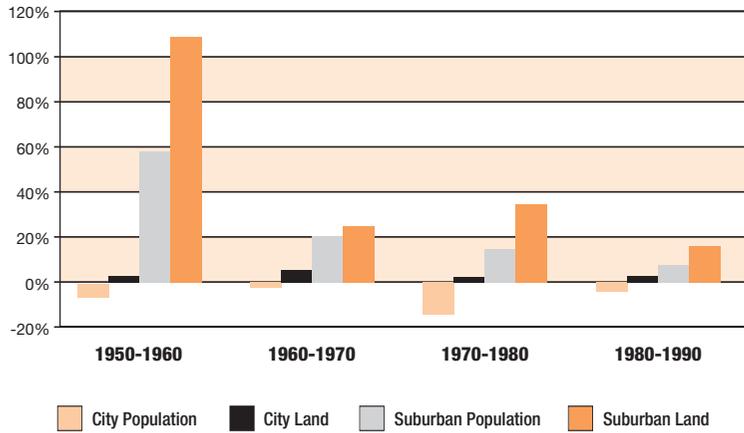
1. *How has Pennsylvania's population changed since 1950? What is your projection for the future?*
2. *When was the time of greatest growth?*
3. *How much has it changed in the last 10 years?*

2. Using the *Pennsylvania Population Growth: 1988–1998* and *Pennsylvania Urban and Rural Counties: 1990*, answer the following questions:

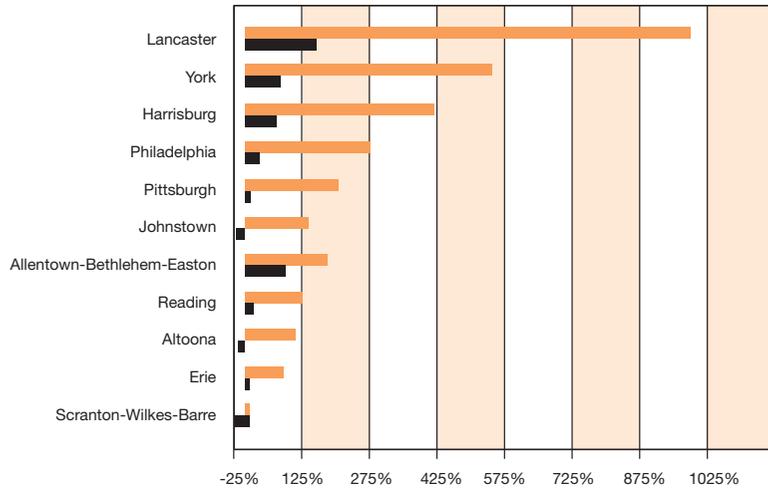
1. *What is an urban area?*
2. *Compare the growth of urban and rural populations in 1950–1960 to the growth/decline in urban and rural populations of the 1970–1980, and 1980–1990.*
3. *When did the greatest change happen of people moving from urban to rural areas?*
4. *How many counties are newly classified from rural to urban? What happened?*
5. *How many counties are newly classified from urban to rural? What happened?*
6. *What is happening to rural areas? How could we plan to improve urban areas?*
7. *How many counties have had the greatest increase? Why?*
8. *How many counties have declined in population? Why?*

Activity 3: Developed Land Graphs and Charts

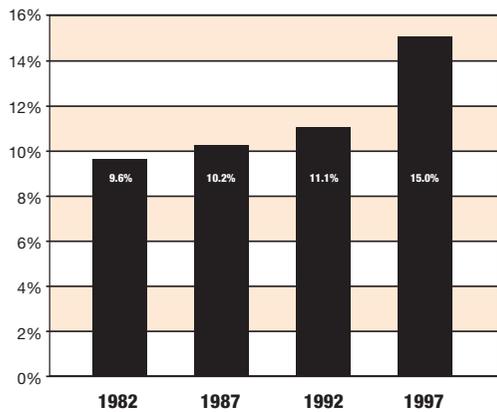
Pennsylvania Urbanized Development: 1950-1990



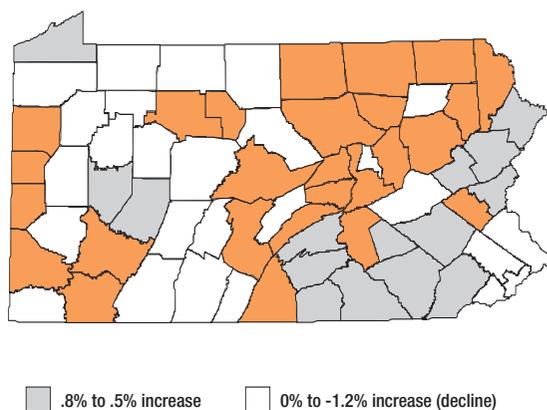
Pennsylvania Population: 1950-2000 (in millions)



Pennsylvania Percent of Land Developed: 1982-1997



Pennsylvania Growth in Developed Land: 1982-1997



Team Members _____

Trends in Pennsylvania. The charts and graphs show changes that have taken place over the past several decades. Charts and graphs summarize data, providing a snapshot of information that will help you identify changes. With this information, you can better determine the planning goals and objectives for the future of Pennsylvania.

1. Using the *Pennsylvania Urbanized Development: 1950–1990* and *Pennsylvania Population: 1950–2000*, answer the following questions:

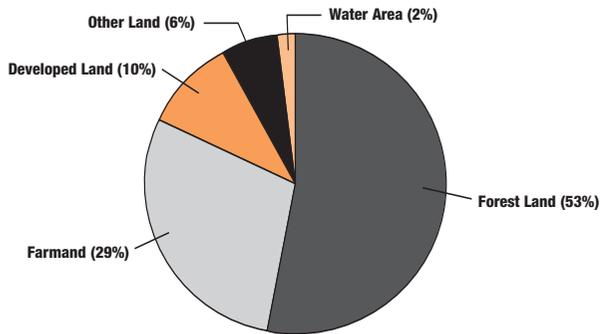
1. *Define what is meant by “developed land.”*
2. *How has developed land increased since 1982?*
3. *When did the greatest development occur?*
4. *Where did development largely occur? Why in certain areas?*

2. Using the *Pennsylvania Percent of Land Developed: 1982–1997* and *Pennsylvania Growth in Developed Land: 1982–1997* charts, answer the following questions:

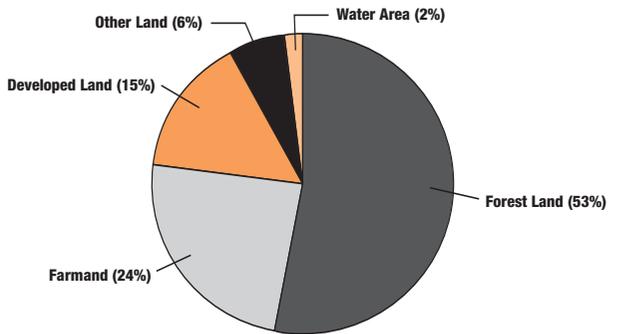
1. *What happened between 1950–1960 to city development compared to suburban development?*
2. *Describe what happened with population growth and land development between 1960 and 1990?*
3. *What three urbanized areas have the greatest growth in population? How does the population growth compare to the land growth?*
4. *If Pennsylvania’s population has slightly increased less than one percent in the past 20 years, why has there been such an increase in developed land?*

Activity 3: Land Cover and Agricultural Lands Graphs and Charts

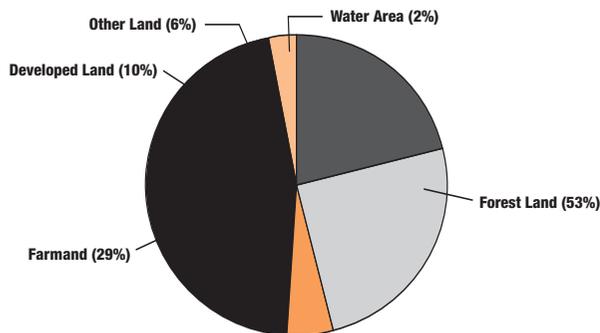
Pennsylvania Land Cover: 1982



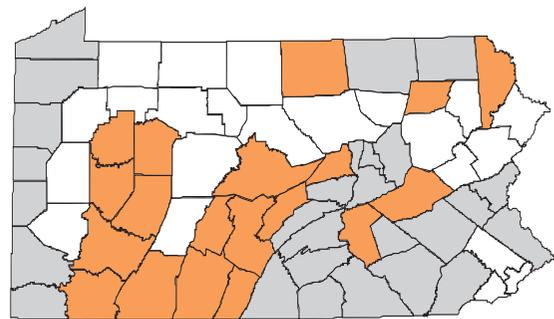
Pennsylvania Land Cover: 1997



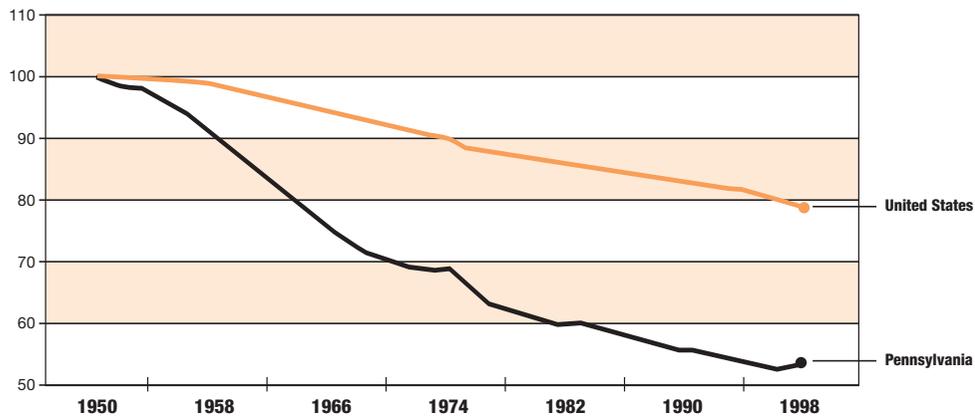
United States Land Cover: 1997



Pennsylvania Percent of Total Land in Farms: 1997



Farm Acreage Index: 1950-1998 (in millions)



Activity 3: Land Cover and Agricultural Lands Worksheet**Team Members** _____

Trends in Pennsylvania. The charts and graphs show changes that have taken place over the past several decades. Charts and graphs summarize data, providing a “snapshot” of information that will help you identify changes. With this information, you can better determine the planning goals and objectives for the future of Pennsylvania.

1. Using the *Pennsylvania Land Cover: 1982*, *Pennsylvania Land Cover: 1997*, and *United States Land Cover: 1997 charts*, answer the following questions:

1. What are the categories of land cover?

2. Compare the change in land cover between 1982 and 1997. What land cover increased? What land cover decreased?

3. How many acres of farm land were developed between 1982 and 1997? Why?

4. How does Pennsylvania’s developed land compare to the national average?

2. Using the *Farm Acreage Index* and *Pennsylvania Percent of Land in Farms: 1997*, answer the following questions:

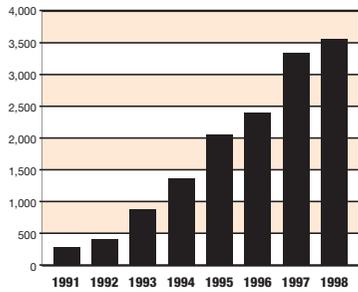
1. What has happened to Pennsylvania farmland since 1950 compared to the national average?

2. Why has farm acreage declined?

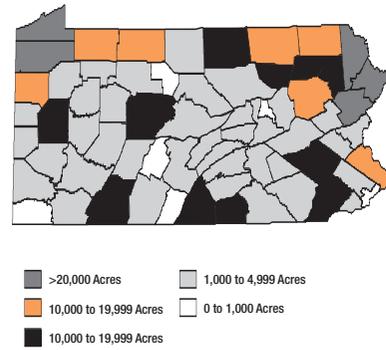
3. Where are the farmlands located that will be urbanized in the near future?

Activity 3: Wetlands, Forest and Park Land Graphs and Charts

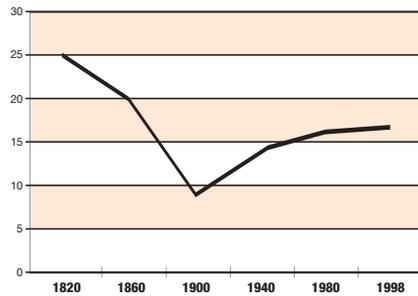
Pennsylvania Cumulative Acres of Wetland Restored: 1991-1998



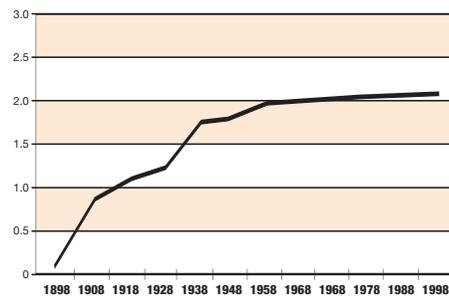
Pennsylvania Acres of Wetland by County: 1990



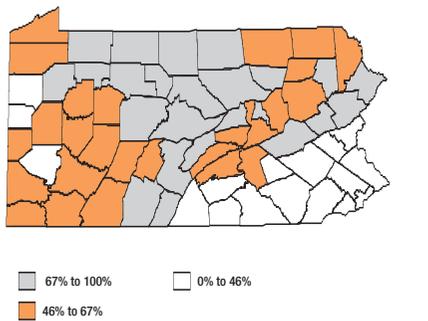
Pennsylvania Acres of Forest Land: 1820-1998 (in millions)



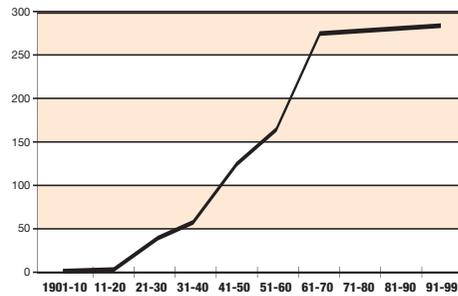
Pennsylvania Acres of State-owned Forest Land: 1898-1998 (in millions)



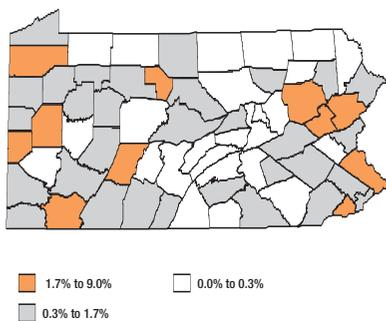
Pennsylvania Percent of Total Land that is Forest Land: 1989



Pennsylvania Park Land: 1901-1999 (in thousands)



Pennsylvania Percent of Total Land that is State Park Land: 1994



Activity 3: Wetlands, Forest and Park Land Worksheet**Team Members** _____

Trends in Pennsylvania. The charts and graphs show changes that have taken place over the past several decades. Charts and graphs summarize data, providing a snapshot of information that will help you identify changes. With this information, you can better determine the planning goals and objectives for the future of Pennsylvania.

1. Using *Pennsylvania Cumulative Acres of Wetland Restored: 1991–1998* and *Pennsylvania Acres of Wetland by County: 1990*, answer the following questions:

1. *Define wetlands. Why are they valuable?*
2. *What has happened to wetlands since the 1700s?*
3. *In 1990, which areas of Pennsylvania had the most wetlands?*
4. *Why are wetland habitats threatened in Pennsylvania?*
5. *How many acres of wetlands were restored between 1991 and 1998?*

2. Using the *Pennsylvania Acres of Forest Land: 1820–1998*, *Pennsylvania Acres of State-owned Forest Land: 1898–1998*, and *Pennsylvania Percent of Total Land that is Forest Land: 1989*, answer the following questions:

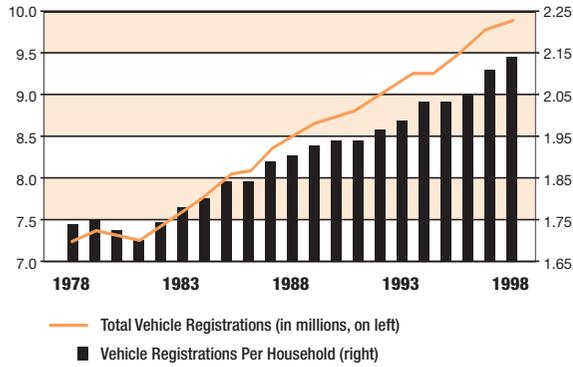
1. *What happened to forestland in the 1800's?*
2. *What happened to state-owned forest land since 1898? since 1970?*
3. *How many acres of Pennsylvania are forested?*
4. *Which regions are the most and least heavily forested? Why?*

3. Using *Pennsylvania Park Land: 1901–1999* and *Pennsylvania Percent of Total Land that is State Park Land: 1994*, answer the following questions:

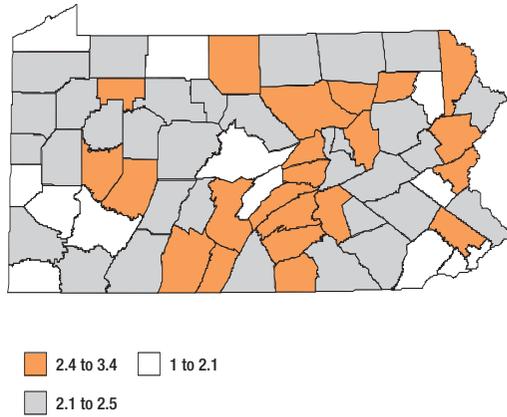
1. *When did the greatest growth occur in state parks?*
2. *What has happened in growth of park land since 1970?*
3. *How valuable are state parks to Pennsylvania?*

Activity 3: Vehicles, Road Miles and Public Transportation Worksheet Graphs and Charts

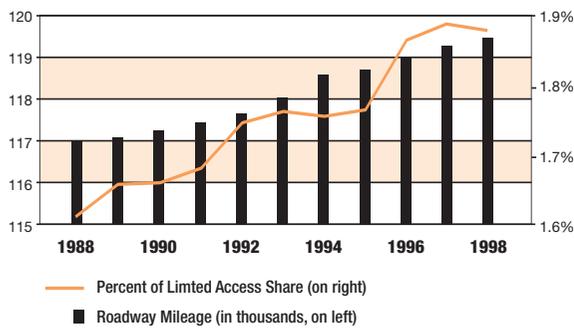
Pennsylvania Vehicle Registrations: 1978-1998



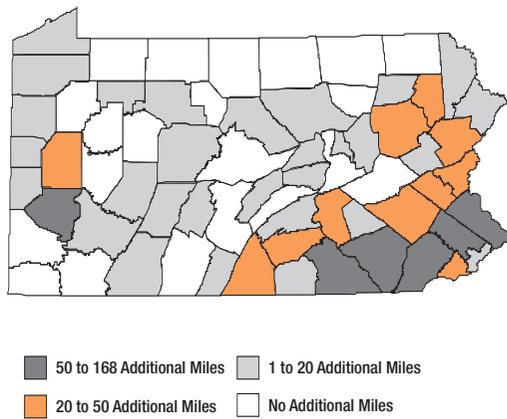
Pennsylvania Vehicle Registrations Per Household: 1998



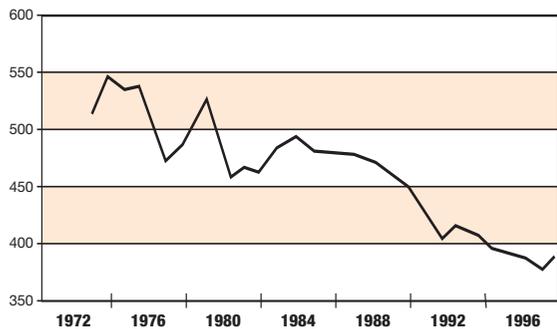
Pennsylvania Road Mileage: 1988-1998



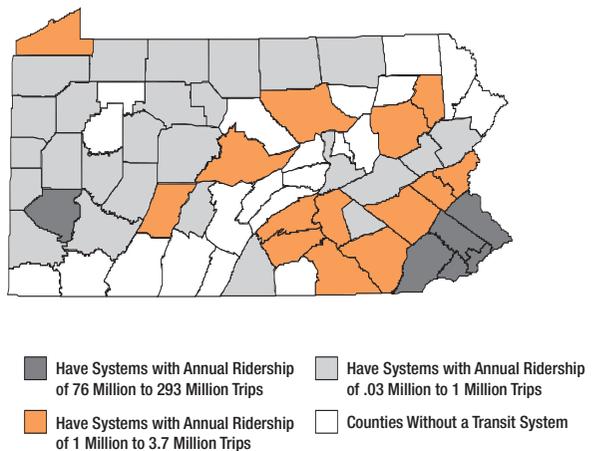
Pennsylvania Change in Public Road Miles: 1994-1998



Pennsylvania Urban Transit Ridership: 1972-1996
(Number of passenger trips in thousands)



Pennsylvania Access to Public Transportation: 1998



Activity 3: Vehicles, Road Miles and Public Transportation Worksheet**Team Members** _____

Trends in Pennsylvania. The charts and graphs show changes that have taken place over the past several decades. Charts and graphs summarize data, providing a snapshot of information that will help you identify changes. With this information, you can better determine the planning goals and objectives for the future of Pennsylvania.

1. Using the *Pennsylvania Vehicle Registrations: 1978-1998* and *Pennsylvania Vehicle Registrations Per Household: 1998*, answer the following questions:

1. *How has the number of vehicles changed since 1978?*
2. *How does vehicle registration impact Pennsylvania's land use?*
3. *What is the average number of vehicles per household in your county?*

2. Using the *Pennsylvania Road Mileage: 1988-1998*, and *Pennsylvania Change in Public Road Miles: 1994-1998*, answer the following questions:

1. *How have the miles of roads changed from 1988 to 1998?*
2. *How do road miles equate to land development?*

3. Using the *Pennsylvania Urban Transit Ridership: 1972-1996* and *Pennsylvania Access to Public Transportation 1998*, answer the following questions:

1. *What happened to the number of urban transit trips from 1972-1996?*
2. *Why is there a decline in public transportation?*
3. *How does efficient and desirable public transportation benefit land use in Pennsylvania?*

Activity 3: *Answer Key for Percent of Population Change Worksheet***Top Eight Population Increases**

County	Percent
1. Pike	8.2
2. Monroe	7.3
3. Chester	3.8
4. Wayne	2.4
5. Adams	3.4
6. Bucks	2.1
7. Butler	2.3
8. York	2.0

Top Eight Population Decreases

County	Percent
1. Cambria	-1.4
2. Philadelphia	-1.7
3. Allegheny	-0.9
4. Beaver	-1.1
5. Lackawanna	-1.2
6. Schuylkill	-1.2
7. Elk	-1.9
8. Luzerne	-1.4



Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Environment and Ecology
- Civics and Government
- Geography

Standard Statements

4.8 Humans and the Environment

4.9 Environmental Laws and Regulations

5.3 How Government Works

7.3 Human Characteristics of Places and Regions

Content Objectives

- Explain how people use land resources and how their activities affect local/regional environments
- Research and explain the role of four planning tools
- Analyze the major components of a comprehensive plan and why it is an important tool
- Analyze five planning concepts included in the Municipalities Planning Code
- Identify at least three tools which aid municipalities in dealing collectively with land use issues and how they affect citizens' lives

Instructional Strategies

- Analysis
- Compare and Contrast
- Discussion
- Lecture
- Listening
- Map Reading
- Organizing
- Reading Research
- Small Group Work

Assessment Strategies

Participants will:

- Develop presentations that include recommendations for a comprehensive plan based on a given scenario.

Materials

Included:

- Major Planning Tools
- Major Planning Tools Worksheet
- What is Planning Worksheet
- Toolbox Vocabulary
- Keystone Township Map
- Map Key
- Invitation to Visioning
- Community Visioning Worksheet
- Comprehensive Plan Considerations
- Keystone Township Citizen's Roles (cut)

Additional Materials:

- Flip Charts, Markers, and Cards
- Supportive Information Such As *Land Use in Pennsylvania: Practices and Tools*
- A Comprehensive Plan
- Subdivision and Land Development Ordinance
- Zoning Ordinance
- An Official Map

Time

- 1.25 hours per each activity

Land use decisions are some of the most important issues facing Pennsylvania communities.

The Pennsylvania state legislature has delegated growth management and land use regulation powers to local government through the Municipalities Planning Code (MPC). The MPC delegates powers on land use to the municipality to engage in comprehensive planning and to enact zoning, subdivision and

Pennsylvania Planning Toolbox

official map ordinances, if it chooses to do so. It authorizes municipalities to coordinate development based on existing infrastructure (public water, sewer and transportation) and to consider multi-municipal planning. There is no statewide land use planning entity in Pennsylvania. The responsibility of land use decision-making rests with local government.

There are over 2,560 municipalities in Pennsylvania, each making decisions that impact their future...each deciding the tools they will use or not use for building sustainable and economically vital communities while conserving natural, cultural and historic resources. Their vision should be reflected in a municipal comprehensive plan that is consistent with the broader vision outlined in the county comprehensive plan.

Citizen education is critical for developing leadership that will guide the growth and development of each community in a healthy, safe and vibrant way.

Overview

Pennsylvania Planning Toolbox includes two activities:

Activity 1: *The Planning Toolbox*

Activity 2: *A Comprehensive Plan for Keystone Township*

The following activities provide a broad overview of four key components described in the Municipalities Planning Code (MPC). Discussions focus on the role of citizen leadership in making planning decisions on a local level. The activities challenge participants to learn about the tools that can be used by municipalities to help define future growth and land use. Participants will apply their knowledge as they take on the role of community members and develop a comprehensive plan for their community.

Activity 1:

The Planning Toolbox

Summary: Participants will discuss the concept of planning and examine samples of planning tools outlined by the MPC. They will study samples of the zoning ordinance, subdivision and land development ordinance (SALDO), the official map and the comprehensive plan. After completing a worksheet, they will discuss the purpose of their tool in land use planning and review examples of specific ordinances using real-life scenarios.

Questions: What are four tools that a community can implement to help guide future growth and land use decisions? How can these tools help your community? Why are they used in some communities and not others?

Activity 1

Preparation

- Copy and cut the Major Planning Tools (p 79). You could provide an opportunity for participants to select one of four tools out of a “hat” or count off by fours. Each participant should be assigned one of the four planning tools.
- Copy Major Planning Tools Worksheet (p 80) for each participant.
- Collect samples of a comprehensive plan, subdivision and land development ordinance, zoning regulations and the official map from communities. For additional information, view and copy the Pennsylvania Planning Series booklets at www.newpa.com. Click on “Get Local Gov Support,” then “Community Planning.”
- Provide cards and markers/pens.
- Copy and prepare What is Planning Worksheet (p 81).

Procedure

Discuss the importance of the community and “a sense of place.” What is planning? Discuss why and when we plan. We plan for a party. We plan for a vacation. What do you think about when you plan for a camping trip?

1. Why plan? Discuss reasons for planning and write them on the board. Some reasons could include: to keep a sense of order, to avoid danger, to avoid problems, to have a sense of peace, security, and to know where we are going so we get there. If we don’t know where we are going, we could end up somewhere else we don’t want to be.

Can plans be changed? Is it easier to make changes when you have the security of an existing plan?

Planning is a road map to guide the actions of the future so we can know the steps we need to take to reach goals and meet expectations.

Planning can be done on many levels. Communities can choose the type of planning tools they want to use and those they don't want to use. If they select to implement a planning tool, they follow the guidelines outlined in the MPC. Many communities use planning tools because they feel that the tools provide guidelines for future growth. Communities enact ordinances which are laws that protect the rights of landowners from potential unwanted situations while maintaining a community character. Some communities prefer not to adopt tools that might restrict the rights of individual land ownership. One community's interests may differ from those of other communities. Communities are encouraged to join together to plan for the best situation for multi-municipal decisions. The responsibility rests with the leadership and local citizenry of each individual community. Citizen education is critical in making wise decisions. It is imperative that every Pennsylvanian understand their responsibility in making land use decisions and become involved in the democratic process within their own communities.

2. Who does the planning? What does a "planner" look like? Planners could look like you. Some people study laws, regulations and designs associated with planning, successfully pass examinations and achieve professional standing as planners. There are affiliations with professional planning organizations such as the American Institute of Certified Planners. There are college courses and degrees in land use planning.

Community leaders are elected by local citizens to govern their community to the best of their ability. They are NOT required to have a planning degree or any special training but they do have a vested interest in the welfare of their community.

Many take classes, attend conferences and study other communities to learn about local government issues so

they can make the best decisions for their communities. Many elected leaders rely on the advice of officially recognized and appointed entities of local government such as the planning commission or the Environmental Advisory Council. Many rely on the advice of knowledgeable and motivated citizenry. Learning about local government is important to help your community make wise decisions.

While some areas of land planning include federal and state involvement, groundwater management or wildlife management, the core of land use planning for Pennsylvania rests with a local form of government called a municipality. A municipality could be a township, a borough or a city. There are 2,563 municipalities in Pennsylvania: 56 cities, 959 boroughs and 1,456 townships of the second class and 91 townships of the first class (2007).

The control of land use in Pennsylvania is dominated by municipalities, not by the state or federal government. Pennsylvania has more local governments than any other state except Illinois and Minnesota.

Local government control means that land decisions are made by members of your municipality which are given jurisdiction by the Pennsylvania MPC.

Historically, people in Pennsylvania have preferred less involvement by state government. Local governments are more responsive, controlling land close to home. However, fragmentation hinders the ability of communities to work together, to share responsibilities and to develop a long-term economic plan. Some say it increases sprawl and limits issues to amateur concerns, not addressing the widening challenges of suburbanization and revitalization.

To address some of the concerns, there are amendments to the MPC that encourage municipalities to cooperate

with each other, incentives to develop and apply comprehensive plans and to protect natural and historic areas. If you are interested in helping make land decisions, it is important to understand Pennsylvania's local government and to involve yourself in the process.

3. Municipal Government. Each person in Pennsylvania lives in one of 67 counties and also belongs to one of the 2,563 municipalities. Each municipality decides how it wants to plan for the future per the MPC. This code outlines the framework for municipalities to govern themselves. (Philadelphia and Pittsburgh have their own code.) The MPC was recently amended to encourage more cooperative planning among municipalities and to support forestry and protect natural and historic resources.

Each municipality has many planning tools it may choose to use. Municipal governments are allowed by state law to choose which of these tools they want to use based on the authority outlined in the MPC. We are going to review four of the planning tools. Have a collection of each of the tools: Comprehensive Plan, Zoning Ordinance, SALDO, and Official Map.

4. The Planning Toolbox. “Open” the “Planning Toolbox” and learn about four important land use planning tools. Participants will divide into groups, and each group will receive one tool to review. They will fill out the worksheet, discuss it in groups and reorganize into new groups, or present to the large group to share information. Ask if anyone has previously reviewed or used any of the planning tools.

Have participants count by fours and gather at one of four designated work areas. All the “ones” will review information on “the comprehensive plan,” “twos” will review “the official map,” “threes” will review “the subdivision and land development ordinance,” and “fours” will review the “zoning ordinance.”

Activity 1

Each group is given a description of their tool, a worksheet and samples of their assigned tool. Participants will follow the protocol for working in groups and designate a facilitator and a timekeeper.

5. Present Information. Each group is to present information on their assigned planning tool to a core group so each must learn the information well enough to teach it to others. Each group must insure that each person in the group is able to teach information to others. Participants may use notes or draw a poster to help them remember the information.

Participants review samples and identify examples of the purpose of the planning tool. They are to take notes and understand the planning tool assigned to them. On the worksheet provided, cut and distribute the photos of planning tools in action, and have participants determine which tool is associated with the photo.

6. Develop Hypothetical Situations. Participants will develop two brief hypothetical situations involving their planning tool that can be solved by looking in the planning tool under the suggested page number. They are to describe the situation on separate cards with the answers (and page number) if appropriate. The cards are collected by the facilitator.

Here are some examples of scenarios that could be used:

1. Your township wants to check this document before it rezones and changes zoning regulations. What are you going to use? Answer: The Comprehensive Plan

2. Your planning commission is reviewing a plan to build 50 new lots and dedicate open space in the area. What tool will you use to review the plan for the development? Answer: Subdivision and Land Development Ordinance.

3. *Your neighbor wants to open a candy store in the neighborhood. What tool will you use to see if this is allowed?* **Answer:** Zoning Ordinance

Regroup participants into groups that will have representatives from “one”, “two”, “three” and “four” in each. Participants explain their planning tool to the other three so that all have an understanding. Distribute the two hypothetical situations to different groups. Groups must decide what tool they will need to solve the situation and travel to the location of the tools needed. They are to answer the problem. When groups have completed the task, they share their situations and the tools they used.

Activity 2:

A Comprehensive Plan for Keystone Township

Summary: Participants will participate in contributing information in the development of a comprehensive plan for a fictional community called Keystone Township. They will become characters in a community and present their recommendations on specific aspects of the comprehensive plan. They will assume the perceived role of their character as they make decisions and learn the value of leadership, compromise and information.

Questions: What are the elements considered in developing a comprehensive plan? How do different members of the community differ in their point of view? What skills and techniques help you to work with individuals and groups with different views?

Preparation

- Copy the Keystone Township Map for each team of participants (p 82).

- Cut and copy the Community Visioning Worksheet for each team of participants (p 83).
- Cut and copy the Toolbox Vocabulary and assign it to the appropriate characters (pp 84-86).
- Cut and copy the Invitation and Township Description for each team of participants (pp 87-88).
- Copy and cut out the citizen’s roles and provide a role to one or more participants (p 88).
- Provide groups of participants with flip charts and markers to develop their presentation.
- Comprehensive Plan Considerations Activity Sheet (p 89).

Procedure

We are going to divide into groups and become members of Keystone Township. We have been invited to participate in a community visioning process to help the planning commission develop a comprehensive plan for the township. Keystone Township did not have a comprehensive plan but would like to develop one. The planning commission has asked for input from the community. Each of you will be assigned a role and your group will be assigned one aspect of the comprehensive plan to address. Your task is to make recommendations based on your role and include a tool from the toolbox in your discussions.

A comprehensive plan is a statement of future goals for the community. It is an official document that will guide future decisions about how to develop the community. Each group will share their contribution to the whole group.

Review the description of Keystone Township. Hand out roles to each person. Each group will be assigned one aspect of the comprehensive plan to address. Groups

may review actual plans from other communities before developing their suggestions. Be sure to represent the role of your namesake when contributing to the discussions. Participants will prepare recommendations for a comprehensive plan based on the views of your group. The group will discuss elements as listed on the Community Visioning worksheet.

Each group receives a map, map key, township description, Toolbox vocabulary, visioning worksheet and their comprehensive plan considerations. They may use a flip chart and markers. Allow 20 minutes for the group to review the information and prepare their recommendations.

Display recommendations on flip charts.

Using different colored dots or markers, distribute three dots per person and have each person select three recommendations that they feel would be a top priority for Keystone Township. Discuss the top priorities.

Select three people from the class to be Planning Commissioners. Explain the importance of the Planning Commission.

Question: What is a planning commission?

Planning commissions are made up of three to nine people living in the community who advise and make recommendations to elected officials who will make final decisions on land use issues in the municipality. They are appointed volunteers who provide ideas on land use regulations, zoning and subdivision controls. They have two functions: to prepare a comprehensive plan and to review/comment on development proposals. They must keep records of their activities. They prepare plans for recreation, open space, greenways, environmental protection, natural resources, agriculture

and forestry. They have great influence on the protection, enhancement and conservation of open spaces. Sixty percent of the municipalities have planning agencies and 66 counties have planning agencies.

Select one person to record the key points to the recommendations. Each group presents their ideas. The Planning Commission is encouraged to question the recommendations and to encourage alternatives that might improve the community.

Closing

Planning deals with the “where,” “what,” and “how” of land use. The “where” of planning addresses the natural resources as well as the man made infrastructure. Starting with an inventory of the green and man made landscape, we are better equipped to make decisions about where future growth should occur. How did you demonstrate sensitivity to green space as you made your recommendations?

“What” we plan must respect the constitutional right of the landowners balanced with the needs of society to use and protect natural resources wisely. The decisions should rest with the values and goals of each community and its relationship to other communities. How did you incorporate other communities in your plan?

“How” we plan requires an understanding of many elements including economics, timing and procedures. Achieving land use goals requires creativity, foresight and commitment. How did you incorporate economic needs while maintaining the character of your community?

When we plan we are comparing what exists now to what should or could exist in the future. Communities have many tools available to them if they choose to formalize their planning process.

Assessment and Review

1. *What tools are available for planning in your community?*
2. *How is planning beneficial to a community?*
3. *What happened in the group dynamics as people exercised the role of their namesake?*
4. *How was it addressed?*
5. *Explain what could happen in a real life planning session?*
6. *What are some strategies for working with differing views?*

Concepts and Vocabulary Task

There are some additional planning tools and concepts that will help participants decide how to develop their plan. Prepare a set of vocabulary cards and place one with each name tag that might be appropriate for that name tag. The person that is assigned a tool must try to think of ways to apply that tool when discussing their

aspect of the comprehensive plan. They must share the definition of their tool in their discussions.

The Toolbox Vocabulary: One or two of the following will be assigned to each person to review and use in planning discussions.

- Multi-municipal planning
- Infill traditional development
- Agricultural preservation
- Conservation easements
- Brownfields
- Traditional neighborhood development
- Transfer/purchase of development rights
- Designated growth area
- Conservation subdivision design
- Greenway

What are the features *that make a township handsome? A river, with its waterfalls and meadows, a lake, a hill, a cliff or individual rocks, a forest, and ancient trees standing singly. Such things are beautiful; they have a high use which dollars and cents never represent. If the inhabitants of a town were wise, they would seek to preserve such things, though at a considerable expense; for such things educate far more than any hired teachers or preachers, or any at present recognized system of school education.*

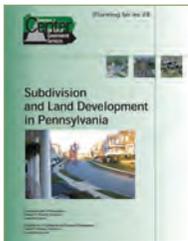
Henry David Thoreau (Poet/Writer/Naturalist)

Activity 1: Major Planning Tools

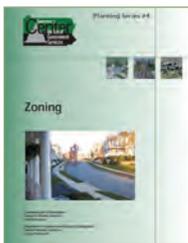
The Municipalities Planning Code provides the state framework for planning for these communities who choose to plan, and even for communities who choose not to plan. The Comprehensive Plan is a guide, not a legal document or an ordinance, that provides a vision and guidelines for future growth and development. The other three tools listed are land use ordinances which are legislative actions of the governing body of the municipality. To enact or amend an ordinance requires the voting procedures of the governing body. The ordinances help implement the comprehensive plan.



The Comprehensive Plan is an official document that guides decisions on land use and development in the community. It is a statement of future goals for the community and provides a formal vision for future growth, natural resources protection, parks, historical resources and transportation systems. It contains a plan for future water supply and determines where growth and development will occur including municipal services, roads, sewer, police, fire protection, schools, parks and open space. It should be updated continually in response to changes. Ordinances should be adopted to support the comprehensive plan.



The Subdivision and Land Development Ordinances regulate the creation of property lines and development on those properties. It is the most common type of ordinance. “Subdivision” refers to the creation of new lots or changes in property lines. “Land development” involves regulations concerning construction. When a developer buys a large farm and creates a new development on it, the community could have regulations in place. The community establishes elements that it requires of a developer. Such elements include lot size, street widths and curves, drainage, water supply, driveways and sidewalks. The regulations could determine that the improvements are paid by the developer, not taxpayers. Communities avoid future complaints about drainage, traffic or lot size.



The Zoning Ordinance is the second most common type of land use ordinance. It is a tool a community may utilize to regulate how land is used in different areas or districts of the community and establishes location for different types of development. The zoning ordinance consists of two parts: a text and a map of the zoning districts. The text contains information on building height, area, setback, density and other standards. The zoning map delineates the boundaries of specific districts or zones. It divides all land within a municipality into zones and creates regulations that apply to specific zones. Zoning should account for all types of land uses and housing types.



The Official Map is a land use ordinance that declares the future public projects and projected areas of a community. It identifies private property where open space is desired or where public improvements are envisioned. It demonstrates the intent of the local government to acquire land for municipal purposes. It identifies future road improvements, wellhead protection areas, parks and future public land. It is the least known tool with less than three dozen municipalities having adopted an official map.

Activity 1: Major Planning Tools Worksheet**Planning Tool Being Reviewed** _____

1. Read the description. Summarize the job of your planning tool:

2. Open the samples of the planning tool. Examine the table of contents or the key. List a minimum of five major categories that are listed in the table of contents or on the key.

1.

2.

3.

4.

5.

3. Look at some of the information that is addressed in your planning tool. Pretend that two people in your community will be developing on their land and need to use the planning tool to see if they are allowed. Develop two scenarios that can be answered using your planning tool. List the page or the area of the map that you will find the correct answer. Examples could be: *Uncle Joey wants to build his swimming pool in his side yard. How far does he have to be from the neighbor's yard? Look on page ?? for the answer, or Marvin wants to pave the parking lot next to his store. It consists of six spaces each nine feet by 20 feet. Is this acceptable? Look on page ?? for the answer.*

Question 1:

Page number for the answer: _____

Question 2:

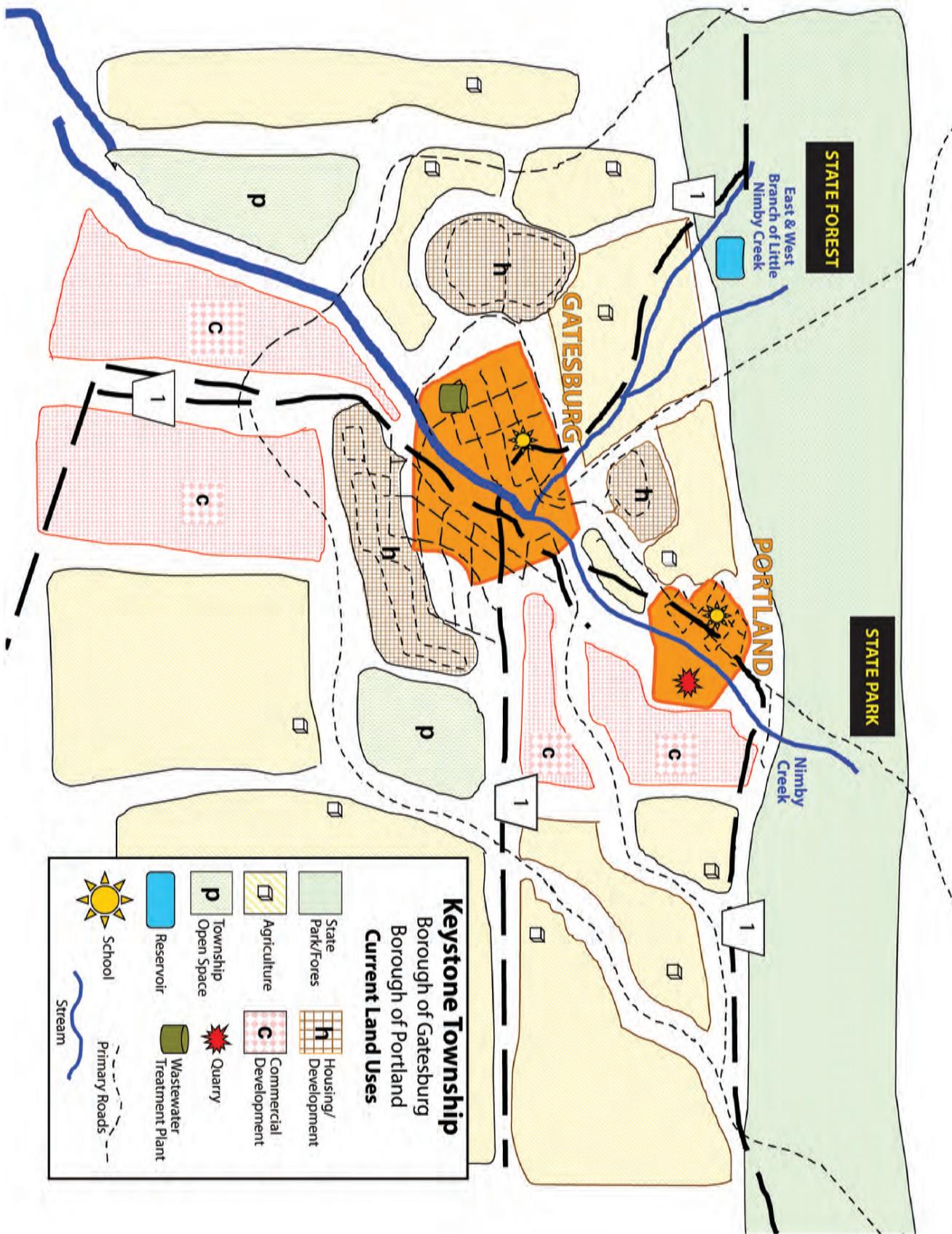
Page number for the answer: _____

Activity 1: *What is Planning?*

What is Planning? Cut and distribute the photos below. Have participants examine and determine the planning tool that is associated with the photo.



Activity 2: Keystone Township Map



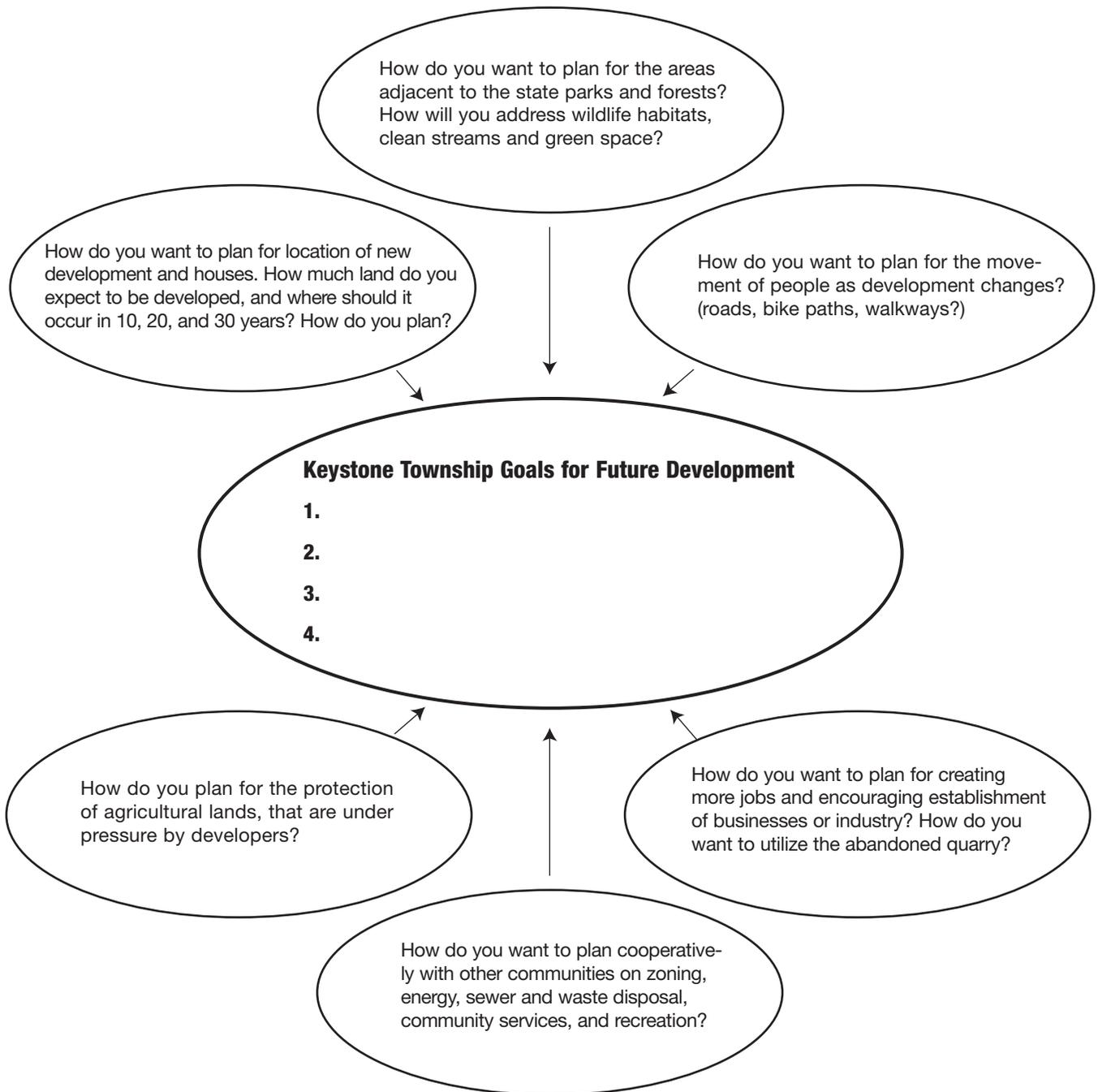
Activity 2: Community Visioning Worksheet

Assignment _____

Group Leader _____

Group Leader _____

What do you recommend for future land uses in your community? Develop and present your plan using flip charts. Here are questions to guide you. You are welcome to add additional recommendations.



Multi Municipal Planning	<p>If two or more communities cooperatively plan some aspects of land use they may develop and adopt a multi-municipal plan. This practice allows cooperation among communities to direct uses to logical locations throughout a larger geographic area. It allows for planning across borders and saves money, minimizes environmental impacts, preserves farms and open space. There is compromise involved.</p>
Conservation Easements	<p>A legal document that permanently restricts part of a property's uses to protect its conservation values. It is a written agreement between the landowner and a government or land trust organization that maintains the area for conservation no matter who owns the land in the future.</p>
Infill Traditional Development	<p>Encourage development in towns and cities by improving existing areas or scattered vacant sites making them desirable places to live thus encouraging people to live there instead of building new homes outside the town.</p>
Brownfields	<p>Abandoned industrialized sites left unused often because of environmental contaminants. These properties, once remediated, could provide viable space for industry, commercial uses, parkland and open spaces.</p>

Activity 2: *Toolbox Vocabulary – Page 2 (2/3)*

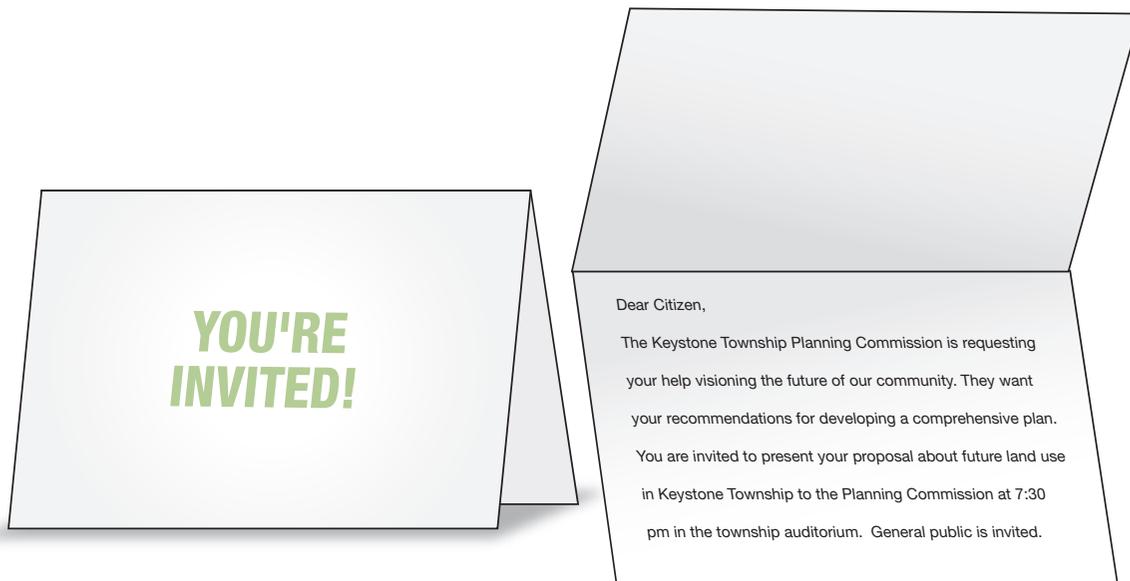
<p>Conservation Subdivision Design</p>	<p>A form of development that encourages developers to reduce lot size and keep more of the area dedicated to open space.</p>
<p>Greenway</p>	<p>A linear open space established along either a natural corridor such as a riverfront or stream valley or along a railroad right of way or canal converted to open space and/or recreational use. It could be an open space connector linking parks, natural reserves and historic sites.</p>
<p>Transferable Development Rights (TDR's) and Purchase of Development Rights (PDR's)</p>	<p>A zoning option that allows conservation and development to coexist within a municipality by shifting development rights away from agricultural lands or sensitive natural areas. Development rights are established for a given piece of land and can be separated from the title of the property then transferred to another location where development is desirable.</p>
<p>Traditional Neighborhood Development (TND)</p>	<p>TND is a compact form of development. It may be used to create a more diversified community for residents by having a walkable design with parks, stores and community facilities. It is recreating the small town character. Before a municipality can approve such development, it must usually amend the local zoning and subdivision ordinances.</p>

**Designated Growth
Areas
or Future Growth
Areas**

A growth area is a geographic delineation or boundary line within which development at higher densities is encouraged and roads, water, sewer lines are planned. Outside the boundary, the land remains rural and natural. These areas are drawn to include enough land for the future, keeping the growth adjacent to developed centers such as a town.

**Agricultural
Preservation**

Two methods to protect farming areas are easements and agricultural protection zoning. Farmers sell easements to a government entity or trust and get paid the difference between the value of the land for agricultural use and value for its best use. They permanently preserve land for agricultural use. Agricultural Protection Zoning ordinances designate areas where farming is the primary land use and thus discourage other uses.

Activity 2: Group Invitation

Read the following description of Keystone Township. Develop a community vision for future land use in your community. Use the Community Visioning Worksheet, Comprehensive Plan Considerations and the Toolbox Vocabulary. You are welcome to offer additional recommendations. Prepare your plan on a flip chart and use a map to draw growth boundaries and show recommendations.

Description

Located in the ridge and valley province of Pennsylvania, Keystone Township is beginning to feel land development pressures from local and outside sources. The township is located on the north side of the Nimby Valley. The northern tier of the township consists of a wooded ridge rich with hardwood forests and wildlife.

The East and West Branches of the Little Nimby Creek flow off of the ridge. The main stem of the Nimby Creek enters the township in the northeast through a gap in the ridge and flows southwest across the township. Both branches of the Little Nimby Creek are exceptional value streams. The Nimby Creek is high quality with some sediment problems from the surrounding farmland. Fishermen from across the state and nation visit these streams to fish for wild brook and brown trout.

The majority of the township is productive farmland. In the past, soil and rainfall had been excellent for growing crops but the last few years, drought conditions have persisted and water shortages could be possible.

The town of Gatesburg was originally a farming town providing support services and supplies to farmers. It is located at the junction of major highways PA 8 and PA 15. The East Branch of the Nimby Creek joins the main stem of the Nimby Creek in town. Gatesburg is an attractive site for high tech industries because of the abundance of high quality water, gentle topography and access to Interstate 99, just south of town.

The small borough of Portland is located on the main stem of the Nimby Creek. The borough grew up adjacent to a cement plant which used the high quality limestone found on the valley floor. There is a large limestone quarry. The plant closed recently, leaving many people unemployed. The plant and quarry have been abandoned.

There are small community parks in both boroughs. People enjoy biking trails that could connect to the state parks.

Activity 2: Roles for Keystone Township Community Visioning**John McDonald and Family**

A farmer for 50 years, John is looking forward to selling the farm to finance his retirement, buying a home and boat on the shore and providing money for the college education of his 10 grandchildren.

Bill D. Ozer and Construction Company

A local housing developer, Bill is hoping to expand his company and sees the need to expand growth boundaries, establish large developments in the township and thus provide jobs in the construction company to help the economy of the community. He is willing to support conservation and set aside some of the land for permanent protection.

Hillary Dale and the Organic Farming Association

Hillary, an organic farmer located near Gatesburg, and the association are both concerned about the impact of growth and development on agricultural areas and both want to preserve farmland in the township.

Forest Glen and the Nimby Land Conservancy

As a member of the Nimby Conservancy, Forest is trying to protect the existing natural areas, preserving green space and the water quality of streams and ground water. His group wants to purchase areas to protect wildlife and hopes the township will limit growth. He'd like to see areas set aside for hiking and bike paths to the state park.

Brook Trout and the Anglers Club

An owner of the local tackle shop, Brook would like to see more tourism brought into the area to fish the local streams.

The group wants to protect the headwaters of local streams and enhance forested areas along streams for wildlife (riparian buffer zones).

Polly Waytogo and the Chamber of Commerce

Polly wants to be elected as a township supervisor by promising to bring in lots of businesses and restaurants and encouraging development. She is interested in protecting the historical sites and wants to protect the beauty of the area.

Walter Mart and the Wallymarket Corporation

As a national retailer, Walter wants development so more people will move to the Nimby Valley. He and his corporation want to open a large store with large parking lots near the main roads. He needs a large warehouse in a nearby location that can handle large truck traffic. He wants to provide jobs and help fund a community recreation center.

Lotta Bucks and Hy Tech and Co.

Lotta and Hy would like to bring a computer manufacturing company to the Nimby Valley. They want to be sensitive to preserving the rural flavor and quality of life for the employees that will work there. They need a place for their factory, clean water and good roads for marketing. They need an airport for their transportation needs.

Activity 2: *Comprehensive Plan Considerations*

Before developing a comprehensive plan, a community should examine its resources, needs and problems. The community should share the information with the county planning office to see how they could help. Here are some factors to consider before developing your plan for the future land use in Keystone Township.

1. Water Resources: Where are the water resources? Where is the watershed? Is there a source of drinking water? Is there need for a lake or reservoir? Do we need to consider developing a water source for future needs? How do you protect the water in the streams so they are safe for fishing and swimming? How do you want to protect the water resources?

2. Forest Resources and Green Space: Where are the forested areas? Why are they important? How do you want to protect the forest resources and wildlife habitat in the future? What type of recreation will you encourage in green space? Do you want to manage the forested areas for timber?

3. Farmland: How important is the farmland to the community and the region? Where should future farmland be protected? How could you encourage farmers to protect the land as farmland?

4. Slope, Drainage, Floodplain: Where is the land steep or flat, and how does this impact development? Where does the land drain well? Is there a floodplain? What type of development if any should be located in such areas?

5. Geology, Soils, Mining: What type of geology is in the valley? Is it stable? Has there been mining activity? Is there a potential for subsidence? What type of soils seem to be in the valley? What type of protection could be afforded to the soils?

6. Wetlands: Are there wetlands? Wetlands are valuable for ground water recharge, flood control, removal of toxins and are important wildlife habitats. How can you protect wetlands from future development?

7. Current Land Use: What is currently there? How can you preserve some of the qualities of the existing communities? How can you protect the history of the community? How can you protect the natural areas? What is happening in adjacent areas that could impact the growth of the township? How could you work with other communities? In what areas could you develop a multi-municipal plan?

8. Former Land Use: Determine if former land uses could lead to future land uses through development on old industrial sites or building tourism around historic uses. Could areas in town be revitalized to make them more attractive for people to live?



Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Environment and Ecology
- Civics and Government
- Geography

Standard Statements

- 4.8** Humans and the Environment
- 5.3** How Government Works
- 7.3** Human Characteristics of Places and Regions
- 7.4** The Interactions Between People and Places

Content Objectives

- Define community, explain the impacts city, suburb and sprawl have on people and community
- Describe characteristics and benefits of a healthy community
- Analyze how human activities affect the environment
- Survey and compare characteristics of a community
- Problem solve solutions to community land use issues
- Conduct preference survey and analyze human needs and wants
- Define actions to improve their community

Instructional Strategies

- Analysis
- Compare and contrast
- Discussion
- Lecture
- Survey
- Data Analysis
- Problem Solving
- Presentation

Assessment Strategies

- Rubric for Project
- Presentations
- Survey
- Class Participation

Materials

Included:

- Lie/Don't Like Worksheet and Photos
- Community Postcards
- Community Nametags
- Community Description Cards
- Dilemma Cards
- Toolbox for Growing Smarter
- Community Survey
- Planning Meeting Worksheet
- Community Photos
- Your Community Worksheet
- Smart Growth Rating Sheet

Additional Materials:

- Flip Charts
- Pens
- Poster Board for Four Teams
- Transparency Sheets

Time

- 3.0 hours (One hour per activity. Time may be needed for the community survey outside of class.)

Where do we start making smart land choices? We need to start with our communities...our boroughs, townships, cities and neighborhoods. We don't have to settle for traffic jams and unattractive neighborhoods and cinder-block shopping areas. Communities can visualize what they want and take charge to assure that their community is changing in a positive direction. Just look at communities that you enjoy visiting. Identify the elements that make a community attractive and vital. Decide what is wanted and what is not desirable and develop a plan to make your community the best you can.

Living In Communities

Change is inevitable. It will happen whether your community is prepared or not. The pressures of development occur for many reasons. They can be traced to societal demands and consumer choices. But that doesn't mean a community cannot control its own destiny. It takes visionary leadership and an educated, motivated and committed citizenry. Creativity and patience can change a degraded neighborhood into a place that generates pride. A small group of motivated citizens can create a museum where a deserted factory once stood. A small group of dedicated leaders can create a regional tourist destination for visitors, artisans and wildlife viewers where few visitors ever ventured. It is this Pennsylvanian spirit and ingenuity that is portrayed in our communities that address change head-on and create their vision for the future.

Overview

Living in Communities includes three activities:

Activity 1: *What Is “Community?”*

Activity 2: *Community Changes, Community Choices*

Activity 3: *Survey Your Community*

Participants will review examples of Pennsylvania communities and highlight positive characteristics inherent in quality neighborhoods such as safety, recreation, green spaces, places to visit, things to do, good neighbors and positive places for working, living and recreating. Participants will become members of communities faced with the challenges of a changing community and must determine creative ways to face the changes to maintain the quality of life they envisioned for their hypothetical community.

Participants will analyze their own community, using tools such as questionnaires, completing worksheets and comparing visual preferences.

Activity 1:

What Is “Community?”

Summary: Participants will discuss a “sense of place”...what makes a community feel like “home.” They will review their own communities and describe what they like and what they would change about their community. They will discuss their opinions about suburban growth and sprawl. It is recommended that students view the DVD “Community Choices,” produced by the Conservation Fund and narrated by Ed McMahon.

Questions: What are characteristics of a healthy community? What do you like about your own community and what would you change? Why is it important to develop a “sense of place?”

Activity 1

Preparation

- Cut out pictures of different communities from a magazine.
- Provide flipcharts and pens for four groups.
- Provide chalk board or one central flip chart for recording responses.
- Prepare Like/Don't Like photo activity sheets (pp 101-103).

Procedure

1. Define the word “community.” A definition of community is “a group of living things sharing a common geographic space and having connections to each other.” Natural communities are as diverse as the plants and animals that reside there. From pond communities to streams, from wetland communities to forest communities, animals and plants live together in these communities and have a common connection through food chains, sharing space, communication or other relationships.

Human communities are varied based on place, history, culture, the natural environment, architecture and people. Communities throughout Pennsylvania, the country and the world are diverse and continue to change, but there are common threads that have been identified as components of a healthy community. We will review some of the factors that could be incorporated into a community vision.

2. Have participants sketch a rendition of their community. (Don't provide guidance but allow each person to depict their perspective of “community.”)

Highlight features of their community. Share with others what features you like about your community and what you would like to change about your community. Write the responses on a flip chart with headings

“What I Like About My Community” and “What I’d Like to Change in My Community.” What is a memorable place or feature in your community? What was part of your community years ago that is not there now? What has changed in your community over the years? Option: Have participants draw a postcard that relates to their community and send it to another participant.

3. Look at sets of Like/Don’t Like photos of different parts of communities. Distribute the Like/Don’t Like worksheet and have participants describe how they felt about the pictures of different aspects of communities. Have participants describe why they felt the way they did.

People living in the community have the power to make choices about the type of community they want. People need the skills and knowledge to know how to implement the choices important to them.

In Pennsylvania, communities are classified into different government types based on size, population density and location from urban centers.

4. When you read or discuss land use, much is said about suburbs and sprawl. Write the words on the board or flip chart: “City,” “Suburb,” and “Sprawl.” Visualization: Have participants visualize each and write down what participants visualize when you say the word. What do you see when I ask you to visualize a city?, suburb?, sprawl?

Cities and boroughs are referred to as urban centers. They have the following characteristics:

- Higher population density than the surrounding area
- Offer mixed use buildings such as businesses and homes on the same block or in walking distance of each other
- Pedestrian-friendly
- Served by public facilities, services and spaces such as public transportation or community centers

- Consist of many types of housing for different incomes
- Provide employment, education, worship and recreation opportunities in proximity to residential areas

Suburbs are characterized by the following:

- Located away from city centers
- Have a lower population density than traditional cities and towns
- Houses are generally larger and spread farther apart
- Create a dependence on cars for almost everything
- Separate uses into distinct areas so places for shopping, worship or movie theaters are not in walking distances

5. Discuss Sprawl. Sprawl is a term that refers to a regional pattern of development that began to impact communities after World War II. It refers to a random growth of housing developments, unattractive strip malls, business parks and roads. You could visualize sprawl as continuous suburbs and repetitive one-story commercial buildings surrounded by acres of parking lots located near highways lined with billboards and traffic lights.

Sprawl is often spoken of as an “impersonal process.” It actually has its roots in the fact that people are choosing to move away from towns and choosing to take up more space in a suburban lifestyle and sacrificing community character, pride and sense of community. Sprawl is a costly choice and impacts natural resources and community quality. There are ways a community can grow economically and sustainably while controlling the negative aspects of sprawl.

The choices of how growth and development are to occur are largely the decision of each municipality. It is important for each person to understand the diversity of choices, the impacts of those choices and the reasons people are making those choices. It is also important to understand the tools and strategies available to help deter the negative problems.

Activity 1

6. *Planting trees in a deserted urban lot is just one way to make a difference.* There are many planning choices that could improve existing urban areas and protect green space in suburban areas so that growing areas could provide more livable and environmentally compatible conditions.

Assessment and Review

There are advantages and disadvantages for living in different communities. Different choices might be better for certain life styles. Certain choices are better for protecting natural resources.

1. *What choices do people have?*
2. *Why do certain people make certain choices?*

Extension

In this lesson, the focus is on analyzing the value of livable towns, cities and similar communities. How can we improve the status of town living and create an awareness about their livability thus making it a more appealing and desirable choice for some? What characteristics make such places as Portland, Oregon and Wyomissing, Pennsylvania desirable places to live? How can we improve existing communities so that we can reduce the impacts of sprawl on our countryside?

Optional: Show Ed McMahon's DVD: "Community Choices." Discuss its message.

Activity 2:

Community Changes, Community Choices

Summary: Participants will define elements of a community and create a list of positive attributes that correlate

with attributes described by the American Planning Association. They will "develop" a community with all the elements needed for living. They will determine how to make their community desirable for themselves and their family. They will promote their community to others. Communities will face changes that will be addressed through the creativity and leadership of the citizens.

Questions: What attributes constitute a quality place to live? What is meant by a "sense of place" and how is it developed? What actions are important to help communities face changes?

Preparation

- Prepare Community Descriptions (p 104) and Nametags (pp 105-108).
- Provide four work areas with poster board and pens.
- Prepare a Community Postcard (pp 109-112) for each group.
- Develop four name place cards, each with the description of a community. Place the community name and description in each area.
 1. **Skyline City (urban community)** with public transportation, sidewalks, walkability to shops, neighborhood schools, historic architecture, housing for all income levels, police service, public transportation, retail and specialty shops, and restaurants.
 2. **Forest Lake Borough** with locally owned bait shop, gun shop, potter, citizens, small general store and a local diner that specializes in the "famous elk burger." Independent folks who look out for each other from a distance. Not too many outsiders visit the area. No motels. Beautiful wilderness. Easy access to countryside, adjacent to a state park with lake.

3. Coal Run Borough (mountainous area) with ethnic character, religious ties, strong neighborhood connections, ethnic foods, neighborhood support and security.

3. Rural Dairy Township in a pastoral setting, open space, farm houses situated on farms of 15 acres or more, community support and familiarity. Many make a living providing services to farmers. Annual community gatherings such as the Fair and Fall Festival draw visitors from long distances.

- Prepare overhead and copies of the Tool Box for Growing Smarter (pp 113-114).
- Prepare Community Dilemma Cards for each group (p 115).

Procedure

1. Introduce participants to each of the four communities. Inform them that each will be given a name of a job that could best be found in one of the four communities. Give each person a name of a job provided on the nametags. Each person must locate others with jobs appropriate to that community. Participants must introduce each other and determine if they would live in that specific community based on their job. There should be about five participants grouping together.

2. Distribute postcards of livable communities to each group. Have participants examine their photo of a community. Their task is to “sell” that community to the rest of the class.

3. Participants are to think of all the things that would make that community the best place to live. Each group will present and “sell” their community to the rest of the group. On a flip chart, record all the attributes that make the community a desirable place to live. Add check marks for each time a characteristic is mentioned again. Review the list with the whole group.

Livable communities are safe, walkable communities that provide access to natural areas, healthy recreational opportunities, an assortment of community services, places for children, architectural interest, historic interest, and unique character.

4. Explain that the American Planning Association and the Growing Smarter Network has developed a list of characteristics that have been identified in quality communities.

Distribute and display on an overhead the Tool Box for Growing Smarter. Review the list with the participants, comparing and contrasting their own list. What was missing? What is the same?

5. The participants will be working in groups to sketch a community map typical of the community that would employ the people in jobs that you have been assigned.

Before drawing your community, we will discuss the services that each community should have. In 2007, there were 2,563 municipalities in Pennsylvania. Each unit is distinct and independent of other local units.

Each municipality is responsible “to protect and promote public health, safety, morals and general welfare” of the people. This is called the “police power” that is the ultimate responsibility of each municipality.

In order to achieve this important responsibility, each municipality must provide for services to meet its goal. Brainstorm a list of the services a community provides and write them on a flip chart.

- Police and Fire Protection (safety)
- Local Roads
- Water Supply
- Sewage Collection and Treatment
- Parking and Traffic Control
- Parks and Recreation
- Garbage Collection/Recycling

- Health Services
- Libraries
- Public Buildings
- Planning and Zoning

Municipalities are given the power to determine how land is used through planning, zoning laws and subdivision laws. Zoning laws are designed to provide for the orderly development of the community. Each municipality may choose to implement such laws and if it chooses to do so, it must designate land to be used for every kind of land use, such as land to build different types of housing, businesses, parks, schools, quarries and industries. Zoning laws may set aside land for just one use such as housing or they may allow for mixed uses such as housing and shops. Zoning also regulates the size, height, location and uses of buildings and the size of land on which they may be constructed or how far back from the street or property lines a building may be located.

Zones are color-coded on the zoning maps. Here is an example of how colors are used on some zoning maps.

Green—Agricultural, parks and recreation

Yellow—Agriculture

White—Residential

Red—Commercial

Violet—Industrial

Blue—Civic, schools, governmental

Lets review the components that are located in most communities.

- 1. Residential**—Housing types should include apartments, single residences, trailer parks
- 2. Commercial**—Businesses, factories, restaurants, offices
- 3. Agriculture**

4. Parks and Recreation—Trails, parks, greenways, bike paths, jogging paths

5. Public Buildings, Civic Buildings—School, prison, churches, library, museum, courthouse, city hall

6. Services—Roads, railroad, airport, mass transit, fire department, police department, wastewater treatment plant, water treatment plant

7. Industrial—Sites for industries

6. Your team may choose to negotiate with another community to share one or more land uses. This is strongly encouraged and is referred to as a “multi-municipal” plan.

As you develop your community, think of a minimum of three laws that could regulate decisions for development in the future, keeping the community the way you like it.

7. Display the picture maps around the room. Conduct a “walk about” by rotating each group around to each community. Have each group spend a few minutes in each community. Using Post-it notes, have participants write what they like about the community and one suggestion to improve the community.

In a large group review the different communities, discussing what elements make a livable, healthy community.

8. There are pressures and changes happening to communities throughout Pennsylvania. Some communities are expanding in population and need more space for housing, some communities are growing in an unplanned manner, using up natural resources, agricultural lands and water supplies, and some communities are losing people and jobs and housing is abandoned. Each community must address the pressures of the future, whether it is growth or decline. There are priorities that will guide a healthy plan.

9. Each team will be given a Community Connections Dilemma Card. Each team will decide and establish

planning strategies to meet the future changes happening to their community as described on the dilemma card. Each team will try to incorporate smart growth policies whenever possible in their plan.

Have each team discuss the dilemma and share the planning tools they used to meet the changes.

Assessment and Review

1. *What is happening in their own communities that reflect these scenarios?*
2. *Survey a community, preferably their own community, and develop a profile of their own community and project what could happen in the future.*

Activity 3: Survey Your Community

Summary: Participants will conduct surveys in their community and assess issues and highlight positive elements. They will research information that is important about the functions of their local government such as the location of the municipal government and the schedule of meetings. They will conduct a preference survey and discuss how they can implement positive elements they envision.

Questions: What make a community a good place to live and what role can you take to implement your vision?

Preparation

- Provide two or more copies of the Community Survey Form (p 116) and the Community Photographic Project Survey (p 117) to each participant. The survey and project could be assigned to them prior to class or assigned to be completed outside of class hours. Participants should answer the questions and provide the survey to at least two or more members of the community.
- Prepare copies of Planning Meeting Worksheet (p 118) and Your Community Worksheet (p 119).
- Prepare copies or transparency of Community Photos (pp 120-121).
- Prepare copies of the Smart Growth Rating Sheet (p 122).

Procedure

1. *Participants may work individually or in groups to conduct a survey in their community.* They may develop their own survey tool or use the Community Survey worksheet provided.
2. *The Community Survey could be accomplished on the participant's own time or the survey could be accomplished as an organized field trip.* To further reduce time or provide practice, the survey could be performed in the classroom using the maps from the previous activities. Teams of participants would “stroll” through the classroom, visiting the picture maps and answering questions based on the maps.
3. *Participants compile their surveys by working in small groups of four or five participants to compare and contrast their findings about their communities.* They will compile their data, present graphic visualization of their surveys, presenting one summary to the class. Compare and contrast the responses.
4. *Photographic Survey.* It is recommended for each participant or participant group to develop a Photographic Survey of their community. (If working in groups, the group may identify a “photographer.”) Digital cameras could be provided through grants. This survey could be completed prior to the first day of the course or could be

extended over the time of the course. The survey could be presented by each participant during the course, by providing time to exhibit and discuss photos or limiting the number of slides and allowing time for a brief summary of their community. For large classes, have participants present in small groups. A Photographic Project Survey Work Sheet is included in the lesson.

5. Distribute the Planning Meeting Worksheet. Attend a municipal planning meeting. Before or during the course, participants are to research and attend a municipal planning meeting and summarize their experience, completing the information sheet. Contact the municipality and gather information on types of meetings, dates, times and place. Request a map of the municipality so that you can refer to the areas being discussed. To complete the assignment, attach the agenda and handouts. Refer to the Your Community Worksheet for your summary. Prepare a log of your experience.

6. Visual Preferences. Using the set of community photos in the lesson, or using a Powerpoint of communities, display or distribute photos to the participants working in groups of two. Provide a Smart Growth Rating Sheet and have participants rate their level of

preference for the photo. If it rates low, discuss what the community can do to improve the situation.

Participants will rate a photo scene from 1 to 5. (To save photos, have participants number a piece of paper and list the rating for each picture.) One represents a place they really like and five represents a place they don't like (2, 3, and 4 are preference ratings).

Allow participants to rate the scenes quickly, on their own and without interruptions. Once participants have rated their preferences, review in a large group and discuss what could be done

Assessment and Review

1. *What makes a community a good place to live?*
2. *What do you like about your community?*
3. *What can we do to make our communities better?*
4. *Review the elements of what you like about a community. What tools help to make communities better places to live? Discuss the aspect of public and private places, walkability, trees, safety, beauty and livability.*

When we see land *as a community to which we belong, we may begin to use it with love and respect.*

Aldo Leopold (Naturalist/Conservation Advocate)



Activity 1: Like/Don't Like Photos - Page 1 (1/2)

Compare the sets of photos. Which would you rather have in your community and why?

1. Strip Malls



2. Walkable Communities



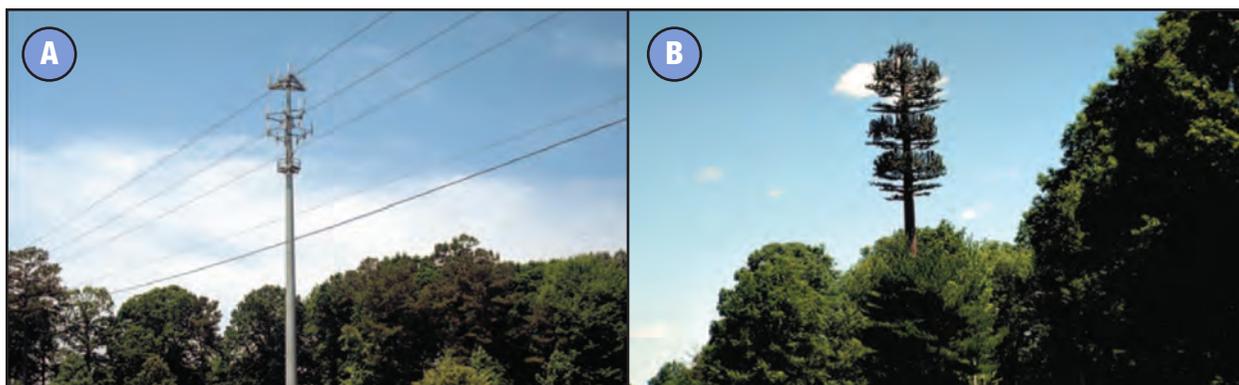
3. Neighborhoods



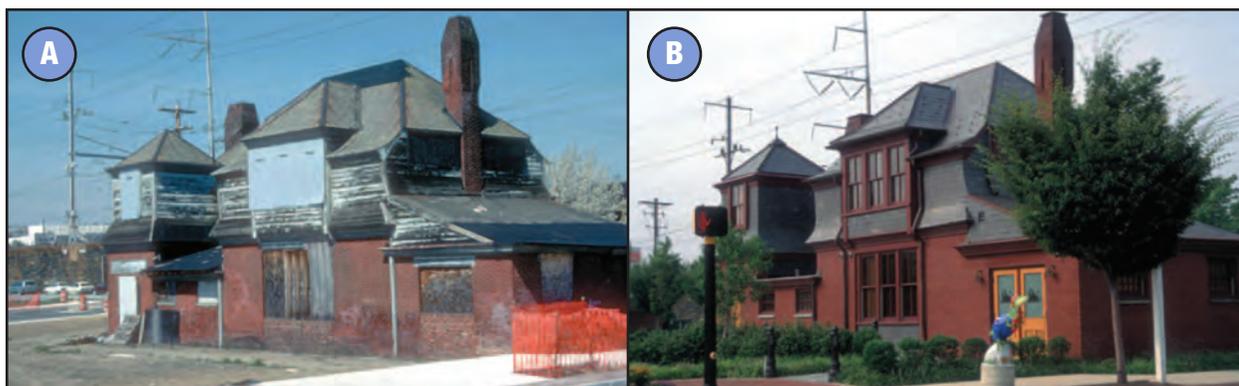
4. Gas Stations



5. Cell Towers



6. Old Buildings



Activity 1: Like/Don't Like Worksheet

Team Name _____

Look at Like/Don't Like photos. Describe how you feel about the image by placing an X in the space that indicates how you feel. Comment on why you like or dislike the picture and how you could change what you don't like.

Community Happenings	 I like it	 Ambivalent	 I don't like it	Comments
1a.				
1b.				
2a.				
2b.				
3a.				
3b.				
4a.				
4b.				
5a.				
5b.				
6a.				
6b.				

Activity 2: Community Descriptions

Community Description Name Place Cards to identify each workspace. Copy the descriptions of the communities, cut them out and place the appropriate description of the community at each workspace.

<p>Skyline City</p>	<p>This is a bustling urban community along the river. Factories along the riverfront provide jobs. Houses and shops are near each other. Visitors come to the museums and enjoy the historic architecture of the buildings. There is public transportation, sidewalks, shops, neighborhood schools and parks, housing for all income levels, young and old people living nearby, public services, two factories, block parties, and community festivals.</p>
<p>Forest Lake Borough</p>	<p>This borough is located in one of the most rural areas of the state located near a state park which has a great trout stream, and great hunting. It is a heavily forested area. There are small locally-owned stores along main street. An art guild is drawing in a few artisans. People have lived there for years. Small supply stores do most of their business in the fall during hunting season or spring trout season. Once was home to a large paper mill that used the lumber cut from the surrounding hillside but they have since closed down. The borough has tried to maintain a quiet profile. Biologists and state agencies are involved in reintroducing elk to the region.</p>
<p>Coal Run Borough</p>	<p>Character of ethnic groups is evident, strong neighborhood connections, ethnic restaurants, strong religious connections, neighborhood support and security, railroads and coal mining operations employ most of the people.</p>
<p>Dairy Township</p>	<p>Pastoral setting, open space, farm houses situated on farms of 15 acres or more, community support and familiarity. Many make a living providing services to farmers. Specific community gatherings during the year. Annual Farm Show is the highlight of the year.</p>

Activity 2: *Nametags - Page 1 (1/4)*

Cut out the following nametags for each participant. The jobs are to be associated with the character of the community. Participants will group themselves by community category.

<p style="text-align: center;">Skyline City Mayor</p>	<p style="text-align: center;">Housing Project Developer and Land Fill Owner</p>
<p style="text-align: center;">Bus Driver and Nature Conservancy Member</p>	<p style="text-align: center;">Taxi Cab Driver and Coach for City Basketball Team</p>
<p style="text-align: center;">City Chamber of Commerce Member and NFL Promotion Agent</p>	<p style="text-align: center;">Factory Worker and Bicycle Club Member</p>

Cut out the following nametags for each participant. The jobs are to be associated with the character of the community. Participants will group themselves by community category.

Forest Lake Borough Council Member	Craftsman: Potter
Diner Waitress serving the “famous elk burger”	Tourist Bureau Director
Waterfowl Ornithologist and Elk Biologist	Gun Repair Shop Owner and Fly Fisherperson

Activity 2: *Nametags - Page 3 (3/4)*

Cut out the following nametags for each participant. The jobs are to be associated with the character of the community. Participants will group themselves by community category.

Coal Run Borough Mayor	Coal Mining Historian
Retired Mule Driver and Steam Engine Enthusiast	Pizza and Pirogies Restaurant Owner
Mountain Recreation Company Owner	Mining Reclamation Bureau Director

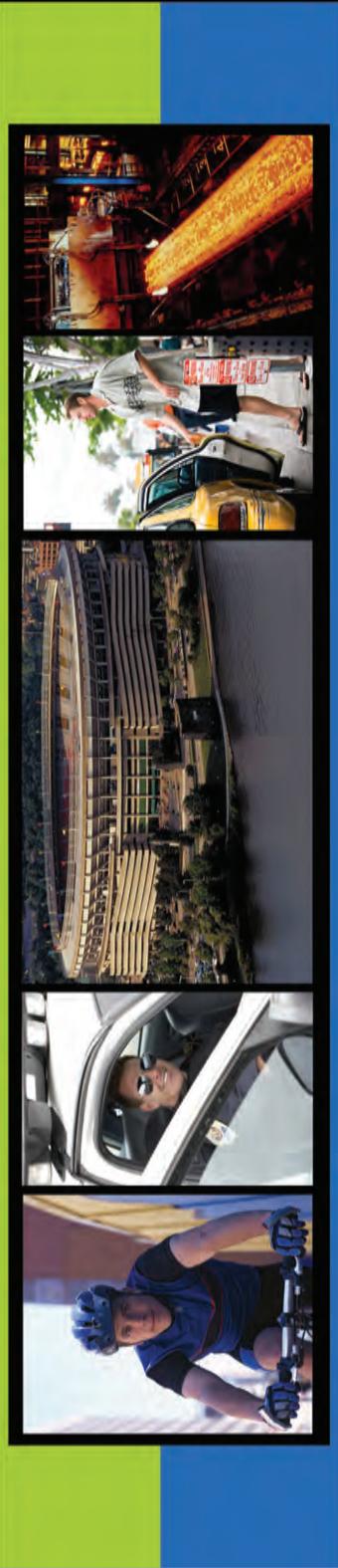
Cut out the following nametags for each participant. The jobs are to be associated with the character of the community. Participants will group themselves by community category.

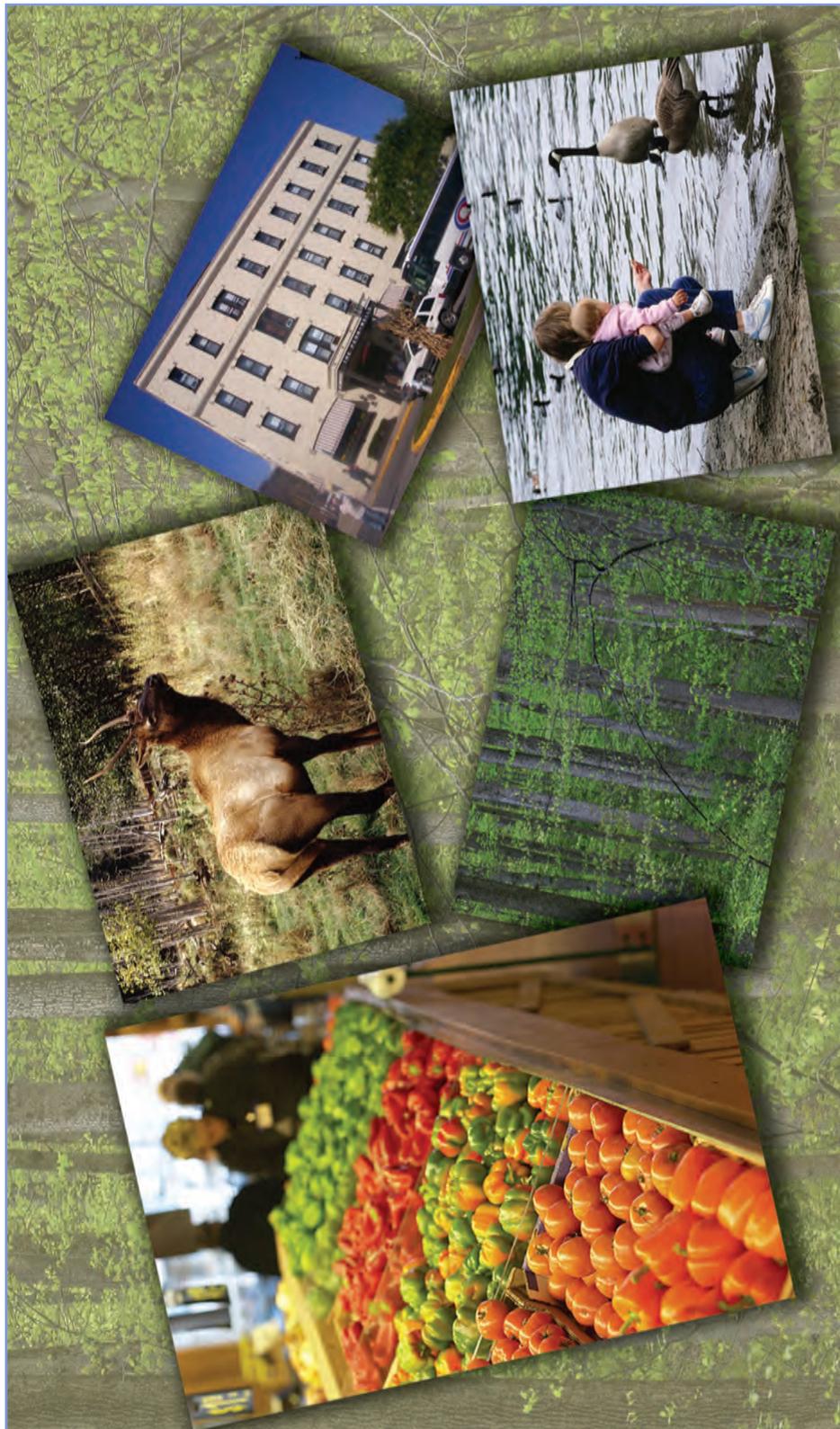
Dairy Township Supervisor	Member of the Farmland Preservation Society
Farming Equipment Sales Person	Dairy Farmer
Soil Conservation Agent	Country Acres Housing Developer

Welcome to Skyline City



Skyline City ...It's Like Night & Day!

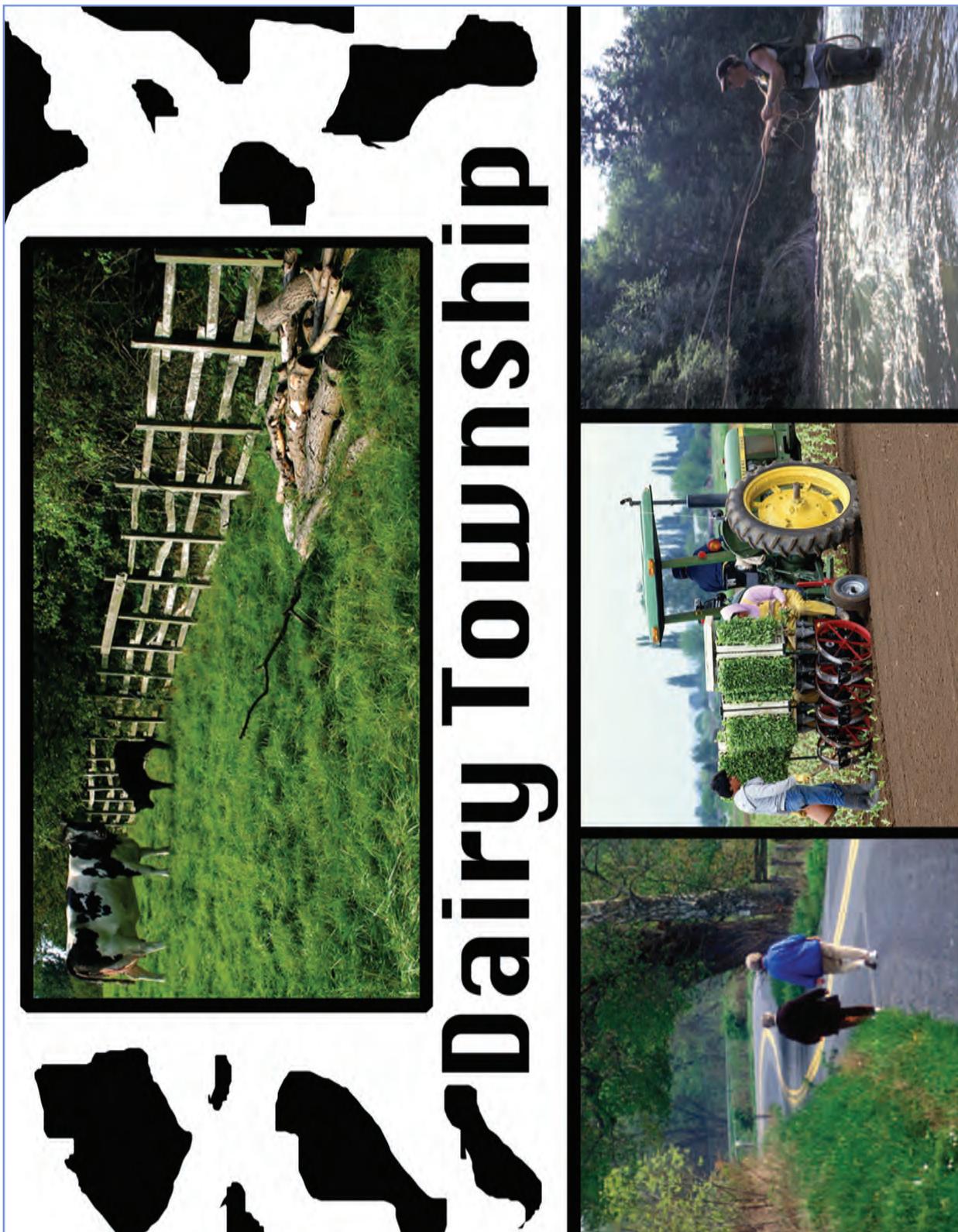




Forest Lake Borough







Activity 2: Toolbox for Growing Smarter – Page 1 (1/2)

“Smart Growth is development that serves the economy, community and the environment.” Smart growth provides solutions to concerns facing many communities. It makes it possible for communities to grow in ways that support economic development, jobs and yet achieve healthy lifestyles and clean environments. The following have been adapted from the Smart Growth Network and Thomas Hylton’s *Saving Pennsylvania*.

1. Mix Land Uses Create a character of the “old” neighborhoods by having people live, work, shop and socialize in neighborhoods. Allow for planning and zoning for livable communities and promote the concept as a choice for healthy living.

2. Take Advantage of Conservation Subdivision Design (CSD) Americans are consuming more land than ever before. The new house size grew from 1,725 square feet in 1993 to 1,928 square feet in 1999. An important part of smart growth is to encourage and celebrate the value of compact building design and leaving more land as undeveloped. CSD incorporates mixed-use housing (single-homes, townhouses, apartment buildings) into an area while ensuring at least 50 percent of the developable land is permanently protected and left as natural space. This may be in the form of a park, trail, orchard, woodlands, etc. Build houses close to streets typically from 60–80 feet across from one another on both sides of the street. This provides a feeling of an outdoor room to the public interface.

3. Create a Range of Housing Opportunities and Choices Housing choices should accommodate the housing needs of all residents. Some may want large back yards but alternatives should be available that are attractive and desirable, providing walkability, access to transit and public parks.

4. Create walkable neighborhoods In the past 50 years, development patterns led to increased reliance on automobiles and eliminating walkability. Walkable communities enhance mobility, reduce negative environmental consequences and support improved social interaction. Communities should provide and beautify walkways, bike lanes, sidewalks and crosswalks. Traffic-calming techniques such as speed bumps and narrower streets will slow down automobiles. There should be a center of the neighborhood that could be a square or memorable intersection. It could have a Post Office or Corner Store. It is recommended that the center of the neighborhood be within a five to ten minute walk for residents.

5. Foster Distinctive, Attractive Communities With a Strong Sense of Place Strip shopping centers and unattractive housing development do little to stimulate civic pride. Smart growth supports the idea that development should help create communities that are distinctive and unique. To create a community of distinction some ideas might be to plant trees along streets to create a canopy for the feeling of an outdoor room. Front porches serve as a transition element from the private to public realm. They create cozy space to relax and socialize. Create gardens on corners or in lots. Construct playgrounds. Enhance unique features such as street lights or historic buildings.

6. Preserve Open Space, Farmland, Natural Beauty and Critical Environmental Areas Communities that preserve open space are preserving critical environmental areas, providing recreation opportunities and improving places for enjoyment and beauty. PDR or purchased development rights offers a permanent solution for communities to preserve open space by having landowners sell the rights to develop land to a trust or government agency. Preservation programs are used to keep farmland protected. Green edges surrounding a community help shape neighborhoods.

7. Strengthen and Direct Development Toward Existing Communities “Fix it first.” Communities could develop priorities to fix up existing neighborhoods that already have streets, sewers, lighting and schools. Brownfields programs encourage development on sites that could previously have experienced environmental contamination. By encouraging development to occur close to existing development, communities can tap existing infrastructure and protect open space and save municipal tax dollars. Planning could decide boundaries for growth over time.

8. Provide A Variety Of Transportation Choices States are responsible for much of the transportation planning and investment. States could offer incentives to communities that ensure mixed transportation modes, funding a balance of pedestrian, auto, transit and bike transportation facilities. Provide an interesting network system of streets. Integrate lanes, alleys, streets and boulevards to promote street vistas. Move cars to the rear for parking and preserve the frontage streetscape. Lanes and alleys allow for vehicular access to rear garages.

9. Shops and Services Are Reachable The elementary school should be close enough so children can walk. Playgrounds should be near dwelling areas. Civic buildings and worship buildings are located centrally or where they are easily accessible. Shops, especially a convenience store and a corner restaurant are valuable to the neighborhood.

10. The neighborhood is organized to be self-governing People should feel confident to gather with others for the purpose of self government. They should decide on matters of maintenance, security and physical change.

Activity 2: Dilemma Cards

Copy and distribute a Community Dilemma Card to each group. Participants are to design planning strategies that relate to the challenges on the card.

<p>Skyline City Dilemma</p>	<p>Due to societal changes and government incentives for new development, people began to move out of the city into the suburbs. The factories closed. There were many empty lots where old buildings were torn down. The neighborhoods began to deteriorate. Restaurants and shops closed. The city needs a plan to attract people and jobs back to the city. The city needs a plan that will strengthen attractive neighborhoods, create character based on its historical structures, improve green space, plant trees, attract jobs, provide luxuries to bring people back to live and to visit and revive the economy. They could create urban growth boundaries to protect the border distinction and work with adjacent communities to protect green space and farmlands.</p>
<p>Forest Lake Borough Dilemma</p>	<p>The community had survived on fall hunters who enjoyed the quiet community, forested mountain-side, and the state park. Employment was depressed after the paper mill closed. The state reintroduced elk into the surrounding forests. As the elk population grew, visitors began traveling to the area to view the elk. The village streets and surrounding roads became heavily congested during the fall viewing time. There were few facilities to handle the numbers of elk watchers who began trespassing on people's properties searching for elk and restrooms. The growing elk population became a nuisance to the homeowners in the area. The community needs to develop a plan to promote the wildlife viewing and be able to address the needs of visitors and concerns of residents which addresses the growing elk herd and community growth. Focus should be protecting the natural and cultural resources and finding ways to minimize land use, while maintaining economic stability.</p>
<p>Coal Run Borough Dilemma</p>	<p>The mining companies have reduced their output and closed many mines. Culm, the waste from the mining industry lies in big piles around the town. Abandoned trains dot the landscape and railroad beds are left to deteriorate. The fast moving streams are degraded by acid mine drainage. The community needs to develop a plan to protect the beautiful mountain vistas, natural resources and cultural and historic treasures of the area. The plan needs to provide incentives to improve the area, bring in new industry and tourism using the mountains, rivers and history.</p>
<p>Dairy Township Dilemma</p>	<p>Some farmers are being offered top dollar to sell their lands for development. Some farmers do not want to sell land. Farmers that will sell, want to protect open space and natural lands. People in the community want to protect the pastoral nature of the area and reduce sprawl. Should developments be built, they want to recommend certain types of development that will protect more open space. Your challenge is to plan for the future using planning tools such as easements, traditional neighborhood development and cluster zoning to protect the resources and cultural heritage of the area.</p>

Activity 3: Community Survey

Name _____ **Community Name** _____

1. List two things that you like about your community.
2. List two things you would like to change about your community
3. Name an activity that you do that involves the community.
4. What is your favorite place in the community?
5. Does the community have a “center of town”? If yes, describe.
6. Are there places for pedestrians to walk such as sidewalks? How long would it take to walk from your house to the nearest store? How long would it take to walk from your house to school?
7. Does your community have a variety of mixed uses such as houses, shops, businesses and recreation in an area? List the categories of buildings that you see.
8. Describe the natural features, open space and green areas? How are these featured in your community? Are there shade trees? List and describe your favorite green spaces in your community.
9. List and describe favorite gathering places in your community. List historic places.
10. Are there playgrounds near residential areas? Describe a playground you use.
11. Are there alleys and parking in the rear of the house and front porches?
12. Is there a diversity of incomes, ages and people among community members?
13. Is the community safe? What services help to keep the people of the community safe? What services did you see in your survey?
14. Is the community growing and changing? How? Why?
15. Is the community organized to be self-governing? What evidence do you see of this?
16. What activities could you do to help your community?

Activity 3: *Community Photographic Project Survey*

Each participant should compile a photographic tour of land use in your area. The project could consist of 20 photos and should be presented in a manner that displays elements of your community. They could be presented as an exhibit, Powerpoint or in an album. The following are suggestions for the photographs:

- 2-3 favorite places
- 2-3 least attractive places
- Sights you see every day
- A public place and a privately owned place
- Land use that negatively impacts the environment
- Land uses that positively impacts the environment
- Architecture styles of buildings in your community
- Places people work
- Places people play
- Places people eat
- Places people shop
- Municipal building
- Roads, intersections, parking lots
- Trees and gardens
- Places you would like to change
- Methods of transportation
- Services in your community.

Your project will be graded using the following rubric:

95–100%	85–95%	75–85%	65–75%
<i>At least 20 photographs with a minimum of 15 elements described above presented in an organized format demonstrating an understanding of land use.</i>	<i>16–19 photographs with a minimum of 12 elements described above presented in a visually pleasing manner.</i>	<i>At least 11–15 photographs with a minimum of 8 elements described above presented for evaluation.</i>	<i>10 photographs with a minimum of 8 elements described above presented for evaluation.</i>

Activity 3: Planning Meeting Survey

Team Members _____ **Municipality** _____

Contact the municipality and complete the chart. Decide on a minimum of one meeting to attend and complete the summary. On a separate sheet of paper, outline the government structure of the municipality.

Municipality type _____ Telephone _____

Municipal Building Location: _____

Type of Meeting	What Day Each month?	Time	Location	Agenda: Items of Interest
Planning				
Zoning Hearing				
Environmental Advisory Council				
Other				

Questions

1. *What was the date and type of meeting you attended?*
2. *How many people were in attendance?*
3. *Describe how the meeting was organized and conducted?*
4. *What topics were covered?*
5. *What were issues of concern?*
6. *What were your reactions to the meeting?*
7. *What information do you need to become more involved?*

Activity 3: *Your Community Worksheet*

Name _____

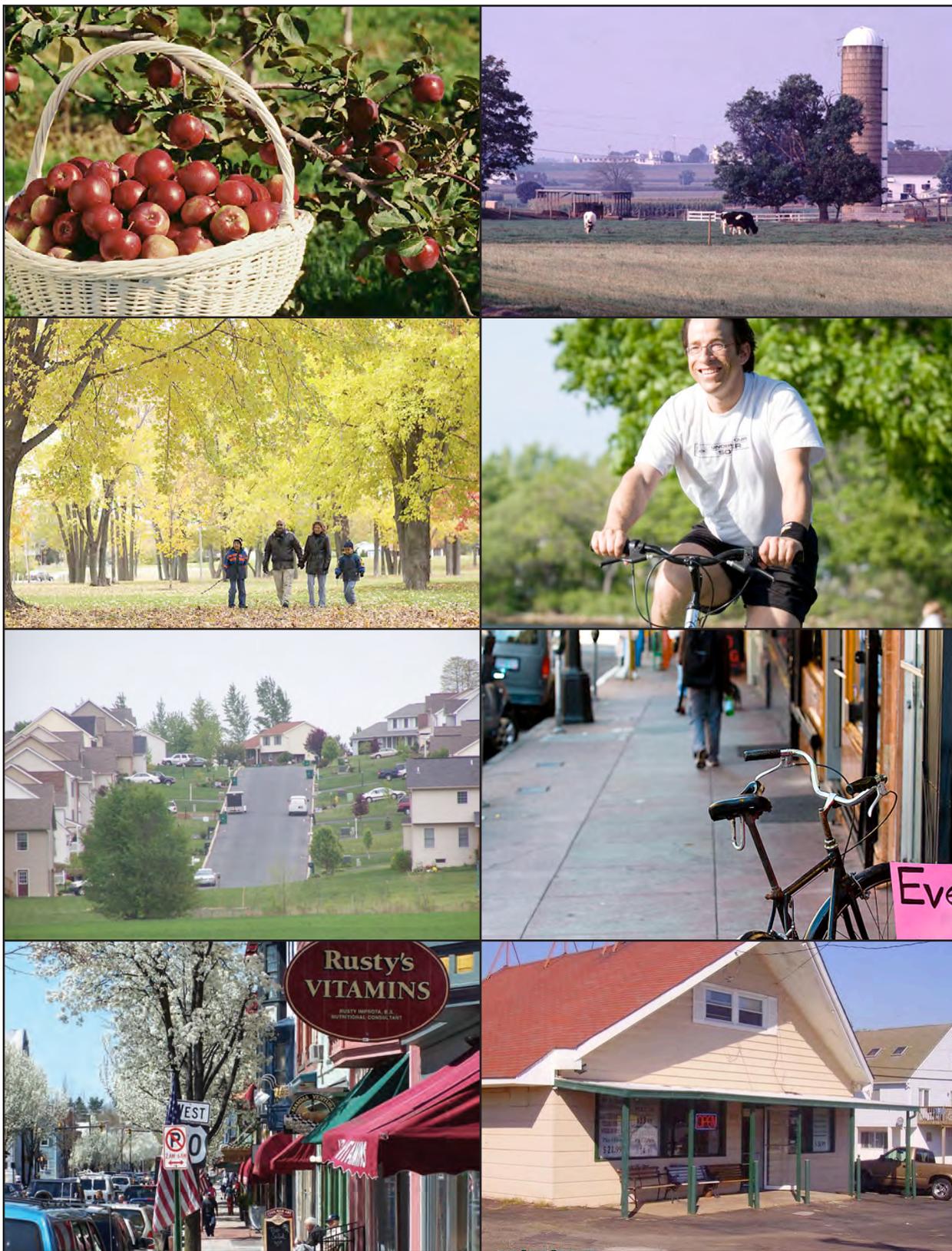
Name of your municipality _____

Type of Municipality _____ **County** _____

Find items that symbolize your community or an item that represents your community. Describe or sketch your community item on the back of this page and explain why you selected it.

1. Two GREAT things about your community
2. A special outdoor place that you like to visit
3. A favorite place in your community
4. Two things that you would like to change about your community
5. A favorite activity you do in your community
6. Describe one action that you could do that would help your community

Activity 3: Community Photos - Page 1 (1/2)



Activity 3: Community Photos - Page 2 (2/2)



Activity 3: Smart Growth Rating Sheet

Team Members _____

Community Name and Location _____

Determine how the community you are studying meets the criteria for Smart Growth. Rate each criteria by giving it 1, 2, or 3 points. 1 point indicates a poor rating, 2 is average, and 3 indicates it meets criteria.

Criteria	Rating	Describe	Recommend Improvements
Mixed Land Uses <i>People live, shop, work and socialize in the community</i>			
Conservation Design <i>Compact building design is attractive and saves land</i>			
Housing Choices			
Walkable Neighborhoods			
Distinctive and Attractive			
Open, Park, and/or Green Space nearby			
Fix up existing neighborhoods			
Choice of Transportation			
Nearby Services <i>(schools, churches)</i>			
Self Governing Neighborhoods			

Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Environment and Ecology
- Civics and Government

Standard Statements

- 4.7** Threatened, Endangered and Extinct Species
- 4.8** Humans and the Environment
- 4.9** Environmental Laws and Regulations
- 5.2** Rights and Responsibilities of Citizenship

Content Objectives

- Compare and contrast historical landscape changes with present day situations
- Analyze how land use needs relate to sustainability of natural resources
- Describe the value of habitat protection as it relates to sustainability of specific species of plants and animals
- Define threatened, endangered and extinct species and explain how human activities impact wildlife
- Research and develop strategies relating to deer management and land use
- Describe a minimum of eight ecosystem services relative to human beings
- Explain laws and tools for protecting land resources
- Analyze the conflicts of land choices and techniques to resolve them
- Calculate and evaluate cost comparisons between developments and protecting land
- Develop and describe a plan for implementing tools for land protection in a variety of situations

Instructional Strategies

- Analysis
- Compare and contrast
- Discussion
- Lecture
- Survey
- Data Analysis
- Problem Solving
- Presentation

Assessment Strategies

- Group presentations
- Group and individual discussions
- Successful completion of land protection worksheets
- Calculations and evaluation of cost analysis
- Post-lesson questions and response

Materials

Included:

- Copies of Animal and Plant Worksheet for each participant
- White-tailed deer Worksheet
- Problem Solving Worksheet
- Ecosystem Services Worksheet and Answer Sheet
- Thank You Trees Worksheet
- Economic Benefits of Ecosystems Information Sheet
- Pennsylvania Declaration of Rights
- Development vs. Preservation Worksheet
- Protecting Resources Tools
 - ~ Greenways Information Sheet
 - ~ Open Spaces and Natural Areas Information Sheet
 - ~ Farmlands Information Sheet
 - ~ Land Recycling Information Sheet
 - ~ Environmental Advisory Councils and Land Trust Information Sheet
- The Last Straw Artwork
- Lancaster County Farms Photo
- The Last Straw Worksheet
- Community Planning Worksheet
- Jonestown Map
- Protecting Land Bingo

Additional Materials:

- Poster Board for Each Group
- Flip Charts
- Markers
- Apples and Plastic Knife
- Transparency Sheet

Time

- 3.0 hours

The built environment has direct and indirect effects on the natural environment. The built environment affects wildlife habitats ecosystems, endangered species and water quality through land consumption, habitat fragmentation and replacement of natural cover with impervious surfaces. Certain patterns of development place little value on the importance of natural systems. As growth becomes a sprawl of roads and rooftops, there is a great need to plan and protect wildlife habitat and ecosystem services.

More than 25,000 species live in Pennsylvania's woods, fields and streams. Forests cover 17 million acres or about 60 percent of our total land area. As the patterns of sprawl and growth continue, natural systems are disrupted, destroyed or displaced by the unplanned spread of the built environment. In recent decades, habitat destruction has caused the loss of 56 percent of our wetlands, 156 plants and animals have disappeared

Protecting Land Resources

and other valuable habitats are being fragmented or destroyed. The wetlands and woodlands of Pennsylvania protect biological diversity and provide ecosystem services to the natural and human communities.

Planning allows us to guide growth while protecting valuable habitat. Educating people about land choices is a step toward protecting environmental resources. This lesson provides an overview of tools and strategies that help to protect the natural resources and green space. Participants will focus on habitats and organisms that tell a story about the impact of land choices. Participants will examine valuable ecosystem services and learn to apply the land use tools that help protect resources and open space.

Overview

Protecting Land Resources includes four activities:

Activity 1: *Wildlife and Land Use*

Activity 2: *Ecosystem Services*

Activity 3: *Tools to Protect Land Resources*

Activity 4: *Jonestown: A Case Study (Following the Greenway)*

“Green” is essential for community health, recreation and aesthetics. Protecting valuable green spaces, trees and other natural resources, should be a priority in community plans. It is important for communities to protect and manage their green space and parks in sustainable ways.

This lesson provides opportunities to discuss the value of environmental services, the impact of unplanned development and the strategies for protecting natural resources and green space. Participants will focus on the story of endangered and threatened species, discuss the values of trees and forests in urban and rural settings and apply land use tools that help protect resources and open space. They will develop a community plan proposing strategies for implementing tools and forming partnerships.

Participants will conduct a study of Jonestown, Pennsylvania and provide recommendations in the development of a greenway. A greenway is a corridor of green space that connects to nodes or destinations, drawing people and wildlife to move within this natural pathway. Participants will apply their knowledge and skills in helping Jonestown design their greenway.

Activity 1:

Wildlife and Land Use

Summary: Participants will discuss the changes in Pennsylvania’s natural resources since the arrival of William

Penn, reviewing the impact of development on endangered and threatened species as well as the challenges of managing white-tailed deer.

Questions: What historical events caused changes to Pennsylvania’s natural resources? What organizations and agencies evolved to manage natural resources?

What are the main reasons for endangered and threatened species? Why is it important to manage white-tailed deer? Why is it important to remove invasive species and promote native plantings?

Preparation

- Prepare information sheets on threatened and endangered species for each participant (pp 141-144). Work groups can be organized by the organism. Each group should have a work space with poster board and markers.
- Prepare information on white-tailed deer (pp 145-147) for each participant.
- Prepare the Problem Solving Worksheet (pp 148) for each group.
- If using the lesson “Oh Deer,” set up as directed by the lesson.

Procedure

1. What changes happened to the Pennsylvania environment over the past 250 years? List responses. Develop time line cards or a presentation of the following historic events that created environmental changes and ask participants to place them in chronological order.

Think back about 250 years ago to the land seen by William Penn. Here is a quote that Mr. Penn wrote in 1684, two years after he arrived on the west shore of the Delaware River. As it is read, compare the wildlife you see today with the animals highlighted by Mr. Penn.

“The food the woods yield is your elks, deer, raccoons, beaver, rabbits, turkeys, pheasants, heath-birds, pigeons and partredge innumerable. We need no setting dogs to ketch, they run by droves into the house in cold weather. Our rivers have also plenty of excellent fish and waterfowl as sturgeon, roeshad, herring, cadfish, or flatheads, sheeps heads, roach and perch; and trout in inland streams. Of foule, the swan, white gray and black goose and brands, the best duck and teal I ever eate and the snipe and curloe with the snow-bird are also excellent.”

If you were to design a travel brochure based on Penns Woods, it would be quite different than today. People impact their environment in many ways. The landscape changes as resources are removed or extracted. William Penn valued Pennsylvania’s natural resources and promoted conservation in his original charter.

Mr. Penn directed the new colonists to preserve one acre of trees for every five acres cleared, setting a vision in the early colony for the protection of natural resources. He and many early colonists extolled the virtues of the wildlife, the forests and the abundance of natural resources.

Since that time, 56 percent of Pennsylvania wetlands have been lost. The Pennsylvania of William Penn had at least 156 more species of native vascular plants and vertebrates than we see today. Among the animals that are now extinct include the passenger pigeon, woods bison, blue pike, eastern tiger salamander and the small white lady’s slipper.

Historical Background Information: (To be reviewed with students) What William Penn experienced was a great American wilderness filled with giant chestnut forests where wild turkey and deer thrived. Beech trees crowded the ridges where passenger pigeons fed on the nutritious nuts. Two hundred foot white pines and hemlocks loomed where elk and black bear meandered.

Elk and wood bison herds summered on mountain meadows. Wetlands rich in biodiversity provided habitat for a host of other plant and animal species.

Pennsylvania did not stay wild for long. The first colonists enjoyed the fertile soils, climate and growing season.

Colonists grew in numbers. New farms needed fields for crops, wood for heat and lumber for houses, barns and tools. Iron furnaces that forged the iron plows and rifles needed charcoal to melt the ore. Each iron furnace consumed an acre of forest a day.

From 1850 to 1870, Pennsylvania produced more lumber than any other state. Forests disappeared and so did the wildlife. By 1750, deer and squirrels were scarce in many areas. Native elk disappeared and the original woods bison, wolves and mountain lions were extinct before the end of the 1800s. As the old-growth forests disappeared, forest birds such as grouse, wild turkeys, barred owls and pileated woodpeckers declined. (Today, only in remote areas of Pennsylvania, such as the Alan Seeger Natural Area in Huntingdon County, can we find evidence of what forests use to look like.)

The log boom moved west and provided relief to Pennsylvania forests. The American Chestnut, the dominant hardwood, was attacked by an introduced fungus which destroyed most of the remaining trees. Oaks siezed the vacant spaces and by the 1930s, new woodlands were taking hold. Deer thrived on acorn mast and herds increased.

Pennsylvania’s mineral wealth was discovered early in its history as iron furnaces smelted iron ore, using the limestone resources and the forests for charcoal. Miners opened the coal fields and the demand for coal grew.

The Commonwealth contains the northern segment of the world’s largest deposits of bituminous coal and the

world's greatest deposits of anthracite coal. By the late 1800s the appetite for coal caused intensive mining and the growth of dense communities of miners and workers. As coal was extracted, sulfur combined with water and air-forming sulfuric acid which flowed from the mines and poisoned streams.

Oil was first discovered in America at Titusville, Crawford County in 1859 and its discovery spread to other counties. Wooden oil pipelines burst and salt brine from wells seeped into streams, suffocating aquatic life.

Today, Pennsylvania's minerals continue to change the landscape, the environment and the economy. With new technologies, the Marcellus Shale, located deep in Pennsylvania's geology, has the potential to produce enormous quantities of natural gas. This discovery has created a "gold rush" mentality in Pennsylvania that will challenge today's communities, and those of the future.

People also found other ways to change Pennsylvania's environment by introducing exotic species imported from other parts of the world. The gypsy moth and the blights that threatened elms and chestnuts were the most famous. For example, in 1904, horticulturists imported the Asian chestnut tree into New England which carried a fungus under its bark. By the 1920s, the beneficial chestnut trees were nearly extinct. Invasive species continue to degrade natural native habitats and much effort is directed at removal of species that impact native wildlife.

In 1866, Governor Andrew G. Curtin established the Commissioner of Fisheries making the Pennsylvania Fish Commission one of the oldest fisheries and conservation agencies in the United States. In 1895, Pennsylvania Bureau of Forestry was established and in 1898, the first forest reserve was started which began the two million acre state forest system. In 1895, the Pennsylvania Game Commission was also

organized to protect the remaining wildlife. In 1902, Pennsylvania established the first state park at Mont Alto, Franklin County. Setting aside land for wildlife, natural resources and recreation became a priority for many Pennsylvanians.

Because of the efforts of early conservationists, Pennsylvania today has a rich diversity of species and natural communities. More than 3,500 species of plants and animals have been documented in Pennsylvania. If you include the fungi, protista and nonvascular plants you could add 20,000 more species.

Unfortunately, land use change is the greatest threat to Pennsylvania's natural communities and biodiversity. Habitat loss and degradation are the greatest threats to native diversity. Some 156 species of vascular plants and vertebrates have disappeared and another 351 species have become endangered or threatened in Pennsylvania.

In 300 years following Penn's landing on the Delaware, three million acres of natural habitat have been converted to urban uses. In the past two decades 1982 to 2002, another million acres have been converted to development. In 1982, Pennsylvania was changing 100 acres per day from the natural environment to the built environment. Today, the rate is estimated to be more than 350 acres per day and it's accelerating. Pennsylvania has one of the highest per capita rates of land consumption in the country

2. Some species actually increase due to changing landscapes.

Development is not always a one-way street for some animals and plants. Some species thrive, causing serious problems for other species. Invasive species threaten our native species. Define the terms "native species" and "invasive species." Using photos from brochures and websites, provide photos of native and invasive species and allow participants to categorize them. Information can be located at www.invasive.org, or on the DCNR website:

www.dcnr.state.pa.us/forestry/wildplant/index.aspx,
www.dcnr.state.pa.us/forestry/wildplant/invasive.aspx,
 and www.dcnr.state.pa.us/forestry/wildplant/native.aspx.

Species of plants and animals that have existed in Pennsylvania prior to the arrival of the first settlers are considered native species. They have adapted to soils and conditions of the ecoregions in which they live. Invasive species are plants or animals that are not native to the region. Their proliferation causes harm or threatens habitat of native species.

Year after year, species are introduced to areas without knowledge or understanding of their potential powers to cause harm. Plant species such as purple loosestrife and Japanese knotweed, grow without natural controls and, in time, will become the dominant species, crowding out any native plants and thus diminishing native food sources for native animals. There are invasive insects, animals and pathogens as well. Forest pest insects include the hemlock woolly adelgid and gypsy moth which have destroyed native trees. Threats can be so severe that entire species have almost been obliterated.

Communities are encouraged to design parks and greenspaces utilizing native plants and avoid invasive species. *Creating Sustainable Community Parks, A Guide to Improving Quality of Life by Protecting Natural Resources* is an excellent resource produced by DCNR's Office of Conservation Science in partnership with Pennsylvania Recreation and Park Society, Inc. Information can be found at www.dcnr.state.pa.us/brc/GreeningPennsylvania.pdf.

Discuss: As communities grow, leaders should reflect on the impact that growth and development may have on environmental services and features. What are some of the consequences of unplanned development to wildlife and the environment?

- Removal and destruction of wildlife habitat
- Fragmentation of habitat: Breaking up forests or migratory routes
- Stormwater runoff impacts wildlife in streams and causes erosion
- Pavement and rooftops are hot in the summer, heating up rainwater before it enters waterways causing a form of thermal pollution
- Impervious surfaces impacts groundwater recharge
- Homeowners and commercial sites use fertilizers and pesticides that could impact water quality
- Increase in automobiles: Discharges from automotive fluids that wash into waterways
- Wildlife/Vehicular collisions (deer, toads, owls, etc.)
- Winter street maintenance increases salts into waterways
- Light pollution impacts migratory animals
- Windows in tall buildings block flight of birds and bats
- Wind turbines may be detrimental to migratory animals and birds

Communities should value their natural resources as an asset and a vital part of their character.

3. What impact does growth and development have on some of the state's wildlife species? In this activity we will discover some of the species impacted by destruction of their habitat and discuss ways to manage lands to protect sensitive species.

Write the following words on a flip chart: "Extinct," "Endangered," "Threatened" and "Extirpated." Define each of the words.

What do we mean by the word "extinct?"

“Extinct” refers to species that occurred in Pennsylvania but no longer exist across their entire range. There are 156 species of vascular plants and vertebrates known to have become extinct in Pennsylvania over the past 250 years. Today, more than 350 species are currently at risk in the Commonwealth.

“Endangered” refers to species in imminent danger of extinction or extirpation throughout their range in Pennsylvania

“Threatened” refers to species that may become endangered within the foreseeable future throughout their range in Pennsylvania.

“Extirpated” refers to species that have disappeared from Pennsylvania but still exist elsewhere.

4. Let’s be wildlife detectives and find out the reason why some of our wildlife is in danger. We are going to study some animals and plants from Pennsylvania and learn what is happening to them, why it is happening and what we need to do about it.

Each participant will be in a work group of a plant or animal as designated by information sheets. Copy and distribute enough of each information sheet so that each student has one sheet. Have students form the following work groups based on the handouts:

- Short-Eared Owl
- Showy Lady’s Slipper
- New Jersey Chorus Frog
- Bog Turtle

Participants read the handouts, research and develop a poster of the natural history and information on their plant or animal. Participants prepare a presentation and discuss strategies for habitat management for survival.

Activity 1

Discuss the importance of conducting natural resource inventories of the community. Organize a “bio-blitz” or large-scale inventory to determine the biodiversity of the community. Contact the Western Pennsylvania Conservancy (www.paconserve.org) for information on bio-blitzes. What are some strategies for communities to protect wildlife species?

5. Some species are successful in adapting to changing habitats. What are some of the birds, mammals and plants that are successful in surviving in urban/suburban areas and why?

The white-tailed deer was declared the state mammal of Pennsylvania in 1959. It is one of Pennsylvania’s most influential species of wildlife. Deer are the most popular watchable wildlife as well as the most huntable resource, providing venison for countless families. Pennsylvania’s rural, cultural heritage is linked to the white-tailed deer.

Deer management is a controversial topic. What are some of the impacts and effects of a growing deer population? As deer populations grow, deer are accused of over-browsing forests, attacking seedlings, shrubs and wildflowers, reducing the understory to ferns and invasive species. In southeastern Pennsylvania, deer have flourished and feed on ornamental gardens, crops and urban plants.

Deer densities over 20 per square mile impact forest regeneration, create greater potential for car accidents and increase Lyme disease. Deer management is essential for healthy forests and healthy communities. For additional information visit the Pennsylvania Game Commission at www.pgc.state.pa.us and the Bureau of Forestry at www.dcnr.state.pa.us.

Distribute copies of the white-tailed deer information and deer photos. Allow students to discuss what they

learn from the deer photos. Divide the report into sections. Assign groups to read sections of the information sheet and report to the large group. After learning about deer, each group is to complete the worksheet entitled Problem Solving Worksheet.

Discuss the Problem Solving Worksheet in a large group. Discuss the pros and cons of different deer management strategies. Discuss the concerns of different people from state forests, state parks, agricultural lands, hunters, animal rights activists and homeowners as deer populations encroach on resources. Discuss current strategies on management.

- Deer exclosures
- Hunting regulations
- Fertility control
- Trapping and transporting
- Repellants
- Fencing

Optional: Visit a deer exclosure area and demonstration plots that prevent deer from browsing in the understory.

Optional: Conduct the following activity:

Project Wild, “Oh, Deer”

www.projectwild.org

The activity involves participants assuming the role of deer while others become elements of the environment. The activity illustrates that limiting factors maintain populations at a predictable level.

- Good habitat is key to wildlife survival;
- A population will continue to increase in size until some limiting factors are imposed; limiting factors contribute to fluctuations in wildlife populations;
- Nature is never in balance but constantly changing.

Activity 2: *Ecosystem Services*

Summary: The ecosystem provides valuable services that have great economic and environmental value. In this activity, participants will gain a perspective of the value of land and the services provided by environmental systems.

Questions: How valuable is productive land? What are the services provided by the environment? What would happen if the services were eliminated?

Preparation

- Earth is an Apple Activity: Apples, plastic knives and plates for each group.
- Copy and distribute Ecosystem Services Worksheets (p 149). Answer sheet on pp 150.
- Have flip chart and markers available.
- Prepare Thank You Trees Worksheet (pp 151-152).
- Review Economic Benefits of Ecosystems Information Sheet (p 153).

Procedure

1. We realize how important planning is for protecting habitats and considering the consequences to wildlife as habitats are altered. How valuable are Earth’s services to us? What services does the ecosystems provide that we take for granted? What services do ecosystems provide for us that should be valued as we look at land use choices?

Brainstorm some ideas from students and write them on the board. We will discuss services in depth following the first demonstration.

2. *Conduct Earth is an Apple activity to demonstrate the value of land for growing food and crops.* Use one large apple or apples for each group and plastic knives.

Think of the earth as an apple. Slice an apple into quarters and set aside three of the quarters. What do these represent? Three quarters represent the oceans of the world. The remaining quarter represents the total land area of the world.

Slice the quarter that is land in half. Set aside one of the pieces. The portion set aside represents the land area that is inhospitable to people such as the polar areas, deserts, swamps and mountains. What fraction do we have left? ($1/8$.) The piece that is left is land where people live but do not necessarily grow foods we need.

Slice the $1/8$ piece into four sections and set three aside. What fraction do we have left? ($1/32$). The $3/32$ set aside represents the areas unsuitable for food or crops. Those contain the developed and built areas of our environment...the parking lots, highways, shopping centers and areas that are too steep or soil is too poor.

Carefully peel the $1/32$ slice of earth. This represents the surface, the thin skin of earth's crust which we depend on for food. It is less than five feet deep.

Explain that protecting land resources is very important. There is a fixed land resource base. As we continue to develop and pave, we must plan for the services that land provides and protect land for those services such as growing food.

3. *What are other services provided by ecosystems?* Work in groups. Distribute the Ecosystem Services Worksheets to each group. This can be conducted on a trail walk or in a park. Look at each service and provide examples for each of the Ecosystem Services. Review in a large group. Write the responses on the

Activity 2

flip chart. You can refer to the Economic Benefits of Ecosystems Information Sheet.

It is important to discuss the economic value of environmental services. What if price tags were placed on each of the services? Would we value the services more and be more inclined to protect the resources?

4. *Trees provide many services and have great value to the community.* Review photos of trees (not included) and make a list of the different services provided by trees. Refer to the worksheet "Thank you, Trees." Check off ways trees help in your community.

The North American Forestry Association estimates that a 50 year old urban tree annually yields \$75 in soil erosion and storm water control, \$75 in wildlife shelter benefits, \$73.00 in air cooling services and \$50 in air pollution control. Compounded at 5 percent interest over a tree's 50 year life, this adds up to \$57,151."

Urban forestry is a major initiative throughout the country. Urban foresters in DCNR are available to provide information on trees and forests within communities. Tree Vitalize is a public/private partnership sponsored in conjunction with DCNR to encourage an increase in urban tree cover through community action volunteers. It started in Philadelphia and has expanded to other cities in Pennsylvania. Learn more at www.treevitalize.net.

Participants can encourage their community to conduct a tree inventory to determine the health of community trees and how to manage them. Some communities develop special tree ordinances that help communities protect trees. Some communities establish Shade Tree Commissions. Learn more about the city of Pittsburgh's Shade Tree Commission at www.city.pittsburgh.pa.us/cp/html/shade_tree_commission.html.

Study the benefits of tree cover. To evaluate the impacts of land cover change, develop a land cover

classification system with four classes: tree canopy, turf, bare soil and impervious surface.

When it rains, rank the four classes of land cover classification with respect to the amount of rainfall that would infiltrate into groundwater from “1” being the most infiltration to the least infiltration “4.” (Answer, canopy cover, turf, bare soil, and impervious.)

Discuss the implications of recent land cover changes in a community. Has there been an increase in runoff? What are the consequences of increased runoff? (flooding, poor surface water quality from sediment, changes in stream temperatures, decrease in groundwater resources/levels, etc.)

Geographic Information System (GIS) and Global Positioning System (GPS) enables participants to use Forest Service software for evaluation purposes. Digital aerial photos from PA MAP (www.dcnr.state.pa.us/topo-geo/pamap/index.aspx) or Google Earth (earth.google.com) image is used to identify trees. A software package quantifies the benefits of trees for carbon sequestration, air pollutant uptake, stormwater management, and local climate benefits.

Activity 3:

Tools to Protect Land Resources

Summary: Land is developed for housing, commercial and industrial needs. Roads, parking lots and other forms of transportation need space for the movement of people and goods. As land is developed, communities need to consider protection of natural space as a prime concern. Communities recognize the value of farmland, greenways and natural wild areas. There is an economic price tag that can be placed on protection of open space and must be part of the consideration as communities grow and develop. There is a way to

develop sustainable communities, maintaining farmland, wilderness and unfragmented tracks of land for wildlife migration and human enjoyment. Protecting green space is critical to the health of future generations and for the health of the environment.

Questions: What is the value of protecting open space for a community? What are the tools that will protect land? How can they be implemented?

Preparation

- Divide participants in work groups, following procedures for working in groups.
- Prepare the Declaration of Rights (p 154) for each participant.
- Prepare “Development versus Preservation Worksheet” (p 155) for each group.
- Prepare copies or transparency of both The Last Straw artwork (p 156) and Lancaster County Farmland Photos (p 157).
- Prepare and distribute copies of the Last Straw Worksheet (p 158).
- Prepare information sheets on each area of land preservation:
 - Natural Areas (pp 159-160)
 - Farmlands (pp 161-162)
 - Land Trusts and Environmental Advisory Councils (pp 163-166)
 - Greenways (pp 167-169)
 - Land Recycling (pp 170-171)
- Prepare copies of Community Planning Worksheet (p 172).
- Prepare Land Bingo Sheets (p 173) for each participant.

Procedure

1. DCNR is entrusted to protect the natural resources of Pennsylvania. We are to manage them for the future generations. Read the Declaration of Rights from the Pennsylvania Constitution.

Discuss the importance of the Pennsylvania Constitution. Discuss the importance of the Declaration of Rights. What does it mean to different groups in a community?

In the natural world, everything is interdependent. As the landscape is changed to a network of roads, sewers, parking lots, and roof tops, many parts of the environment are affected. Nature's important cost-free services are taken for granted and abused, or destroyed. Local biodiversity is decreased. Air and water quality are diminished.

2. It is important to note that residential development costs a community much more in increased municipal and school district services than agricultural or open space uses. The following is a mathematical problem for you to compute and determine your own assessment.

We will compare the cost of converting a 100-acre farm to residential use versus the cost of protecting it from development through a conservation easement. A conservation easement is a permanent legal agreement between a landowner and government or a land trust which permanently restricts a property's uses to protect its conservation value. An individual continues to own the property but accepts money to restrict its use. Owners permanently give up agreed upon rights. Future owners would be bound by this agreement.

Distribute the Development vs. Preservation handout to each participant. The figures used are from the Upper Perkiomen School District in southeastern Pennsylvania. Allow participants time to do the mathematical exercise.

3. Analyze and discuss the results. The shortfall of the development is \$322,311 per year. The cost of the easement purchase is \$434,900 which has a 1.3 year break-even period. The shortfall is an ongoing, permanent expense that will tend to increase over time as education, energy, and transportation costs escalate. It does not reflect the capital costs of new school construction or increased municipal costs. By closely examining the true costs of development, community planners can save both money and quality of place.

A community could decide to purchase the property outright. When owners convey property in "fee simple" acquisition, they transfer all ownership rights. A fee simple acquisition of the farm would save the community money but it would take longer to break even on the purchase. Easements are less expensive because not all the ownership rights are being acquired.

4. Artists have captured the landscapes and communities throughout history. Pennsylvania artist Bruce Johnson, born in Allentown, currently resides in Dingman's Ferry, Pennsylvania. Bruce Johnson is highly recognized for his whimsical pen and ink "Statements." These humorous, often outlandish, and always penetrating statements about the human condition have quickly become the prized possessions of collectors everywhere. "Statements" are available in hundreds of galleries across the United States as well as several foreign countries.

Bruce Johnson has graciously and generously granted permission for "The Last Straw" to be used as an educational addition for PA Land Choices. We thank Mr. Johnson for granting permission with restrictions that it only be used for educational use and would not be used for any commercial venture. We respect this request. To learn more about Bruce Johnson and his work visit www.bjohnsonltd.com.

Participants will examine the artwork of Bruce Johnson called “The Last Straw.” The activity provides an opportunity to identify the artist’s rendition of the plight of agricultural lands and the invasion of sprawl and development. Participants are to work in groups, examining the artwork by Mr. Johnson’s “The Last Straw” and discuss the questions outlined on the worksheet.

Participants are to share their comments in large group discussions. Compare the artwork to the Lancaster County farm photo. Describe the similarities. What are the possibilities of future land use surrounding the Lancaster County farm in the next 20 years? What choices could the community enact to protect the agricultural character of the area or to manage future community growth?

5. By maintaining patterns of large woodlands and wetlands (nodes) and protecting wooded stream valleys (corridors), significant natural functions are protected.

Development doesn’t have to destroy the valuable nodes and corridors. Planning and regulating can identify and protect these valuable areas. Tools such as the conservation easement we discussed previously and new terms that define different types of green space. Such tools will help communities and individuals protect valuable natural areas not only for wildlife but for the valuable services they provide, the increase in land value and the quality of human life for future generations.

6. In this activity we will look at some of the tools involved in specific areas of land protection. We will divide into five groups:

- Natural Areas
- Farmlands
- Land Trusts and Environmental Advisory Councils
- Greenways
- Land Protection/Land Recycling

Each group will review information sheets relating to land protection. The task is for each group to look at the map of their community or use the communities we addressed in Lesson 2: Keystone Township. Using your knowledge about land protection, each group will present recommendations describing the tools and terms they learned about in their group research. Each group will justify their recommendations. Use the Community Planning Worksheet.

Using as many tools as you find appropriate, you will present your recommendations to the Planning Commission through visual representation. Be creative in describing your implementation plan.

Groups will describe all tools included in their readings. Distribute Protecting Land Bingo Worksheet (included) to each participant. As the group is reviewing the strategies, participants can jot down descriptions of the different terms for future reference.

7. Discussion: What impact does unplanned development have on the natural resources and agricultural lands in Pennsylvania? How does unplanned development impact wildlife and future generations? What is an Environmental Advisory Council and how does it help a community? What planning tools did we use to protect land for future generations?

Assessment and Evaluation

- 1. What are the important values of natural resources?*
- 2. Develop an action plan for your own community. What actions will protect land for future generations? What partners will help implement the plan? Develop an implementation strategy.*

Activity 4:

Jonestown: A Case study

Summary: Participants will explore the community of Jonestown, Pennsylvania and apply their knowledge and skills as they help Jonestown develop a greenway.

Preparation

- Gather artifacts that reflect an important aspect of Jonestown history.
- Display maps of Jonestown (p 174).
- Prepare sets of photos from Jonestown website (www.jonestownpa.org).

Questions: Why is the greenway important to Jonestown? What tools and partners did they develop to implement a greenway? What were the challenges and success?

Procedure

1. Where is Jonestown? If we were zooming in from Google Earth, we'd begin with the solar system where eight planets circle the sun and one of those planets, the third from the sun, is planet Earth. The Earth and all its inhabitants are traveling at a speed of 66,705 miles per hour in orbit around the sun and rotating at approximately 1,037 mph at the equator. There are seven continents (Antarctica, Australia, Asia, Africa, Europe, South America and North America), 194 countries and over six billion people. Most of those six billion people live in communities that have some of the same qualities as Jonestown. But Jonestown is unique because it is your community.

This is Jonestown, Pennsylvania. Located in Lebanon County at the confluence of the Swatara Creek and the Little Swatara Creek, it is home to about 2,000 people and about 500 families. It is a borough governed by a mayor and a borough council.

Activity 4

2. What is history? You may think it is about famous wars, famous people and famous places. History is the story of everyday people and places. It's about your community, your house, and your school. You are making history. The objects you use are part of history. Objects like a microwave, a cell phone, an iPod, even a toothbrush are part of your history. History reflects the stories of people, events, places and things.

There is also natural history. Natural history is the study of the river, the forests, and the animals. The natural history helped to shape Jonestown. The Little Swatara and the Swatara provided power and transportation. Today, the rivers provide beautiful scenery and opportunities for healthy recreation.

History is a story that is passed down through people talking, writing or through objects left behind. Things written down make it easier for people of today to learn about the past. It's important to capture the history in the memories of people who have stories to share. Jonestown is fortunate to have a living history "book" in the memories of Evelyn Isele, a local historian. She continues to share her memories in the borough newsletter. Citizens of Jonestown, especially the children, benefit from visits with Evelyn, capturing interviews on tape and writing in journals. By demonstrating the importance of our historians, children develop the sense of pride and importance in their history.

3. Artifacts: Each group will be given an item that represents clues to the history of Jonestown. These objects will depict the culture, the manufacturing and lifestyle of the people during different periods of time.

Participants must look at their object and try to determine the following:

- What is the object?
- What is it made of?

- Who made it?
- What it was used for?
- Who would benefit from it?

Participants analyze the object and discuss when it might have been made or used in Jonestown.

The following is a list of objects representing aspects of life in Jonestown history.

- Arrowhead
- Animal pelts and traps
- Bricks, pottery
- Tobacco press
- Horse bits and hardware
- Ice tongs
- Shoemaker equipment
- Tools
- Leather water bucket
- Washboard
- Cotton coverlets

Group discussion will help analyze the different objects and how they relate to Jonestown. What do the objects tell us about the people and industries?

A brief history of Jonestown: Susquehannock Indians settled along the Swatara Creek. German settlers were the first Europeans who settled Lebanon County. In 1761 Jonestown was first named Williamsburg but it was changed to Jonestown because another community had already selected Williamsburg. Jonestown became a central location for many travel routes. With the opening of the Union Canal in 1828, much trade passed through Jonestown. Floods in 1862 wrecked the canal and ended the heyday of canal usage. A railroad from Pine Grove to Lebanon began operation in 1870 with a station in West Jonestown. Between 1870 and 1875 Jonestown was a booming town with many businesses

including two drug stores, mills, boat builders, cigar makers, coachbuilders, brick and pottery kilns, and coverlet factories and blanket manufacturing.

4. Building a Borough. Participants will work in small groups. Each group will receive poster board. Participants will orient the poster board to north, south, east, and west. Look at a map of Pennsylvania and of Jonestown. Locate Jonestown on the Pennsylvania map and take note of major highways near their community. Note neighboring communities, state parks, and other special features.

After examining the large maps, participants will draw the Swatara Creek and the Little Swatara Creek on the west and south edges of the poster board, joining each river in the lower southwest corner of the poster board. Color and label the rivers.

Question: Why did people settle in Jonestown?

What were some of the natural resources that brought people to this area? Good soils and water are very important natural resources combined with a moderate climate. Food could grow on the land and water could also be used for power. It was a fairly level area without steep slopes so that people could farm and build on the land. If there were steep slopes, it would not be easy for early settlers to build a home or farm the land.

What is the source of surface water surrounding Jonestown? The Little Swatara Creek enters the Swatara Creek at Jonestown. A confluence of a river is a place where two rivers come together. Jonestown is at the confluence of these two rivers. (The place where a river begins is called the headwaters. The watershed of a river is the land surrounding that river that is “elevated” in a certain way that allows rainwater/surface water to drain into that specific river.) Why were rivers important to early settlement of

Jonestown? (i.e. waterpower for mills, transportation by boat or barge, movement of goods, water for people and livestock, fishing.)

Today, Jonestown is called a borough. Because it is a borough, it has a form of government led by a strong borough council and a mayor elected by the people. What are some of the services needed in Jonestown that the mayor and the borough council must address? Participants will discuss services, facilities and infrastructure that are necessary and those that are special to their community. List these aspects on a flip chart: safety, fire protection, water, sewer, roads and road maintenance, lighting, post office, schools, playground, park, wooded area, shops, parking, etc. Circle those aspects that are necessary and place a star next to those that are special to Jonestown.

Participants will think about their own community and layout a grid of main roads or side roads as best they can recollect or imagine. Participants will discuss some of the buildings and places they remember. They will examine the borough's zoning ordinances.

Participants will be given a set of photos of buildings in Jonestown from the borough's website (if available). They will place them on their poster board map where they think they belong. The photos include the school, post office, churches, firehouse, municipal building, stores, factories, playground, etc. They will develop symbols for special places such as their friends house, a place to skateboard, a picnic table.

Participants will use a green marker and color in green areas of their community. This is important to identify. (Be sure to color the area adjacent to the rivers as green space.)

People need places to live. Participants will add drawings of their homes and homes of their friends. Place the homes where you think they belong.

Look at your map. Are the stores clustered in one area? Are the factories or gas stations in another area? Are homes clustered together in certain areas? Sometimes this happens without rules to make it happen. If we decide to define each of those areas, we could develop rules for each area based on certain uses such as commercial uses, industrial uses and residential uses. This is called "zoning" if a community decides to label areas based on uses and create laws that restrict those uses. Jonestown has decided to officially zone the community. Look at the zoning map. What are the zones and what color are they? Did you place your buildings in the correct zone? Take different color markers and circle the zones. Develop a key for each color and the zone it represents.

Why do you think zoning is important to Jonestown? Why would another community choose NOT to zone? Communities have a right to choose whether they implement zoning or not. If they choose to develop laws for zoning, they must follow codes or regulations established by the state through the Municipalities Planning Code.

Communities are always changing. What are some of the things that have changed in your lifetime? What are things you like about your community? Have you noticed that something you liked is not there anymore (i.e. a tree, a patch of woods, a red barn, an ice cream shop)? If you want to keep something you like, you need to recognize why it is special and then work toward ways to keep it for the future. You have a right to express why you like something or don't like something.

How and where can you express your opinion about something happening to your community that you like or don't like? Discuss freedom of speech and freedom of press. Discuss the right to voice your opinion. Discuss the right to organize a group that shares similar opinions. Discuss different ways to voice an opinion (i.e.

write editorials, meet and present to officials, express your thoughts in a flyer, brochure or postcard, etc.).

5. What could we do to protect the land along the river?

The rivers are still very special places for the people of Jonestown. There are some laws that can protect the river. The land along the river could become a park for everyone to enjoy. The borough is developing a greenway and trying to save the land. What are some things the community could do to make the area along the river an enjoyable place to visit?

- Plant native trees, bushes and plants along the greenway
- Develop a butterfly garden area
- Develop a brochure about the town and the river
- Develop a trail for other school children to use
- Study the water quality

6. Community of the Future. Communities change. It will happen to every community. Sometimes change will improve the community such as developing a waterfront park in a busy city and sometimes it will be a negative change such as an increase in abandoned stores and deserted lots. Some changes will require people to compromise on their expectations.

What if an industry wanted to build a factory (or shopping center) in Jonestown today? What positive impacts could result from that decision and why? (Record responses.) It could generate an increase in population, an increase in housing construction jobs and materials, additional jobs, improve the economy, benefit the local business community, increase funding toward community improvements such as a new borough hall or park, increase tax revenue to the borough, etc.

What problems could it bring? (Record responses.) Depending on the factory and its environmental

ethic, it could increase pollution, noise, traffic, need for road expansion, demand for groundwater, wastewater treatment, unpleasant landscape, odors, dust, future brownfields, etc.

If the decision is inevitable, there are situations that are better than others. There are CHOICES that could be more appealing to the community and choices that may not be beneficial. Some people may think that a factory on the outskirts of the community is a good idea. Some would think that a factory should not be built near the school, or next to the river or on a favorite natural area.

It is the right of the community to envision the future, decide to protect what will maintain a character for the community and protect the natural areas, historic sites, farms and open space BEFORE something happens to them. Jonestown decided that the land along each of the rivers should be protected and enjoyed by future generations.

The community decided they wanted to protect the natural areas along the rivers. They decided they wanted a park for all to enjoy. If the land was developed for private homes or factories, then people could not access the land. It could destroy the beauty of the wooded stream. It was such a beautiful place for people of Jonestown to enjoy.

7. What did they decide to do? The Mayor and the Borough Council along with community leaders, researched grants that would give them money to buy the land or to buy the right to protect the land (conservation easements). They began by talking to people who owned the land and generating interest in the concept of saving the ribbon of “green” land that surrounds their town. They envisioned a park where all the community could walk, ride bikes, play and enjoy. It could be a place for wildlife and a place of beauty. It would protect the landscape along the river and allow people to access the banks for fishing and boating.

What is a “greenway?” A greenway is a corridor of open space. They vary in size and scale from narrow ribbons of green that surround an urban area to wide corridors of wilderness. Greenways can be land or water-based, running along stream corridors or wetlands. Many greenways provide healthy recreation by having a network of trails. Some are primarily recreation corridors. Some primarily provide corridors for wildlife travel. All greenways protect natural, cultural and scenic resources, enhance the natural beauty and improve the quality of life in the communities. The defining characteristic of greenways is connectivity. The purpose is to provide connections to other natural areas and/or connect communities. Greenway development is initiated by volunteers who share a vision with the community. They form a partnership with local, county and state officials.

8. What type of activities would you propose for the Jonestown Greenway? Brainstorm ideas in your group.

Before making any decisions, there is a process that will help you develop a proposal and guide the community to make the best decision. It is important to develop a plan. The plan must address many different considerations. It is important to have a committee because there is a lot of work to be done.

- a.** Conduct an inventory of the site using the Concept Map. It’s important to know what you have. List plants, wildlife, historic sites, wetlands and soils. Note any litter problems, drainage pipes, bridges, etc. Create a map. Identify flood zones; sink holes, highway, noise, and other problems that will be important to the project.
- b.** Survey the community. Develop a survey and ask the community what they would like. Solicit help. Compile results and incorporate them into your proposal. Try to recruit a representative sampling of the

community by asking different ages, careers, genders, businesses, scientists, etc.

- c.** Survey what services already exist in the surrounding area. You might have a canoe rental facility just upstream from your greenway. You might have a state park that you would like to eventually connect to your greenway. Remember, that the defining character of a greenway is connectivity.

- d.** Identify funding sources. DCNR’s Bureau of Recreation and Conservation is a source for information on funding community projects. Propose sources for funding. Develop a proposal that addresses funding needs. Develop a funding campaign or propose a bond initiative.

- e.** Develop a vision statement. What do you envision for this greenway? Have group consensus.

- f.** Brainstorm ideas. What would you like to develop in your greenway to align to your vision statement?

Using a chart, make three columns. In the first column, write down the activity you would like to propose. In the second column, write down what is needed to allow that activity to happen. In the third column, write down what impacts that activity would have on the natural area and the community.

- g.** Design your greenway. As a group, decide which activities you would allow and where you would place them on your map. Draw or discuss the infrastructure needed for that activity. Develop a proposal based on the consensus of the group. Develop a sign about your project. Present your ideas to the class. Present your ideas to the Borough Council.

- h.** Help implement the ideas that are approved. Help plant trees and flowers. Help pick up litter. Help create

wildlife habitats and viewing areas. Help by enjoying and using the greenway.

9. Congratulations! You made a positive contribution to the community that will be enjoyed by all who live there today and in the future. Remember, the community is the result of the culmination of its past right up to the present. But the question now is “Who will shape the community of the future?” YOU will. What do you want your town to look like in 10 years? 50 years? What could happen if no one cared to make decisions that address future change? By protecting the Jonestown Greenway you took leadership in deciding what is important to the community character and made recommendations that will have a positive impact for today and for future families and businesses.

Assessment and Review

1. *What are the services provided by a community?*
2. *What makes a community special?*
3. *Why is the history of a community important?*
4. *What did Jonestown do to make their community special?*
5. *What are some of the ideas proposed for the greenway?*
6. *Why is a greenway important to Jonestown?*
7. *Who will visit the greenway?*

In the end, *our society will be defined not only by what we create but by what we refuse to destroy.*

John Sawhill (Conservation Advocate)

Activity 1: *Short-Eared Owl, Asio flammeus***Identifying Characteristics**

The short-eared owl received its name from its lack of "ear" tufts. It's about the size of a crow, 13 to 17 inches high, and has a 38 to 44-inch wingspan. Color is variable, from light to dark brown. The dark patches on undersides of wings, and large buff-color patches on upper sides are most distinctive. There are also dark patches around the eyes.

Biology/Natural History

Short-eared owls are birds of open country. They may be found in Pennsylvania throughout the year. They nest on the ground, sometimes in colonial groups. The nest is a slight depression, sparsely lined with grass and feathers, often at the base of a clump of weeds or grasses. A normal clutch consists of four to seven white eggs. Young hatch about three weeks after egg laying, and are able to fly in about a month. Unlike most other owls, the short-eared is active at dusk, dawn and—at times—even in mid-day; therefore, they are seen more often than other owl species.

Preferred Habitat

These owls have been nesting in the southeast corner of Pennsylvania, in the marshland and meadows around the Philadelphia International Airport. Recently, they have been found nesting on reclaimed strip mine sites in Clarion County. Short-eared owls are more likely to be encountered here in the winter when several may be seen together, hovering or flying low and in circles over agricultural fields in search of their main prey, meadow mice.

Threat

Suitable nesting habitat for the short-eared owl is extremely limited in Pennsylvania, and intensive agricultural practices make many potential habitats unsuitable.

**Management Programs**

In Pennsylvania, most open lands are farmlands and, therefore, subject to repeated disturbance. Accordingly, the welfare of grassland nesting birds is threatened. This may be why the only known nests of short-eared owls were discovered in extensive and low-disturbance open lands such as strip mine reclaimed to grass. Future management, based on the needs for safe nesting habitat for all grassland nesters, should include the creation of large, herbaceous reserves suitable for all grassland nesters. Such reserves might include airports, reclaimed strip mines and large pastures. Primary management of these areas must assure a disturbance-free nesting season.

State Status

Endangered

Activity 1: Showy Lady Slippers, *Cypripedium reginae***Range**

Showy lady's slippers have been found in swamps, bogs and wet woods extending from Newfoundland and Quebec to North Dakota and south through New Jersey, Pennsylvania, Ohio, Indiana, Illinois and Missouri to the Appalachian Mountains as far south as North Carolina and Georgia. Pennsylvania populations historically occurred in alkaline wetlands from northwest through central to southeast areas of the state, but can be found today only in the glaciated northwest.

Appearance

Showy Lady's slipper orchids are named for the inflated pouch formed by the lower petal. The single or paired, 1 to 2 inch white and rose-pink flowers are the largest of our native orchids. Plants stand one to two feet high with 8 inch oval leaves clasping the stems.

Biology/Natural History

This species is a member of the Orchid Family (Orchidaceae). Plants of this genus are perennial herbs. Flowers bloom in June and July.

Threats

Loss of habitat from recreational and housing development in addition to water pollution from mineral extraction have taken their toll. Although 29 populations have been documented by historical collections, only five are known to exist here today. Threats include collection by nurserymen and misguided gardeners.



The probability of showy lady's slippers surviving a transplant from their wetland habitat is poor. Even casual picking of the flowers destroys the plant's chances of reproducing.

Management

One showy lady's slipper population is protected in a natural area owned by the Western Pennsylvania Conservancy. A second is located on a state game lands. Owners of the three other sites must protect the sites.

State Status

Threatened

Activity 1: *New Jersey Chorus Frog, Pseudacris feriarum kalmi***Identifying Characteristics**

This subspecies of the western chorus frog is similar in size (3/4 - 1 1/2 inches long), but is somewhat more robust. The outermost pair of the three dark stripes on the back start at the snout and continue backward through the eye and down each side. These may be variously broken. A prominent light line is present beneath each eye along the upper lip.

Biology/Natural History

New Jersey chorus frogs move to small, sometimes temporary, bodies of water to breed, anytime from February to June. Males may arrive at the ponds before females and call loudly from sedgy or grassy clumps in the open. The eggs are deposited irregularly in loose gelatinous masses on the stems of matted vegetation not far below the surface of the water. The 1 to 1.5-inch tadpoles are blackish to olive above with a bronzy belly. They transform to the adult stage within two months. Adults leave the breeding pools following mating and egg laying, and are only occasionally encountered in wooded areas.

Preferred Habitat

In Pennsylvania the New Jersey chorus frog breeds in small, relatively open bodies of water with a mixture of shrubby and herbaceous aquatic vegetation, or sometimes in the shallow backwater areas of larger bodies of water with similar vegetation.

Threats

The populations of the New Jersey chorus frog in Pennsylvania are small and threatened because of heavy



industrial use of the areas they inhabit. Many of the small breeding ponds and forested areas they require have been filled in or cleared. During breeding season, many amphibians are crushed by vehicles while crossing busy roads to get to breeding ponds.

Management Practices

The Fish and Boat Commission reviews projects in which possible threats to habitat of this small frog is concerned. The populations are monitored each spring.

State Status

Endangered

Activity 1: Bog Turtle, *Clemmys muhlenbergii***Range**

The historic bog turtle range runs from southern New England to northern Georgia. A 250-mile gap in Virginia separates the species into distinct northern and southern populations.

In Pennsylvania, the turtle is found mostly in the rapidly developing southeastern portion of the state. Turtle populations once found in the western part of the state are gone.

Appearance

The bog turtle is one of the smallest North American turtles with the adult shell measuring 3 to 4.5 inches in length. It is easily distinguished from other turtles by the large, conspicuous bright orange, yellow or red blotch on each side of its head. The upper shell is dark brown with yellow to orange markings and covered with ridged plates that are eventually worn smooth; the lower shell is dark brown or black, sometimes with scattered light markings.

Biology/Natural History

Bog turtles are active from spring to fall, and hibernate during the winter. They are most difficult to find in midsummer, possibly inactive during the hottest part of the year. When danger threatens, the turtle burrows rapidly into the mucky bottom. They eat a diet of beetles, insect larvae, snails, seeds and millipedes. Female bog turtles mature at 5 to 8 years of age. They mate in May and June, and in June or July the females deposit two to six white eggs on sphagnum moss or sedge tussocks that are exposed to sunlight. The eggs hatch after an incubation period of 42 to 56 days, and the young emerge in August or early September. Infertile eggs are common, and not all females produce egg clutches each year.

Preferred Habitat

Bog turtles live in wetlands which are shallow, spring-fed fen; sphagnum bogs; and swamps, marshy meadows and pastures with soft, muddy bottoms, slow-flowing water and open canopies.. They depend on this hydro-



logic mosaic, using shallow water in the spring and mud during winter hibernation. These wetlands gradually undergo succession and become a closed-canopy, wooded swamps unsuitable for bog turtle habitation. Historically, bog turtles probably moved from one open-canopy wetland patch to another, as succession closed wetland canopies in some areas and natural processes, such as fire, opened canopies in other areas.

Threats

The primary reason for the bog turtle's status is the draining or destruction of its habitat. Bog turtles have always been considered the rarest of North American turtles and are highly valued by turtle fanciers in this country, and possibly twice as much overseas. Many, therefore, have been illegally removed for commercial purposes. Because their habitats are widely separated, other turtles are not likely to move in and replace those removed.

State Status

Endangered

Federal Status

Considered for listing as a threatened species.

Activity 1: Whitetailed Deer - Page 1 (1/3)

The white-tailed deer, *Odocoileus virginianus*, received its name from the white hair on the underside of its tail which it occasionally holds erect so that the white undersurface is visible. Whitetails belong to the Cervidae family, split hoof mammals with no incisor teeth in the upper jaw, which in North America includes the elk, moose, caribou and mule deer. They are classed as ruminant animals, meaning they have a four-chambered stomach and frequently chew a "cud." Adult male whitetails grow and shed a set of antlers each year. The northern woodland whitetail is the subspecies which occurs commonly throughout Pennsylvania.

In Pennsylvania the average adult buck weighs about 140 pounds live weight and stands 32 to 34 inches at the shoulder. He is about 70 inches long from the tip of his nose to the base of his tail. Does tend to average less in weight and body length than males of the same age from the same area. Hair color is alike in both sexes. Fawns are born with white spots in the upper coat. When a fawn is lying on the ground or in dry leaves its coat provides excellent camouflage for the fawns.

Deer can run at 40 miles per hour for short bursts and maintain speeds of 25 miles per hour for longer periods. They are also good jumpers capable of clearing obstacles up to nine feet high or 25 feet wide. The air-filled hairs of their coats enable them to swim easily. They mark trails with scent glands and have an excellent sense of smell.

Although antler growth is evident on male fawns, a buck's first set of antlers begins to grow when it's about 10 months old. Each year after the buck reaches this age, it will grow and shed a new set of antlers. If the yearling buck comes from an area with poor food conditions, his first set of antlers may be only "spikes" -- antlers consisting of single main beams only. Spikes are more common in yearling deer than older ones because antler growth starts at a time when the young buck's



body is still growing rapidly. But because antler development is tied in closely with the animal's nutritional status, older bucks might also carry spikes if they come from an area with poor food conditions.

Antlers generally begin to grow in March or April. Growing antlers are covered by a skin called "velvet." This velvet is covered with soft hairs and contains blood vessels which supply nutrients to the growing antlers. The solid bone-like substance which makes up the polished antler is secreted by cells on the inside of the velvet. By August or early September antler growth ceases and the velvet is shed or rubbed off by the buck as he rubs saplings or rocks with his antlers. Polished antlers are carried throughout most of the breeding season, which can last into late February. The antlers are shed at the end of this period, and a new set begins to grow in March or April.

Social Organization

The social organization of the whitetail is largely matriarchal. The most common social group is an adult doe, her fawns and her yearling female offspring.

Activity 1: Whitetailed Deer – Page 2 (2/3)

Sometimes three or four generations of related does are present in a family group. When fawning season rolls around in late May, adult does leave the family group and remain alone to bear and rear their fawns.

Siblings tend to remain together throughout most of summer. Sibling groups with yearling bucks separate in September as the rut approaches. Yearling bucks tend to disperse from the mother's home range at this time. Yearling does remain in the mother's home range and generally rejoin their mother and her new fawns between September and October.

During the breeding season adult and yearling bucks tend to stay alone except when in pursuit of a female approaching estrus. After the breeding season in late January, yearling and adult bucks form loose associations of small groups, usually two to four animals, which remain together throughout most of the winter and summer months. These groups break up around September when the rut starts.

The mating season of white-tailed deer begins as early as September and can last into late January. Breeding activity reaches its peak in mid-November, and most adult females have been bred by the end of December.

Food Habits

Whitetails eat a wide variety of herbaceous and woody plants. In a Pennsylvania study, more than half the food eaten by deer were tree, shrub or vine species, the remainder, herbaceous plants. Whitetail food preferences are largely dependent on plant species occurring in an area and the time of year. Green leaves, herbaceous plants and new growth on woody plants are eaten in the spring and summer. In late summer, fall and early winter, both hard and soft fruits such as apples, pears and acorns are a major component of their diet. In winter, evergreen leaves, hard browse and dry leaves

are eaten. Good supplies of a variety of natural foods at all times of the year are essential if an area is to carry a healthy deer population.

Habitat

Deer prefer to eat the buds, stems and leaves found in the forest understory. Young forests in the seedling/sapling stage especially provide an abundance of food and hiding space. These forests are created when a disturbance such as a fire, insect outbreak or timber harvest kills or removes mature trees, allowing space for new trees and plants to grow. Even-age forest management practices such as clear-cutting and shelterwood harvests help create these young forests that deer prefer. To ensure a sustainable forest, timber harvests should account for “regeneration,” the young trees and plants that will make up the future forest. Also, snags, den trees, mast trees and unique tree species should be left behind to assure a good habitat diversity for an abundance of wildlife.

Management

Deer are not only part of our beautiful wildlife heritage but they are a valuable natural resource to Pennsylvania. They are at the heart of a rich hunting and wildlife-watching tradition for millions of Pennsylvanians. Hunting, fishing and wildlife-related recreation approaches \$6 billion for the state's economy. Deer have adapted readily to the changes in land development. Without natural predators and hunting, they can quickly overpopulate the range they inhabit.

Since the early 1990s, the deer population has grown from 1.2 million to nearly 1.6 million. They occupy every habitat from forests, farmlands, wetlands, suburban neighborhoods and urban lands. When overpopulation occurs, deer strip their habitat of its life-supporting qualities, not just for deer, but for many woodland

Activity 1: *Whitetailed Deer* – Page 3 (3/3)

wildlife species. Deer invade backyard gardens for food as well as regenerating forests. Crop damages and other farm property problems relating to deer have been increasing. Deer-vehicle collisions have escalated. Up to 100,000 deer-vehicle collisions occur each year. This translates into 3,200 to 5,000 human injuries and \$220 million in vehicle damage.

Every three years more than 350,000 acres of rural and forested habitats are being converted to other uses in Pennsylvania. Deer herds are adapting to this changing landscape. Land development can sometimes offer additional food sources for deer and refuges to survive hunting season. This dynamic can lead to ballooning populations that can wreak havoc on surrounding forests. The dilemma must address the impact of land development on the deer herd, its impact on the surrounding forest, and efforts to control them through hunting. Foresters are concerned about the impact of deer on regenerating forests. Currently, less than 50 percent of Pennsylvania's forests are regenerating. Alleviating deer impacts will help ensure more forests regenerate to provide clean air, clean water, plant and wildlife habitat, and provide wood products to society through the state's \$4 billion forest products industry.

In some areas, deer herds impact agricultural crops and gardens. Farmers report losing an estimated \$9,000 a year to deer damage. The key to managing deer is keeping their populations at healthy levels. This essentially entails ensuring they don't exceed their range's ability to support them. As development occurs, the pressure on deer populations grow.

Managing the deer population brings controversy. In Pennsylvania, hunting is a primary tool to adjust deer populations. There are pros and cons to the issue of doe and buck seasons as well as to the success of hunting. Population control can be facilitated through a rationed harvest of female deer. Deer populations and density goals based upon habitat, along with hunter success rates, are used to gauge how many hunting permits should be issued. Public support of a sound management program which includes addressing habitat management is essential to maintaining the deer population as a public asset to be enjoyed by future generations of Pennsylvanians and visitors to Pennsylvania

Activity 1: Problem Solving Worksheet

Name _____

Title of Article _____ **Source of Article** _____

Read the article and answer the following questions. Share and discuss with others.

1. Identify the problem presented in the article.

2. Identify the issue(s).

3. Is this problem local, regional, national or international? Why?

4. Who are the different groups or individuals that are interested in or affected by the problem?
Why are they concerned? What is their view?

Who?	Why?/What?
_____	_____
_____	_____
_____	_____
_____	_____

5. What factors are affecting the problem?

6. What are the possible solutions to the problem?

7. List three additional things you want to know and where would you find information.

Activity 2: *Ecosystem Services Questions Sheet*

Describe examples of the services provided by ecosystems.

- **Gas regulation**
- **Climate Regulation**
- **Energy**
- **Habitats**
- **Water Regulation**
- **Water Supply**
- **Erosion Control**
- **Soil Formation**
- **Nutrient Recycling**
- **Waste Treatment**
- **Pollination**
- **Biological Control**
- **Refuge**
- **Food Production**
- **Genetic Resources**
- **Recreation**
- **Cultural**
- **Carbon Sequestration**
- **Other**

Activity 2: Ecosystem Services Answer Sheet

Distribute this worksheet to groups. Participants are to discuss and describe many examples of the services provided by ecosystems. Discuss in large group.

- **Gas regulation:** Plants provide CO₂ + O₂ balance. *For example:* One tree produces enough oxygen for a family of four. For each ton of growing wood, an estimated 1.47 tons of carbon dioxide are removed from the air and 1.07 tons of oxygen are produced.
- **Climate Regulation:** Clouds, greenhouse gases, etc. *For example:* Forests are important sinks for greenhouse gases and provide natural barriers to wind, snow, rain and solar radiation.
- **Energy:** Provide thermal heat, wind, fossil fuels.
- **Habitats:** Regulate disturbances such as floods, drought, and winds.
- **Water Regulation:** Pervious surfaces allow for recharge, and transpiration.
- **Water Supply:** Drinking water for households, industry, and electric energy. *For example:* Forest soil absorbs runoff, filters water and traps/transforms contaminants.
- **Erosion Control:** Retention of soil within an ecosystem. *For example:* Trees and other plants reduce the impact of rain while root systems hold soil in place.
- **Soil Formation:** Weathering of rock and accumulation of organic material.
- **Nutrient Recycling:** Nitrogen fixation and cycling of nutrients.
- **Waste Treatment:** Detoxification by plants that absorb pollutants and decomposition.
- **Pollination:** Insects, bats, and birds allow for propagation of vegetation.
- **Biological Control:** Predator control of prey and vegetation control.
- **Refuge:** Refuge for nurseries and habitats for migratory species. *For example:* Forests provide a diversity of habitats over time.
- **Food Production:** Fish, game, and crops.
- **Genetic Resources:** Resources for medicine and breeding.
- **Recreation:** Hiking, hunting, fishing, etc.
- **Cultural:** Aesthetic values, artistic inspiration, and education. *For example:* Forests provide Christmas trees, artistic inspiration, and outdoor classrooms
- **Carbon Sequestration:** Carbon emissions that cause global warming are "stored" in forests and soils.
- **Other**

Activity 2: *Thank You Trees - Page 1 (1/2)*

Name _____

Draw a tree in your community. On each branch list a reason that trees are important.

List the benefits of trees:

Look at photos of trees and determine the benefits. Match these categories to the photos.

Pleasant Attractive Surroundings

- Screen unpleasant views.
- Frame attractive views.
- Cool the air and provide shade and lower average daily temperatures.
- Bring beauty and character to neighborhoods.
- Provide breaks for cold winter winds.
- Buffer and reduce traffic and other noise.
- Provide attractive habitat for desirable birds and wildlife.

Social Improvement

- Calm traffic.
- Separate pedestrians and traffic.
- Encourage walking.
- Reduce family and community crime and violence.
- Promote self discipline and reliance, exploration, and increased student concentration.
- Increase adult concentration and work levels.

Good Health

- One hundred trees remove 10,000 lbs of carbon dioxide and 400 lbs ozone.
- Clean pollutants out of the air and water.
- Improve health, reduce stress and disease, increased healing.

Create Pride in Your Community

- Help communities meet and work together and promote community interaction.
- Provide opportunity for personal renewal and restoration.
- Promote economic benefits.
- Save energy and cut heating and air-conditioning costs.
- Save costs of energy production.
- Reduce storm water runoff, erosion and damage to streams.
- Promote people involvement and spending in commercial sales.
- Increase property values and property tax revenues.

One large tree can provide the following benefits each year.

Planted on the west side of the home, a tree saves \$29 in summertime air conditioning by shading the building and cooling the air (250 kWh). This is about 9 percent of a typical residential building's total annual air conditioning cost.

A tree absorbs 10 lbs. of air pollutants including 4 lbs. of ozone and 3 lbs. of particulates. The value of pollutant uptake by the tree is \$45 using the local market price of emission reduction credits. Uptake of NO₂ by the tree (1.07 lb.) is equivalent to NO₂ emitted by a typical car driven 188 miles.

A tree intercepts an average of 760 gal. of rainfall in its crown, thereby reducing runoff of polluted stormwater and flooding. This benefit is valued at \$6 based on local expenditures for water quality management and flood control.

Cleans 330 lbs. of CO₂ from the atmosphere through direct sequestration in the tree's wood and reduced power plant emissions due to cooling energy savings. The value of this benefit is \$5. The tree reduces the same amount of atmospheric CO₂ per year as released by a typical car driven 388 miles.

Adds about 1 percent to the sale of the property, or about \$25 each year when annualized over a 40-year period.

Activity 2: Economic Benefits of Ecosystems Information Sheet

Ecosystems provide economic benefits.

Corporate CEOs say quality of life for employees is the third-most important factor in locating a business, behind only access to domestic markets and availability of skilled labor. Owners of small companies ranked recreation/parks/open space as the highest priority in choosing a new location for their business (Economic Benefits of Open Space, Trust for Public Land, 1999). In the year 2000 alone, the economic value of insect-pollinated crops in the United States was estimated to be between \$20 and \$40 billion. Thus, the loss of pollinator species could lead to a series of devastating losses to our economy and food supply. (*Endangered by Sprawl: How Runaway Development Threatens America's Wildlife*, National Wildlife Federation, 2005—www.nwf.org)

“The real estate market consistently demonstrates that many people are willing to pay a larger amount for a property located close to parks and open space areas than for a home that does not offer this amenity,” writes John L. Crompton, a professor at Texas A&M University who has published extensive research on parks and recreation. (*Why America Needs More City Parks & Open Space*, Paul Sherer prepared for Trust for Public Land, 2003—www.tpl.org)

American Forests (a conservation organization) estimates that trees in the nation’s metropolitan areas

save the cities \$400 billion in the cost of building stormwater retention facilities. Yet natural tree cover has declined by as much as 30 percent in many cities over the last several decades. (*Why America Needs More City Parks & Open Space*)

A study of 27 water suppliers conducted by the Trust for Public Land and the American Water Works Association in 2002 found that more forest cover in a watershed results in lower treatment costs. According to the study, for every 10 percent increase in forest cover in the source area, treatment and chemical costs decreased approximately 20 percent, and approximately 50 to 55 percent of the variation in treatment costs can be explained by the percentage of forest cover in the source area. (*Protecting the Source: Land Conservation & the Future of America's Drinking Water*, Trust for Public Land, 2004—www.tpl.org)

Trees more effectively and less expensively manage the flow of stormwater runoff than do concrete sewers and drainage ditches. “By incorporating trees into a city’s infrastructure, managers can build a smaller, less expensive stormwater management system,” according to American Forests Urban Resource Center. (*Why America Needs More City Parks & Open Space*)

“The people have a right to clean air, pure water, and to the preservation of the natural, scenic, historic and aesthetic values of the environment.

Pennsylvania’s public natural resources are the common property of all the people, including generations yet to come. As trustees of these resources, the Commonwealth shall conserve and maintain them for the benefit of all the people.”

-Article 1, Section 27 of the Pennsylvania Constitution

Activity 3: *Development vs. Preservation*

Case Study of the Upper Perkiomen School District from “Saving Land Saves Money” (view publication at www.conserveland.org/lpr/library)—Montgomery County Lands Trust, 2002. Compare the one time purchase price cost of the easement to the shortfall per year. To determine the break-even period, divide the purchase price of the easement by the shortfall.

Development of the “100 Acre Farm.”

A farmer is selling his 100 acre farm. A developer will buy the property and build houses on 1.42 acre lots with land set aside for roads, drainage area, and commons.

There will be 0.66 homes per acre. How many houses can be built on 100 acres? _____
(100 acres \times 0.66 homes per acre = total homes per acre)

It is estimated that there are 0.8265 school-age children per home. How many children would be in the subdivision? _____
(Number of homes \times 0.8265 = total children in the subdivision)

\$7,995 is the cost of public school for each participant. How much does it cost to send the children of the subdivision to school? _____
($\$7,995 \times$ number of children = public school costs/subdivision)

In this community, the average school-tax revenue per home is \$1,779. Each home in the new subdivision must pay an average school tax of \$1,779 a year. How much public school revenue will be collected from the homes in the subdivision each year? _____
($\$1,779 \times$ number of homes = public school revenues/year)

What is the cost to the community for allowing the farm to be developed? _____
(Dollars of revenue/year – public school costs = dollars of shortfall)

Preservation of the “100 Acre Farm” by purchase of the Conservation Easement.

The average cost per acre for the easement purchase is \$4,349. How much is the total purchase price of the easement? _____
(100 acres \times \$4,349 = one time purchase price cost of easement)

Activity 3: *The Last Straw* by Bruce Johnson (www.bjohnsonltd.com)



The Last Straw has been provided by Bruce Johnson solely for educational purposes in connection with PA Land Choices.

A larger version of this photo is located in back pocket.

Activity 3: *Lancaster County Farms*



Activity 3: *Last Straw Worksheet*

While looking at the *The Last Straw* artwork by Bruce Johnson, answer the following questions.

1. What message is the artist, Bruce Johnson, expressing in this poster?
2. Why did the artist color the farm and not the rest of the poster?
3. Describe the emotional, social and political contrasts between the farm and the rest of the poster.
4. Make a list of the things people are doing in the poster.
5. What are the dominant types of services depicted throughout the poster?
6. Does this reflect aspects of real life in your community?
7. How do you think the artist feels about what is happening in “real life?”
8. Find 5 signs, slogans, words, and/or place names discuss the message behind their meaning.
9. What messages are repeated throughout the poster?
10. Find drawings (outside of the farm) that are connected to farm life.
11. Find items that demonstrate things that are potentially harmful.
12. Find some trees? What is happening to them?
13. Why is there a group of people lined up on the border of the farm?
14. Why did the artist name the painting “The Last Straw?”
15. What could the community have done to change the situation?

Activity 3: Natural Areas Information Sheet – Page 1 (1/2)**How much open space is needed?**

Every environment has a carrying capacity for specific organisms that live there. The carrying capacity is a point at which it can no longer support additional members of species with the natural resources they need to survive.

Carrying capacity for each animal species depends upon the amount of natural resources available on a given area of land. For example, to raise one cow, you would need one acre (about the size of a football field) of very rich pastureland, or ten acres of rangeland, or 100 acres of scrub land.

How many acres of land do you think each wild animal requires to meet their needs for an entire life span? Remember an acre is about the size of a football field and the animal must get all of its needs from its habitat.

- How much does a cottontail rabbit need? (1 acre)
- How much does a chipmunk need? (1.2 acres)
- How much does a black bear need? (38,400 acres or 60 square miles if it is a male and 3,200- 12,800 acres or 5-20 square miles, if it is a female).

Each animal has different needs. Many species need large natural woodlands and wooded corridors for survival.

- Tree species need 10 acres (300 feet minimum width)
- Forest dwelling birds need 50–1,000 acres
- Owls and raptors need 600—1,000 acres
- Large mammals need 100 acres and up

From: Guiding Growth, Compiled by CH2M Hill

If you are asked how much land a human needs for survival, we don't often realize how much land is needed to provide food, fuel, shelter and textiles. How many acres of land would one person need to provide basic needs?

That is difficult to answer since different lifestyles would determine how much land a human requires. American society creates demands on more land than any other society to meet its standard for consumer goods. Some societies need much less. According to Dr. Edward Passerini of the University of Alabama, a human needs 2.5 acres of land to basically survive.

Widely diversified ecosystems are much more likely to survive periods of environmental stress than are ecosystems with little diversification. Smaller isolated areas are more vulnerable than larger ones to extinctions due to disease, inbreeding and chronic disturbances of habitat. When wooded areas are fragmented into pieces, it is difficult for organisms to move from one habitat fragment to another.

According to Guiding Growth, habitats will lose between 30-50 percent of their species for each 90 percent reduction in area. Areas of less than 10 acres have little value for maintaining species diversity while areas of 50 –1,000 acres, may be very helpful in maintaining diversity. Areas less than 35 acres have significantly fewer species than areas of over 175 acres.

Depth is a consideration. A wooded area must be at least 300 feet wide if it is to provide a deep forest habitat. The extent of natural boundaries or edges between ecosystems is another consideration such as edges between forests and fields creating a diverse area which benefits some game animals and some common non-game animals such as raccoons and opossums.

Current strategies must recognize the need to protect regional ecosystem patterns and processes. One large forest is better than a medium forest but a medium forest is better than four adjacent forests, four adjacent forests are better than four separate smaller forests and a compact forest is better than a linear forest.

Activity 3: *Natural Areas Information Sheet – Page 2 (2/2)*

How do we protect large natural areas? Land is protected in Pennsylvania by a variety of entities, including state agencies like DCNR and the PA Game Commission; federal agencies like the National Parks Service and the United States Department of Agriculture; local and county governments and private organizations such as land trusts and trail organizations.

Our state conservation agencies add an average of 10,000 acres every year to a 4-million acre system of public lands. The Bureau of Forestry manages 2.1 million acres of state forests. The Pennsylvania Game Commission manages 1.4 million acres of state game lands.

Another method of permanently protecting land involves acquiring the property or property rights through a land trust or conservancy. Landowners who wish to preserve a beloved place, make the decision to sell or donate their property rights or entire property to a land trust, which in turn ensures the safeguard of the property in perpetuity. As of the end of 2007, 476,550 acres of Pennsylvania have been protected by Pennsylvania land trusts.

Most land trusts are private charitable corporations. Some are governmental or quasi-governmental agencies that operate with much of the flexibility and freedom of a private land trust. Some land trusts own and operate preserves and recreation areas open to the public. Others own no land at all but hold conservation easements, which protect certain natural values on properties. Others work to acquire and then transfer critical land to government for use as parks, game lands, etc. Learn more by reading the fact sheet on land trusts or by visiting www.conserveland.org.

Municipal Tools: Municipalities are given some flexibility and control in determining where development is placed and which lands should be protected through zoning and planning tools.

Additional municipal tools may be found on the Land Recycling Fact Sheet. Visit www.conservationtools.org to learn more about additional resources available.

Conservation Subdivision Design: Conservation subdivision design allows communities to implement a subdivision and land development ordinance that requires a developer to dedicate a significant portion of land to permanent open space uses. This strategy allows developers to create open space buffers along boundaries of protected properties (e.g. a state park or forest) thus expanding the natural space.

Transfer of Development Rights: Transfer of development rights is a program set up either in a community or across several communities where a sending zone for development is established and a receiving zone for a development is established. Landowners in one area sell their development rights to landowners so developers may build in another area. Land from which development rights are sold is permanently protected while land where the sold rights are applied is enhanced in development value.

Open Space Plan: Open space plan identifies the critical lands and resources within a community that are worthy of protection. These areas may be comprised of farmland, water resources, wildlife habitat, scenic areas and may include cultural or historic resources. It is part of the comprehensive plan and is usually necessary for grant funding.

Open Space Referendum: Municipalities are authorized by PA Act 153 (“Open Space lands, Acquisition and Preservation”) to purchase land or easements for the purpose of conservation. “Local governments may levy a tax on real estate or earned income above the existing limits of the Commonwealth’s laws, but only if they first receive referendum approval from the voters. A plan to protect these resources is required prior to expenditures of open space tax revenue.

Activity 3: Farmlands Information Sheet – Page 1 (1/2)**What is happening to farmlands?**

Development is more likely to take place on farmland than on any other type of land. A study in the Philadelphia area indicates that of all developed land between 1970 and 1980, 67 percent had been used for farming before it was developed. Since 1954, the area of cropland in Pennsylvania has dropped from 7.3 million acres to about 5.4 million acres. Counties such as Adams, Cumberland, Northampton and Lancaster have faced the dilemma similar to York where in just 30 years, almost 30 percent of York County’s farmland was lost to suburban development. Pennsylvania loses between one and six acres of agricultural land for each new household created. Once developed, the valuable soils are lost along with the entire service and character that agriculture provides to communities.

Despite the loss of farmland, the agricultural industry remains sizable and vigorous. Well managed farmland protects soil and water resources and can prevent flooding. Many farmers support conservation measures such as conservation tillage in their fields, building manure storage facilities and constructing stream bank fencing to protect water quality. Many farmers set aside land to return to its natural state.

The issue of farmland preservation has many aspects. It is an important economic industry for Pennsylvania. Farmers and their families are not the only ones benefiting from a successful agricultural industry. A multitude of industries are stabilized by a strong agricultural economy. It is part of the Pennsylvania culture, drawing tourists worldwide and providing a pastoral countryside for residents and visitors.

Agriculture is Pennsylvania’s single largest industry. Farming costs municipal governments far less than

other forms of development and pays more in property taxes than it receives back in services. Such low density development demands far fewer governmental services, placing fewer children in local schools, few roads, no sewers and usually no public water.

Today, Pennsylvania leads the nation in the total number of farms and acres preserved for agriculture. Pennsylvania is preserving more farmland than any other state.

What tools are available to protect farmland?

Agricultural Conservation Easements: Agricultural conservation easements are legal agreements that permanently protect farms from development. Landowners sell conservation easements to a government entity or land trust. The buyer pays the farmer for the value of the land for agricultural use and the value of the land for its “highest and best use” (which is usually a development). Farmers continue to own and manage the land. If they sell their land, it must remain agricultural. The first easement was purchased in December 1989 and to date, approximately 3,745 farms were approved for easement purchases totaling over 210,000 acres.

Farmers apply for selection and farms must meet several criteria to be accepted. They must have a minimum of 50 acres. Parcels as small as ten acres may be preserved if next to other preserved farmland. They must be part of an Agricultural Security Area.

Agricultural Security Area: An agricultural security area is a designation given by local government to at least 250 acres of farmland (owned by one or more farmers). It provides protection from local ordinances that restrict farm practices and nuisance ordinances. It limits taking of land by eminent domain.

Activity 3: Farmlands Information Sheet – Page 2 (2/2)

Agriculture Protection Zoning (APZ): APZ ordinances designate areas where farming is the primary land use. It limits non-farm uses such as high-density development and restricts subdivision of land into parcels that are too small to farm. This stabilizes the land base by keeping large tracts of land free of development and reduces conflicts between farmers and their non-farming neighbors.

Transferable Development Rights (TDRs) and Purchase of Development Rights (PDRs): TDRs is a zoning tool that allows conservation and development to coexist within a municipality. Growth is directed to preferred locations through the sale and purchase of development rights. Development rights can be separated from the title of a property. These rights can be transferred to another location where development is desirable. A landowner can transfer the right to develop one parcel of land to a different parcel of land to protect farmland or open space. The farmer keeps possession of the land and right to farm it. It allows the purchaser of the development rights to develop another parcel more intensively than would otherwise be permitted, ideally in an area that is more suitable for intense development.

The PDRs are the zoning tool that allows a person or an entity to buy the right to develop land from the landowner. A municipality could pass a bond issue to buy the rights and “bank” them. A developer may purchase the development rights from the municipality when he wishes to develop an area with high density. TDRs give substantial control to the municipality since it is the municipality that owns all the development rights. Municipalities need to locate revenues to purchase the development rights. TDR programs can only be used by a single municipality or among municipalities with a joint ordinance.

Clean and Green: PA Act 319 is called Clean and Green. It is designed to provide tax incentives to voluntary landowners who preserve land in agricultural use and/or forest reserve. It allows agricultural land to be taxed at its value for agriculture instead of its market value. It provides land protection by penalizing the farmer with rollback taxes and penalties if the farmer decides to sell and develop the land instead of maintaining it as farmland.

Land Trusts

The surest methods for permanently protecting land involve acquisition of property rights by land trusts. It is the use of conservation easements that most clearly defines a conservation organization as a land trust. Land trust efforts revolve around working cooperatively with landowners and crafting projects with win-win outcomes for communities.

As of the end of 2007, 476,550 acres of Pennsylvania have been protected by Pennsylvania land trusts.

Land trusts vary in character and priorities. Most land trusts are private charitable corporations. Some are governmental or quasi-governmental agencies that operate with much of the flexibility and freedom of a private land trust. Some land trusts are quite small, run entirely by volunteers, doing their work in just one municipality or small watershed. Some utilize large staffs of professionals and work region or nationwide.

Some land trusts own and operate preserves and recreation areas open to the public. Others own no land at all but hold conservation easements, which protect certain natural values on properties. Others work to acquire and then transfer critical land to government for use as parks, game lands, etc.

Land trusts may have one or more conservation priorities. They may conserve land to protect our rivers, streams and groundwater. They may protect community open space for new parks, scenic views, wildlife preserves or neighborhood gardens. They may conserve productive farmland or working forests. Some focus on protecting biodiversity while others preserve traditional hunting grounds.

More than 1,200 land trusts work in all fifty states, conserving land using a variety of techniques. Eighty of these organizations work to protect Pennsylvania's special places. Regardless of size, methods and priorities, land trusts share a commitment to conserving important lands for future generations. Land trusts can also work on land use planning, nature education, trail development, and other areas.

The three methods that land trusts protect land are conservation easement, fee simple ownership and reconveyance.

A Conservation Easement: A conservation easement is a legal agreement between a landowner and a conservation organization that limits certain specified uses on all or a portion of a property for conservation purposes while leaving the property in the landowner's ownership. Easements are almost without exception of perpetual duration. They are recorded at the county office where all deeds are recorded, and the easement's terms are binding on all future owners of the eased parcel.

Through the use of a conservation easement, landowners may still retain the right to use their property for many different purposes, subject to local zoning and public health and safety requirements. For example, an owner can plant trees or cut them down, build buildings or demolish them, grow crops or dig holes, allow public access or prohibit it, subdivide the property, etc. To understand the conservation easement concept, it is helpful to think of these rights as a bundle of rights. A landowner may donate or sell the whole bundle, or just one or two of the rights in the form of a conservation easement.

A conservation easement is a legal and permanent agreement between a landowner and a conservation organization that limits certain specified uses on all or a

Activity 3: Land Trusts and Environmental Advisory Councils Information Sheet – Page 2 (2/4)

portion of a property for conservation purposes while leaving the property in the landowner's ownership. Easements are recorded at the county office where all deeds are recorded, and the easement's terms are binding on all future owners of the eased parcel.

Every conservation easement is unique, the terms of the easement tailored to the particular property and to the particular needs and goals of the landowner and conservation organization. An easement might state, for example, that no building or road may be placed within 200 feet of a stream passing through a property but allow for a house to be built on another portion of the same property. Another easement might permit farming on a property but forbid residential, retail and industrial development. Yet another easement may prohibit all activities except for sustainable forestry and recreation. The flexibility and applicability of conservation easements is nearly endless.

A variety of model easements have been developed through DCNR and the Pennsylvania Land Trust Association for various types of conservation goals – these documents may be downloaded at conserveland.org and include:

Conservation Easement: Provides for a comprehensive level of protection with flexibility to customize for specific conservation needs.

Trail Easement: Provides specific language for developing a right of way agreement for public access of a linear tract of land for recreational purpose.

Riparian Forest Buffer Protection Agreement: A single-purpose document, designed for protecting a narrow ribbon of land along a waterway. The model could be used in combination with or independent of CREP.

Fishing Access Agreement: Model easement provides a framework for conservation organizations and governmental entities to build cooperative relationships with private landowners to ensure responsible fishing opportunities for the public while keeping properties in the control of the owners.

Water Quality Improvement Easement: Help secure long-term access through and to property for the purpose of remediating the effects of abandoned mine drainage.

Fee Simple Title Ownership: Fee ownership involves full acquisition of the land and enables the land trust to control all aspects of use and management of the property and its resources. With Fee simple ownership, a land trust may provide the strongest guarantee of long-term conservation. However, because fee ownership may be costly or require additional resources, it is not always the best option or even a viable one.

Reconveyance: At times a land trust may operate as a third party, first acquiring the land from the original owner and then transferring the ownership of the property to another entity for the sole purpose of conservation. Usually this entity is a governmental unit such as a state agency or municipality but sometimes it is another land trust.

According to the 2007 census data collected from the Pennsylvania Land Trust Association, 2,233 conservation easements are held by 62 land trusts across the state. Sixty percent of Pennsylvania's land trusts are operated entirely by volunteers. Half of the Pennsylvania land trusts that exist today were formed after 1989.

For additional information regarding land conservation, including current data on conserved lands in Pennsylvania, visit the Pennsylvania Land Trust Association's website at www.conserveland.org.

What is an Environmental Advisory Council?

An Environmental Advisory Council is a group of 3-7 community residents, appointed by local elected officials, that advises the local planning commission, park and recreation board and elected officials on the protection, conservation, management, promotion and use of natural resources within its territorial limits.

Municipalities are authorized to establish EACs through Act 177 of 1996, originally Act 148 of 1973.

EAC members devote time and energy to assist elected and appointed officials in protecting the environment. They can act on a municipal or multi-municipal level.

For more information, review the EAC Handbook available at www.eacnetwork.org.

Why are EACs a priority for Pennsylvania?

Through the legislature, Pennsylvania has chosen to delegate much of its power to regulate land to the local government. As a result, the Commonwealth of Pennsylvania has over 2,560 local governing bodies. The decisions these governing bodies make on a variety of issues, from land use designations to stream corridor protection, have direct impacts on natural resources within individual municipalities and beyond. EACs, as part of local government, work directly with municipal officials to help them make environmentally sound decisions - and protect the health and quality of life of our communities.

Where are there other EACs in Pennsylvania?

As of 2008, there are over one hundred EACs in Pennsylvania and they are continuously being formed. To locate EAC's across the state, use the interactive map at www.eacnetwork.org/map.asp.

What do EACs do?

In accordance with Act 177, EACs are authorized to:

- Identify environmental problems and recommend plans and programs to protect and improve the quality of the environment;
- Make recommendations about the use of open land;
- Promote a community environmental program;
- Keep an index of all open space areas to determine the proper use of such areas;
- Review plans, conduct site visits, and prepare reports for municipal officials; and
- Advise local government agencies about the acquisition of property.

What don't EACs do?

- EACs do not regulate; they are advisory only.
- EACs do not take the place of or compete with planning commissions or park and recreation boards; they augment and work closely with them.
- EACs are not activist or extremist environmental groups—they are part of the local government and accomplish the most when they work well with local officials.
- EACs do not compete with local grass-roots organizations, such as watershed associations.
- They are contact points and local government liaisons for these groups.
- EACs do not add bureaucracy to the local government- they have an organized procedure for participating in land use decisions.

Activity 3: *Land Trusts and Environmental Advisory Councils Information Sheet – Page 4 (2/4)***Why start an EAC?**

- While municipal officials have a high demand for their time and attention, an EAC can devote their full attention to environmental protection. EACs help municipal officials make environmentally sound decisions.
- EACs serve as liaisons to represent both the community and decision makers.
- EACs are a focal point for funding and raise money for projects.
- EACs engage residents, community volunteers, and the private sector in natural resource protection.
- EACs work on a multi-municipal level to reflect natural rather than artificial municipal boundaries.

Source: www.eacnetwork.org

Activity 3: Greenways Information Sheet - Page 1 (1/3)**What is a greenway?**

A greenway is a corridor of green space. It could be a narrow ribbon of woods in an urban or rural area or a wide corridor of diverse natural features.

It could be a railroad right of way converted to recreational use or a scenic road or a canal. It could function as a recreation area or function exclusively as a corridor for wildlife and environmental protection, linking parks and natural areas.

The PA Greenways Action Plan (2001) promotes establishing a statewide network of greenways. It advocates a greenway in every community by 2020. One of the primary goals is to identify a statewide network of greenway “hubs” (local/state parks, forest, communities) and establish connecting corridors of local and regional greenways called “spokes.”

Learn more about greenways by visiting www.pagreenways.org.

What are the benefits?

If we think of the greenway system as infrastructure, the same way we think of roads, utilities and schools, we see many payoffs.

There are many benefits of greenways:

- To protect water resources by buffering non-point sources of pollution, reduce floods, and purify water
- Provide opportunities to protect and manage wildlife, forests and ecological systems
- Recharging and purifying underground aquifers that supply ground and surface waters including drinking water
- To provide recreational opportunities for people fostering health and wellness

- Alternative to automotive transportation
- Add to the economic value of the area
- Accentuate scenic beauty

What are some examples?

- A regional coordinated system of green space plays a critical role in managing water for the benefit of humans and wildlife. A riparian corridor is land adjacent to a stream or other waterway which supports a band of vegetation. Buffers can be either forested or herbaceous although forested buffers are preferable.
- A scenic corridor is associated with a highway, waterway or major hiking/biking trail that has a view of significant scenic value.
- A linear heritage area like the Schuylkill River Heritage Corridor is a multi-county region designated at the state and federal level to plan, conserve, develop and market the natural, historic and cultural resources of an area.

What tools help you to create greenways?

Greenway Planning: DCNR established the County Greenways and Open Space Network Planning Program to provide funding and technical assistance to counties to plan for a countywide greenway network.

One of the primary goals of this program is to establish a statewide greenways network of hubs/destinations and connecting linear corridors. Working in cooperation with their municipalities, each county is encouraged to develop a County Greenways and Open Space Plan which provides an inventory of existing natural and manmade resources, a vision for their county greenway network, and an action plan for realization that vision.

Activity 3: Greenways Information Sheet – Page 2 (2/3)

These plans are then adopted as a component of the County’s Comprehensive Plan. Greenways are an important strategy for achieving land use management, recreation, open space protection and community revitalization goals. The plan should be used to guide greenway development within the county as well as provide a framework municipal greenway planning efforts.

View planning resources, including DCNR’s guidelines for county and municipal Greenway Plans, at www.pagreenways.org/toolboxdocuments.htm, and all completed County Plans at www.dcnr.state.pa.us/brc/greenways/CountyGreenways.aspx.

Official Map: An ordinance that notifies the public and property owners of lands that the local government has designated for possible future acquisition for a public purpose and that gives the government a year to acquire the land for public grounds once a property owner expresses the written intent to develop that area.

Lands could be designated on the Official Map for potential use as future public streets; parks and playgrounds; schools, libraries, community centers, and open space; pedestrian/bicycle ways; public easements; floodways, floodplains and stream-courses, etc.

By showing the area on the Official Map, the local government puts the property owner on notice that the property has been designated for possible future acquisition for a public facility or purpose. Only those areas where the municipality is able and willing to purchase, or on which it can acquire an easement, should be entered into the Official Map.

Municipalities in Pennsylvania are granted the power to create Official Maps through the

Pennsylvania Municipalities Planning Code (MPC). Additional information on this topic can be found at: www.conservationtools.org.

Public Dedication: Pennsylvania municipalities have the power under the state’s Municipalities Planning Code (“MPC”) to require developers to dedicate land to the municipality for public parks and recreation purposes. Called “public dedication” in the MPC, this tool is often referred to as “mandatory dedication” by those in the land use planning field.

Public dedication is based on the concept of impact fees: Development creates increased demand for municipal services or facilities. Requiring developers to provide amenities or funding for expanded or enhanced public amenities is an efficient and equitable way to offset some of the impacts of new development.

Before taking advantage of a public dedication provision, a municipality must first adopt a recreation plan and then pass a Subdivision & Land Development Ordinance (SALDO), which was discussed in the Planning Toolbox section of this book.

A collection of public dedication ordinances are available at the www.conserveland.org Library. Additional information on this topic is available at www.conservationtools.org.

Additional Resources:

Greenways Toolbox: An online resource at www.pagreenways.org/greenwaystoolbox.htm that provides a variety of guides, publications, sample materials to assist in the development and implementation of a statewide greenways network.

How-To Manual: Creating Connections: The Pennsylvania Greenways and Trails How-To Manual,

Activity 3: *Greenways Information Sheet - Page 3 (3/3)*

is a valuable resource that describes the process for creating, acquiring, constructing, and managing Pennsylvania Greenways. A copy can be found in the Greenways Toolbox.

Trail and Path Planning: A Guide for Municipalities, a publication by Chester County, is an excellent resource which describes how local governments can encourage the development of trails through planning and land use regulations. This can also be a resource for trail enthusiasts to better understand how they can urge their municipalities to advance trail development.

www.dsfc.chesco.org/planning/cwp/view.asp?a=3&q=631389.

A Resource Inventory Analysis Map: A community needs to map and inventory the natural, historical and scenic resources, building a geographic information system base map that identifies existing features. It should be coordinated with other municipalities, cooperating together for protecting the resources. A Resource Inventory Analysis map is an important tool. Every municipal comprehensive plan should contain a basic resource inventory to help protect the community's special resources.

Conservation Design: Conservation design is implemented through a municipality's subdivision and land development ordinance. The purpose is to preserve a larger amount of land for conservation use while still allowing development. Under this technique, subdivisions are required to dedicate a portion of their land to permanent open space uses. The open space or greenway is owned and managed by a homeowners association, land trust or municipality. Easements are placed on the land to ensure it will not be further developed. The open space in each new subdivision should ultimately join together to form interconnected systems. For more information on Conservation Subdivision Design, visit

the Natural Lands Trust Growing Greener: Conservation by Design site at www.natlands.org/categories/subcategory.asp?fldSubCategoryId=26.

Conservation Easement: A conservation easement is a legal agreement between a landowner and a conservation organization that limits certain specified uses on all or a portion of a property for conservation purposes while leaving the property in the landowner's ownership. Easements are almost without exception of perpetual duration.

A variety of conservation easements exist for specific types of conservation goals, including creating greenways. Some of the easements that are beneficial for developing greenways include the Trail Easement, the Riparian Forest Buffer Protection Agreement and the Fishing Access Agreement. The Pennsylvania Land Trust Association and DCNR has developed samples or model documents of these easements and they are available at www.conserveland.org.

Acquisition or Reconveyance: Conservation organizations or government entities may decide to acquire the parcel of land that is being considered for the greenway and either maintain ownership or transfer ownership to another entity. More information on easements, and other tools used by land trusts are available on the land trust information sheet or online at conserveland.org.

Conservation Funding: There are a variety of funding sources available for conservation of greenways and other conservation properties. State and federal agencies provide grant funding for both private and public entities to protect natural resources. Conservation organizations may rely on additional private sources of funding, including foundations, individual donors and/or membership dues. Government entities may also choose to establish funding sources by seeking tax increases or bond issues specifically for land conservation efforts.

Activity 3: Land Recycling Information Sheet – Page 1 (1/2)**Land Recycling and Other Specialized Techniques**

Industrial development left wastelands in almost every community throughout Pennsylvania. These areas of abandoned industrial sites are called brownfields. Usually located along rivers and transportation corridors, these sites are a testimony to a rich industrial heritage. There are estimated 400,000 brownfield sites across the nation.

Selling land that had been contaminated and polluted by previous owners became a liability issue. Purchase of such property was avoided due to cleanup requirements and lack of funding. Such lands remained a challenge for redevelopment. The Land Recycling Program (Brownfields Law – Act 2) clarified liability issues and established health standards that made redevelopment of brownfield sites more attractive. It provided unprecedented opportunities to recycle abandoned and old industrial sites into productive properties that could strengthen the economic viability of our cities and towns and provide new areas for parks and green space.

The Land Recycling Program promotes redevelopment in sustainable communities. These communities feature a mixture of uses, provide a variety of housing choices, are pedestrian friendly, have access to public transportation and greenways.

By incorporating these qualities, the program acts as an incentive to improve cities and towns, making them more desirable places to live.

Brownfields reduce sprawl by reusing sites and focusing development where existing infrastructure exist instead of developing farmland or open space. It also cleans up hazardous sites. Sites can be obtained for \$1.00 just to have them redeveloped. They are situated in prime locations near business districts, waterfronts and existing neighborhoods.

Once a brownfield is assessed, it must still be remediated before used. This is costly but state funds are available for assessment and implementation of a cleanup plan. Certain design strategies can be applied in dealing with contamination. For example, if contamination is localized to one portion of the site, this portion could be capped and used for parking.

Enterprise Zones are areas where property taxes are adapted for a specific period of time to encourage economic development. Keystone Opportunity Zones are examples of enterprise zones which are active in Pennsylvania from 1998 to 2010. Areas are usually depressed but infrastructure is available or nearby. Improving these areas for residential, recreation and commercial use allows development to occur on previously developed land thus protecting existing natural resources.

Compact Development: Design philosophy where the space needs of a population can be satisfied with less land area. Compact development can take various forms. From a regional perspective, it may limit development of land in cities and towns so that it does not extend into rural areas. The following are types of compact development:

Conservation Subdivision Design: A technique that provides the developer flexibility in newly developed areas by clustering the development into concentrated areas that can protect natural habitat. Square footage of buildings may remain the same but compact clusters reduce dimensions of lot sizes and shorten road lengths. The open space protected could be more than half of the development and may be owned by a homeowner association or conservation organization. By building houses on smaller lot sizes and having the open space usable and visible, homeowners seem to be attracted to this concept. They not only preserve natural and cultural landscapes, they reduce construction costs and long-term maintenance due to the shorter streets.

Activity 3: Land Recycling Information Sheet – Page 2 (2/2)

Mixed Use Development: A development that contains at least three different uses including residential. Mixed use development integrates the concept that a community is a place for people to live, shop and walk. Stores, homes, offices and public transportation are pedestrian oriented. Conventional zoning actually discourages this and segregates land uses. Conservation design features a balanced mix of land uses and compact development reminiscent of traditional Pennsylvania cities and towns. Traditional Neighborhood Development (TND) is a compact form of new development used to create a small town character as its primary goal. This is achieved by a number of aspects of community design such as sidewalks and narrow streets. It has a mixed-use core of community facilities, retail businesses and a variety of housing types. It requires a municipality to amend local zoning and subdivision ordinances.

Infill Development: Occurs in locations where some development has already taken place and the infra-

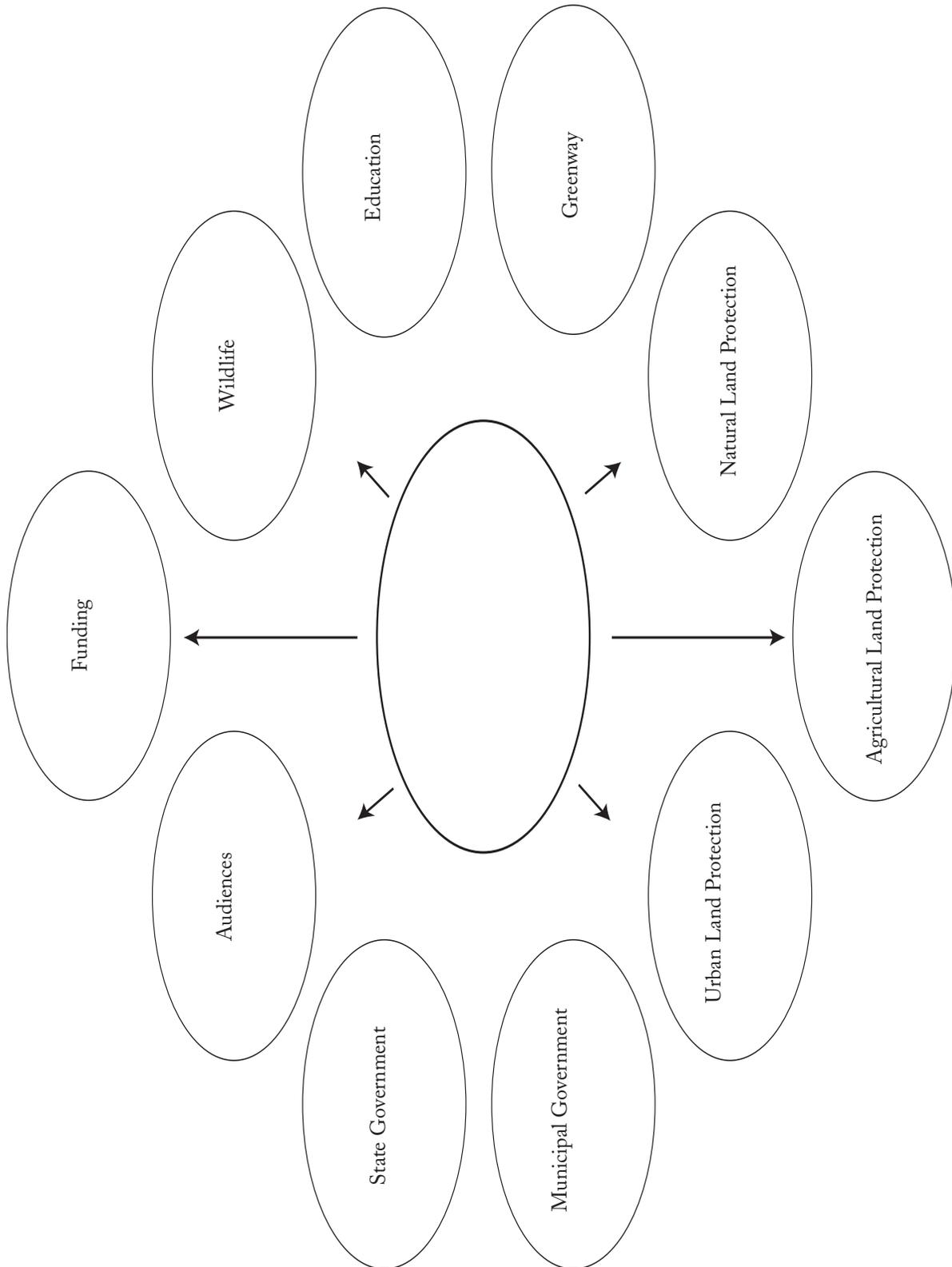
structure is already there. In urban areas, infill development refers to the conversion of old buildings such as schools into new uses or by filling the space with new development. Abandoned lots could be replaced by housing or parks.

Urban Growth Boundary: A planning strategy by which a planning agency establishes a boundary line around a community within which urban infrastructure and development are to be encouraged. Outside the boundary, development would be discouraged and set as low density, open space and agricultural easements.

Reduce Impervious Surfaces: Groundwater recharge and surface water runoff are impacted by paved surfaces. A one-acre parking lot was found to produce a runoff 16 times as large as the runoff produced by a meadow. Reducing overall paved surfaces and utilizing pervious materials for paving will help reduce the problem.

Activity 3: *Community Planning Worksheet*

Develop a “map” of all the community/regional resources, tools and appropriate partners or contacts that would apply to each of the headings. Write the name of the region or community in the center circle. Surrounding the center circle make ovals with these names in each oval.



Activity 3: *Protecting Land Bingo*

Greenways	Open Space Zoning/Conservation Design	Conservation By Design	Environmental Advisory Council
Riparian Corridor	Conservation Easement	Agricultural Conservation Easements	Infill Development
Scenic Corridor	Fee Simple Title	Agricultural Security Area	Brownfields
Heritage Park	Carrying Capacity	Agriculture Protection Zoning (APZ)	Urban Growth Boundary
Resource Inventory Analysis Map	Land Trusts	Transferable Development Rights (TDR's)	Traditional Neighborhood Development (TND)

Park Master Plan Update - Jonestown Community Park



A larger version of this map is located in back pocket.

Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Reading, Writing, Speaking and Listening
- Environment and Ecology
- Civics and Government
- Geography

Standard Statements

- 1.6** Speaking and Listening
- 4.2** Renewable and Nonrenewable Resources
- 4.8** Humans and the Environment
- 4.9** Environmental Laws and Regulations
- 5.2** Rights and Responsibilities of Citizens
- 7.4** Interactions Between People and Places

Content Objectives

- Describe the difference between public and private land
- Compare and explain public agencies involved in land ownership and their services
- Explain activities and services provided by state parks
- Explain and analyze the impacts public recreation has on natural resources
- Explain the controversy between protecting natural resources and the public demands for recreation
- Design and present a state park and community model incorporating sound management practices while meeting the demands of the public
- Demonstrate land use decisions on private lands that impact public lands
- Demonstrate smart growth policies in planning designs
- Analyze the role of citizens at the local and state levels regarding land decisions and initiatives

Instructional Strategies

- Discussion
- Survey analysis
- Group problem solving
- Presentations
- Demonstration

Assessment Strategies

- Small group and large group participation
- Design and presentation of a state park and community plan
- Evaluation rubrics
- Written evaluation

Materials

Included:

- Agencies Information Sheet
- Mission of DCNR
- Photos of Recreation Activities
- Photos of Infrastructure
- Map of Bald Eagle State Park
- Public Lands Worksheet
- Sample Map Icons
- Assessment Sheet
- Resource Inventory
- Project Review sheet
- Dilemmas (cut out)

Additional Materials:

- DCNR Park Visitor Welcome Kit
- Poster Board and Markers for Each Group
- State Park Mini Maps
- PA Tourism and Transportation Map
- Yellow Stickers or Post-it Notes

Time

- 3.0 hours

Public lands are part of our heritage. There are public lands that are owned and managed by community, county, state and national governments. Public lands can be set aside for public recreation, resource protection and resource management. Public ownership means public responsibility. Each citizen has a responsibility to provide recommendations and participate in planning and managing public lands.

Pennsylvania state parks and forests are under the administration of the Department of Conservation and Natural Resources. DCNR boasts one of the largest state park systems in the country. The Bureau of Forestry manages the largest tract of certified forests in the country. These public lands are conserved to provide access to scenic beauty, natural treasures, learning experiences and countless recreational opportunities.

Other state and federal agencies manage public lands along with local communities and counties.

Citizens are encouraged to know their public lands and their rights and responsibilities as citizens to provide recommendations on local, state or federal levels.

No Park Is An Island

This lesson provides background information on participating and protecting public lands. The title “No Park is An Island” speaks to the connections between communities, natural resources and public lands. There are no isolated lands or isolated communities. Each should enhance and benefit the other.

Overview

No Park is An Island includes five activities:

Activity 1: *Public Lands: Our Civic Responsibility*

Activity 2: *Enjoying Pennsylvania's Public Lands*

Activity 3: *Activities versus Resources*

Activity 4: *Who is Your Audience?*

Activity 5: *Developing a Public Park Project*

Summary: “No Park is An Island” expresses the connections of public lands to the surrounding communities, the natural resources, the state and the people. Public lands are the responsibility of each citizen. This lesson provides discussion about government responsibility and the encouragement of public input. Through the activities, participants will determine the role of government agencies and define the characteristics between public and private land. Participants will work in groups to make recommendations about the development of public lands for park, recreation and resource management.

Groups will research information, applying skills learned in previous lessons, and develop park and recreation plans for public land. The group will present their plans in a public forum.

Questions: What is the difference between public and private lands? Who has responsibility to manage public and private lands? What is the role of the PA Department of Conservation and Natural Resources in managing public lands? What recreation activities are available in our state parks and forests? How do activities impact the natural resources? What activities are recommended in developing a public park and recreation initiative?

Activity 1

Activity 1:

Public Lands: Our Civic Responsibility

Summary: Participants will work in groups to discuss the Department of Conservation and Natural Resources (DCNR) as the leader in management of public lands. They will review the mission and goals of the agency and other state and national agencies that own and manage public lands. Groups will locate state and national public lands in Pennsylvania and determine the types of visitor experiences provided at different sites.

Questions: Where are public lands located in Pennsylvania? Who owns public lands? What activities can be conducted in state public parks and forests, state game lands and on national lands located in Pennsylvania?

Preparation

- Reproduce a copy of the DCNR Mission Statement (p 189) and Action Plan (available online at www.dcnr.state.pa.us/info/shapefuture/actionplan.aspx) to display to the entire group.
- Copy and cut the Government Agency Worksheet (p 190) for pairs of students.

Procedure

Question: What public agencies are involved with protecting natural resources through land ownership?

1. Discuss the meaning of the words “public” and “private” land ownership. In Pennsylvania, DCNR is the primary organization responsible for the protection and stewardship of natural resources. Although DCNR owns only a small percentage of Pennsylvania’s lands, 2.4 million acres of Pennsylvania’s 29 million acres, it establishes a

model for the long-term sustainability of our natural resources. DCNR also provides funding incentives to private owners and communities to protect land such as greenways for natural resources and open space and to improve outdoor recreation activities.

2. Review DCNR's mission and explore and discuss DCNR's 2004 Action Plan. What are the highlights of the action plan that reflect a focus on land use issues?

3. There are other state and federal agencies involved in protecting public lands and protecting aspects of the environment. We will examine and compare the responsibilities of different state and federal agencies in relationship to land use.

Distribute the Government Agency Worksheet. Assign one box to pairs of participants to read. Pairs are to discuss the role of the assigned agency and provide examples. If time permits, pairs of participants could visit the web site and research information about the agencies. Discuss in a large group. How do the responsibilities of each agency compare with the other agencies?

4. Since DCNR owns only a small percentage of land in Pennsylvania, the long term sustainability of our natural resources rests with local communities, nonprofit conservation organizations and private landowners. What land in your community is owned by the municipality or conservation organization? What are some of the non-government land conservation organizations in your area? Distribute list of agencies that includes the Nature Conservancy, Natural Lands Trust and local conservancies. How are these organizations involved in land use decisions? How can DCNR help support municipalities and nonprofits on land use issues? (Through education and funding.)

5. The Department of Conservation and Natural Resources was created to advocate for Pennsylvania's state parks and forests and to promote public recreation and resource protection. DCNR is responsible for managing our ecological

heritage, geologic resources, waterways, greenways and for providing support and funding for community open space, conservation and recreation projects. DCNR promotes responsible decision making and stewardship for all natural resources in Pennsylvania and is involved with land choices on a daily basis. It maintains, protects, preserves, constructs facilities and administers policies for 2.4 million acres of public land.

The lesson will address the importance of public lands and the role of each person in protecting our "common wealth." Public land is land owned for the common good or "commonwealth" of the citizens from the public domain. Pennsylvania's public woodlands, wetlands, streams and other natural resources in the public domain can be thought of as our "commons" of today. Public lands are part of our state and national heritage. Such lands are administered and managed through local, state or federal government agencies.

There are opportunities for citizens to help make decisions on management and development of public lands.

It is our responsibility to be involved with decisions about public lands. There are opportunities to attend public meetings or to submit comments about management plans. Contact the nearest state park to find out when they are reviewing their management plan.

It is also important for people living in adjacent communities to make land use decisions on private lands that are compatible with protecting and enhancing public lands. It is important to encourage compatible gateway communities and protect natural resources beyond state park borders through education and participation in the planning process.

Individuals who own land own the rights to the land and they decide what to build on it, who can visit it and when to sell it. Places like a McDonalds or

Walmart are private places even though they are open to the public at certain times. Private land ownership places many rights in the hands of the owner. These rights can be exercised to the limit governed by municipal codes, if codes and regulations exist. These rights can be separated and sold individually such as in a conservation easement or mineral rights.

Government and environmental organizations can educate private landowners about options for their ecologically valuable land. Government can provide incentives such as tax incentives to protect forest land and funding for land acquisitions and easements that make wise land use decisions more desirable for the private landowners.

Activity 2:

Enjoying Pennsylvania's Public Lands

Summary: Participants will examine maps and information on Pennsylvania's state parks and forests and identify activities they can enjoy at the various places.

Questions: Where are state parks and forests? What can you do there? Why is it important to manage public lands for public enjoyment? Which parks have you visited? Which would you be interested in visiting?

Preparation

- Divide participants into groups and discuss procedures for group work.
- Provide each group with a Pennsylvania Tourism and Transportation Map (available through www.visitpa.com).
- Provide each group with a Pennsylvania Public Lands Worksheet (p 191).

Activity 2

Procedure

Question: Where are the public lands located in Pennsylvania and where do I find information about public lands?

1. Divide participants into groups. Establish groups of five or six. We are going to “take a journey to our public lands” using the PA Tourism and Transportation Map. Provide a map for each group. Distribute the Public Lands Worksheet for each team. Open the maps and locate the key. Discuss the key. Overview the location of various information on the map.

2. Each group is to complete the worksheet by using the front and back of the map. Additional paper may be needed to write answers. Allow about 10–15 minutes for groups to complete the map activity. Review the answers when completed. (Facilitator Note: The Appalachian National Scenic Trail runs from Maine to Georgia and is 2,167 miles of which 232 miles are in Pennsylvania.) Discuss participant experiences. Place a map in front of the room. Using yellow stickers, participants identify their favorite place on public land by placing their name on the map. Share their experiences. After hearing their experiences, place a red sticker on the place you want to visit.

Discuss the following question: How can participants be involved with public lands? List and discuss the following:

- Conservation Volunteer Program
- Forest Stewardship Program
- Park Management Plans
- Clean-up programs
- Advisory or Friends Groups
- PA Cavity Nesting Trails Program
- Watershed Education and stream watch programs
- Visit and Enjoy: Hiking, Hunting, Fishing, Camping, Kayaking, Horseback Riding, Birding

Activity 3:

Activities versus Resources

Summary: Participants will discuss the history of state parks and focus on the types of recreation activities available through state parks. They will define the network of people and communities impacted by recreational choices. They will discuss how the communities impact the public lands. They will discuss the impacts of activities to the natural resources and develop strategies to help balance between the use of the land, the character of the community and the protection of the resource.

Questions: How does Pennsylvania manage public recreation and the conservation of natural resources on public lands? How do recreational activities impact natural resources? How do communities enhance recreational experiences? What choices could enhance experiences while protecting resources?

Preparation

- Develop groups.
- Provide a collection of mini maps, greenway maps or watershed maps.
- Provide a copy of the Recreation Impact Worksheet (p 192) for each group along with photos of Recreation and Activities (pp 193-195).
- Provide writing paper and implements.

Procedure

1. What is the primary purpose of State Parks in Pennsylvania? The Bureau of State Parks is part of the Department of Conservation and Natural Resources. There are 117 state public parks in Pennsylvania (2008). The primary purpose of state parks is to provide oppor-

tunities for enjoying healthy outdoor recreation, to protect the natural, scenic, aesthetic and historical values of each park and to serve as outdoor classrooms.

Before 1883 there were no state parks in Pennsylvania. Industrialization in the 19th century was booming. The appetite for natural resources threatened to overwhelm and destroy natural areas. Forests were harvested by lumbering companies without reforestation. Mountains of mining refuse overshadowed coal towns. By the 1880s it was clear that to save our natural heritage, we had to find ways to protect it. First it was a national movement that grew slowly into a state movement encouraged by Dr. Joseph T. Rothrock and Gifford Pinchot (governor from 1923 to 1927 and 1931 to 1935).

By the early 1920s, 29 of the 48 states had no state parks. The first state park in Pennsylvania was established at Valley Forge in 1883. Now there are 117 state parks located in every region of the state so that every Pennsylvanian is within 25 miles of a state park.

2. Find the state parks nearest your home. Write down the directions from your home to the state parks using the roads on the map.

3. What type of activities can you and your families and friends enjoy while visiting this park?

Decisions on how to manage and develop a state park involve knowledge and sensitivity to our natural resources and knowledge of the best management practices for developing the park for public visitation. Many of the skills and concerns needed to develop a park can be applied to community planning. Today we are going to develop a state park model.

4. How does a state park manage land for public recreation and the protection of natural resources? Distribute different state park mini maps or recreation guides so that each group is responsible for examining one mini map or

guide. Have each group examine their mini map or recreation guide. Using markers, locate and circle natural features such as streams, fields, forests, wetlands and create a list of natural habitats that appear to be protected by the state park. Discuss animals and plants that might inhabit those habitats. Write the habitats on a flip chart. Discuss why it is important to protect the habitats.

5. Distribute Recreation Impact worksheet: “What do people enjoy doing in our state parks?” The task is to work in groups and make a list of recreational activities.

Distribute photos of different recreational activities to each group to use as a reference. Have participants complete the first column of the worksheet. Have participants discuss their list of activities.

Discuss how every action can impact the natural environment. Review an example such as camping and discuss what is needed to support the activity. Discuss how the activity and infrastructure impact the natural resources.

6. How do activities affect others in the community and region? Identify the nearby communities and townships. How do they impact the park? How does the park impact the community?

Each group selects one or two of the activities in state parks (e.g. camping). Have each group select a different activity. Using a concept map design, write the activity in the center of the page and think of the services and infrastructure needed to maintain that activity in the park. Include the support, resources and materials needed outside the park.

Add additional connections to demonstrate the infrastructure needed to support each item. Remind participants to include signage, brochures, mapping and other elements that may be taken for granted. Include the elements provided by surrounding communities.

Discuss ideas on what communities can do to enhance the experiences of park visitors.

Optional: Participants could investigate careers and jobs associated with each aspect of parks and recreation management.

7. Discuss the concept maps with the whole group.

Participants could complete the worksheet as groups present. Have participants discuss the impact of each activity and its support structures (infrastructures) on the environment and the consequences of that activity on natural resources. What new recreation activities do people want to do in state parks? What changes might be implemented to meet these needs? What pressures do these activities have on the natural resources such as wildlife...birds, amphibians, wildflowers?

Challenge participants to look at their concept map and consider ways to conserve and lessen the impact to the environment. Select aspects of the concept maps to discuss such as water conservation devices to lessen water use. Parking surfaces could be turf parking to provide better runoff and recharge. Restrict camping to certain areas to protect sensitive areas.

8. Review the activity by discussing important reasons to have a park or greenway. Solicit answers from the participants and write them on a flip chart to include the following:

- Protect natural resources and ecological health
- Provide healthy recreational opportunities
- Conserve land for the future
- Preserve and protect open space
- Educate about nature, history and environmental issues
- Protect scenic beauty
- Protect areas of historical significance
- Connecting trails

- Economic development
- Tourism
- Raise land values in surrounding communities

Which are important to communities? Which are important to users of the park? Which are important for communities far away from a park? Which are important to people in other states?

Activity 4: *Who is Your Audience?*

Summary: It is important to identify the “users” and “potential users” of public lands and to assess their profile and needs. Knowing your audience is imperative before developing services. This activity involves the development of surveys and researching the needs and wishes of the audiences. It provides a basis for the types of services that parks could provide for present and future generations while managing for the conservation of the natural resources.

Question: Who are the visitors to public lands? What services do they want? What services will they use? How can public lands better meet the needs of the audiences?

Preparation

- Develop groups.
- Provide examples of survey questions.
- Provide clipboards, writing materials, surveys.

Procedure

1. How can we determine the audience and their needs?
Your group will be a team of “Park Planners” involved in developing a park and recommending land use sug-

gestions for adjacent communities. Your first task will be to develop a survey (questionnaire and an opinionnaire) to gather firsthand information about your site. By developing surveys, participants will gather information from people who use the park and compile the data so that it becomes useful to make decisions. People who work at the park, people who use the park and people living near the park have important perceptions that will help to define actions.

2. There are different types of surveys. According to Dr. Harold Hungerford, a questionnaire is a special kind of survey which collects factual information through a carefully written set of questions about a subject that is given to a selected population. The questions in a questionnaire collect facts. (How many people in your family hike this trail?) The questions in an opinionnaire collect perspectives on beliefs or opinions. (Where should the bike path be developed to avoid sensitive areas of the park?)

Participants will work in groups and develop questions that will help them design their park based on input from users, neighbors and employees of the park. They could develop one type or a mixture of both.

3. The task is to develop a survey with about 12 questions that will gather information and opinions from people to guide you in park development decisions. You will compile the data so that it is summarized in a useable, visual format.

Here are some rules to follow when developing and administering the survey:

- 1. Keep questions simple, direct and useful to your goal.**
- 2. Introduce yourself and be polite.**
- 3. Do not argue or disagree.**
- 4. Record accurately.**

Sample Survey Questions:

Assess if the interviewee is a

Visitor Employee Neighbor

1. *How far do you travel to get here and if visiting, how often do you come to the park?*

2. *Why do you come to this park? Did you have a history of coming here as a child or with family? How often did you visit? What nearby facilities or services do you use when visiting the park (e.g. retail store, restaurant, gas station, etc)?*

3. *What are the important natural resources and natural features in the park that are important to you and why? What historic resources are in the park?*

4. *How should the park protect the natural resources that are important to you? The historic resources?*

5. *What recreational activities do you do when you are here?*

6. *What activities would you like to see developed at the park and where should they be located?*

7. *What facilities in the park need to be improved?*

8. *What facilities would you like to see added and where?*

9. *How should lands surrounding the state park be protected or developed?*

10. *How could the communities adjacent to state parks improve or enhance the state park?*

11. *How does the state park enhance the community?*

12. *What is the relationship of state parks to local municipalities?*

13. *How can municipalities enhance their resources to be compatible as a gateway to a state park?*

4. *After participants develop their survey, they are to administer the survey.* They are to summarize the data so that it is visually presented in written and/or graph form. They are to develop concluding statements that summarize the information. Groups will assess the information and present their findings to the class. They will demonstrate how the survey will be applied to the development project.

Activity 5:

Developing a Public Park Project

Summary: Your task is to apply the information learned in the program and develop a public park or greenway. Using the example provided, participants develop planning strategies for the development of a state park. Participants will utilize information to make decisions about its recreational uses and impacts to the natural resources. Participants will provide recommendations to the community to enhance the visitor experience to the park.

Questions: What are the main concepts that emerged in the design of the project? What factors are involved in successfully applying your design?

Preparation

- Develop teams for group activity and review the procedures for working in groups.
- Provide a base map and information for the park or greenway.
- Provide participants with markers and oak tag. Distribute available maps to each group.
- Make copies and be prepared to distribute the following:
 - Assessment Worksheet (p 196)
 - Bald Eagle Map (p 197) and Map Icons (pp 198-199)

- Park and Community Resource Inventory Worksheet (p 200)
- Park and Community Land Choices Project Review (pp 201-202)
- Designing a Conservation Subdivision (p 203)
- Public Land Community Dilemma Cards (pp 204-206)

Procedure

Your task is to apply the information learned in the course to develop a state park and provide land recommendations to the surrounding communities.

1. Review the following information:

A. How does land become public land? When land is purchased or donated directly from a private landowner, acquiring fee simple title to land, it is defined as the acquisition of complete title to the land with no restrictions. The title of the land is transferred to the buyer or buying agency such as the state government, municipal government or a land trust.

The seller may wish to make a charitable deduction or a donation for all or part of their land. Sometimes they will donate or sell the land but are able to live there until they die. Sometimes the seller refuses to sell. If the property is needed for a very important reason such as construction of a lake or reservoir, the state has the right to exercise the power of eminent domain. This legal action requires the owner to sell the land for the common good.

A conservation easement is a flexible planning tool that protects land from maximum development while leaving it in private ownership. The easement is a legal document which protects the future use of the land regardless of ownership. Easements (conservation, agricultural, forest or recreation easements) are

intended to permanently protect the land from development. Conservation easements help improve the value of land in a community.

B. How does money become available to purchase easements? In the past, federal money played a major role in purchasing land for state parks. Federal money is available for certain projects such as national trail development. Land trusts try to obtain funding through donations and grants to purchase land. Funding through state and federal government is becoming more readily available channeled through county, municipal and land trust organizations. Communities and counties may request their residents to vote on issuing bonds for the purpose of buying open space. The state administration has proposed bond referenda (Growing Greener I and II) to establish funding sources for open space initiatives including conservation and forest easements.

A very important aspect of protecting land is to protect interconnected networks of permanent open space. The greenways become corridors that connect communities and parks. These corridors could provide walking and biking pathways which connect to destinations and improve the quality of life for the residents of the communities. Greenways can also protect natural habitats, watersheds and forests in communities. Some are managed exclusively for this purpose.

C. How can communities provide protection of the natural resources as development continues to grow? Review the following examples.

The Official Map: Communities are authorized under the Municipalities Planning Code to establish the Official Map. Its purpose is to provide notice to landowners and intending developers that the municipality has identified certain areas or corridors for future acquisition to serve public needs

such as streets and parkland. Land can be identified on Official Maps many years before its intended acquisition. Municipalities are legally obliged to purchase that land at fair market value within 12 months if the landowner notifies them of his/her intent to develop the land. If the municipality fails to initiate a sale agreement, the designation is deemed null and void.

The Map of Potential Conservation Lands: This is a new approach loosely related to the Official Map. Unlike its more formal counterpart, the Map of Potential Conservation Lands does not identify land earmarked for public acquisition but is a tool that informs local officials of natural resources on property proposed for development. It is used by a municipality to identify parts of undeveloped properties that need protection so that there could exist an interconnected network of conservation land. Green space such as land along streams, blocks of mature woodland, wetlands, prime farming soil, and other natural and historic features are outlined prior to new development. This approach does not involve condemnation or public acquisition but instead relies upon creative ways of accommodating development while protecting interconnected open space.

Conservation by Design: Communities adjoining your state park could become aware of adopting conservation zoning ordinances and conservation subdivision designs for new development which would require protection of natural features.

Conservation by Design is an approach to development that encourages protection and conservation of green infrastructure. Developers may be offered incentives if they conserve a significant percentage of land. A conservation subdivision

design devotes half (50 percent) or more of the buildable land area within a residential development as permanent open space. An example of an incentive is the offering of a 25 percent density bonus for preserving 60 percent of the unconstrained land or offering a higher density bonus for preserving 75 percent of the unconstrained land.

By “greenlining” conservation elements to be conserved such as tree groups, wildlife habitats, historic sites and viewsheds, the developer avoids building in these areas and locates sites for development that minimize impact. Using a community-wide Map of Potential Conservation Lands as a template for the layout and design of conservation areas within new subdivisions, the green space in developments should help to create an interconnected network of open space.

2. Design a map of a park or community project. Follow the outline as a guide to complete your project. Be prepared to present your recommendations.

Based on the knowledge and the visitors survey developed in the course, participants, acting as Park Planners, will design a map that will include the state park and surrounding communities. Participants may use the icons provided or design their own symbols for their map. Participants will provide recommendations to the adjoining communities on conservation planning that will enhance the natural resources and benefit the park and the surrounding communities. Participants will respond to situations and provide recommendations for solutions.

3. Review project assessment. Groups will be judged on the following criteria: (Distribute the Assessment Worksheet and review the following.) Participants will:

- Demonstrate awareness and sensitivity toward natural resources: special habitats, watersheds, forest continuity, groundwater recharge and needs of special species.

- Demonstrate awareness to the needs of diverse visitors (including visitors with disabilities) and improving the quality of life for the communities.
- Demonstrate awareness of present and future education and recreation demands and trends.
- Demonstrate connectivity to communities and natural resources through greenways and partnerships.
- Demonstrate awareness of budget constraints and economic potential.
- Demonstrate knowledge of planning tools and conservation concepts for design and construction.

4. Gather Resources. Participants are encouraged to use state or local community parks for this activity. The activity involves Bald Eagle State Park as an example, and the sample maps of Bald Eagle State Park were developed by DCNR State Parks.

It is important to collect resources and information on your site. Obtain maps and references on natural resources, historic information and community data.

Individual park maps could be used in combination with the PA Tourism and Transportation Map. Review the maps and map keys. Distribute the Project Review Sheet. Groups will work together through the eight steps of the project. Review each step briefly.

Step 1: Sketch your state park and communities, enlarging your map on poster board. Use the map icons that are provided or develop your own icons to develop a map key. Use symbols, colors and words to label information. Identify natural areas including wetlands, forests, streams and other natural features. Identify and color code surrounding communities and label boroughs and townships. Identify and color code quarries, abandoned industrial land, railroads, roads and significant man-made features. Color code agricultural lands.

Step 2: Develop a land use vision statement. Write a land use vision statement for the park and surrounding community on paper or on the poster board. Write your vision in a two-line statement that will guide future development in your park and community. The vision statement should reflect health and well-being of users and protection of natural resources.

Step 3: Develop inventory of resources and develop land management strategies. Inventory the natural, cultural and historic resources within the park and the surrounding area using the nine elements recommended on the Park and Community Resource Inventory Worksheet. Label them on your map.

Display a minimum of four strategies for managing land in the park that demonstrates your awareness and concern for natural resources. Strategies could include recommendations for protecting headwaters, streams, water resources, sensitive natural areas, groundwater (e.g. type of paving for parking lots), removing invasive species, planting native species, deer management, elk reintroduction, mosquito abatement and erosion control.

Step 4: Develop your park design and sketch the facilities for education and recreation activities that will meet your vision and serve a diversity of visitors and meeting requests from the survey. The facilitator may direct participants to enhance existing facilities based on what we have learned from the visitor survey.

Groups should decide the location of roads, camp sites, swimming pool and other visitor services they would like to have at the park. Design and develop the infrastructure to support visitor services in locations that have the least impact on sensitive natural resources. Participants will explain their design and reasons for their choices to the entire group during the oral presentation. It is important to demonstrate

your awareness of the impacts to the natural resources while meeting current visitor trends and expectations.

Step 5: Develop recommendations for “green” planning strategies for the surrounding communities. Focus on land use strategies for adjacent lands and surrounding communities. Locate watersheds, forests, farms, and sensitive natural habitats outside of the park boundaries. Recommend implementation of a minimum of three planning strategies that will help communities protect the green infrastructure in communities surrounding the park. This could include recommended areas for conservation easements, farmland preservation, brownfields development, watershed protection areas, riparian buffer zones and rails to trails. Locate actual and/or hypothetical areas to demonstrate your understanding of the green infrastructure concepts.

Step 6: Design a conservation subdivision. Address a development proposal for 85-acres of mixed woods and fields located along a stream for a maximum of 42 houses. Read the description of the land and review the illustrations. If there is space, draw the development on the map or on a separate posterboard. Groups must demonstrate an understanding of “Conservation by Design,” ensuring that a least 50 percent of the land is protected as open space. Demonstrate how the subdivision could be connected to the state park and other features through proposed greenways.

Step 7: Recommend improvements to enhance the community to serve the visitor experience. Display a minimum of three recommendations for the existing community to improve ways it can be more livable and appealing to residents and visitors. Demonstrate a greenway connection from your project to other places to enhance experiences for visitors and community members. Identify and label your ideas on the map.

Step 8: Respond to a community dilemma. Each group will receive a scenario about a community situation dealing with land in or around a state park.

Participants will have 15 minutes to discuss the community situation and develop recommendations for solutions. Groups will present their recommendations in group discussion. Groups will discuss how to address the community situation demonstrating the best practices for protecting resources and serving visitor needs.

Step 9: Participants will present their maps and planning suggestions to the group. Discussions will further enhance knowledge and understanding of conservation planning.

Step 10: Participants could be more involved in helping their communities. Describe examples of actions that will help implement successful land choices in their community:

- Become involved in neighborhood improvement projects.
- Form or join an Environmental Advisory Council.
- Attend and participate in public planning meetings.
- Become aware of and involved with a land trust, conservancy or similar organization.
- Educate public, teachers and leaders about land choices.
- Partner with organizations that can assist in protecting open space. (e.g. inventory natural resources, land acquisition and support.)
- Support bond issues for land acquisitions.
- Participate in conservation volunteer activities. (e.g. planting native plants, removing invasive species, inventory of species, litter cleanup, water quality assessment, etc.)
- Document changes in the community.



Activity 1: DCNR Mission Statement

The legislation that created DCNR in 1995, outlined the following mission:

“The primary mission of the Department of Conservation and Natural Resources is to maintain, improve and preserve state parks; to manage state forest lands to assure their long-term health, sustainability and economic use; to provide information on Pennsylvania’s ecological and geologic resources; and to administer grant and technical assistance programs that will benefit rivers conservation, trails and greenways, local recreation, regional heritage conservation and environmental education programs across Pennsylvania.”

DCNR’s current mission states: “We conserve and sustain Pennsylvania’s natural resources for present and future generations’ use and enjoyment.”

The core mission remains a cornerstone of DCNR’s services. The DCNR Action Plan lays out the future of the agency, one in which DCNR is viewed as a leading steward and advocate for the natural resources of the state, an expansion of the mandated mission.

Improve Stewardship of State Parks and Forests: In order to sustain the many uses of lands for generations, DCNR encourages the best science, research and technology to guide management of the lands. DCNR supports economic development through wise use of natural resources and increased tourism. DCNR is dedicated to the acquisition of lands and conservation easements to protect ecologically valuable areas.

Promote Statewide Land Conservation: DCNR owns only a small percentage of land and water. DCNR helps communities manage growth, protect special lands and reduce the loss of open space through education, grants and land easements. DCNR will help landowners understand the conservation values of their properties and protect forests on private lands.

Build and Maintain Sustainable and Attractive Communities: Using financial and technical assistance, DCNR helps foster regional and county-level planning that conserves natural and heritage resources and promotes recreation. DCNR targets assistance to projects that invest in older communities, build green infrastructure and greenway connections.

Create Outdoor Experiences for Citizens and Visitors: DCNR creates recreational connections with the outdoors by improving visitor experiences and increasing awareness of what is available. DCNR expands and targets educational messages to help people make lifestyle decisions to protect natural resources.

Activity 1: Government Agency Worksheet

Pennsylvania Department of Conservation and Natural Resources (DCNR) is charged with managing 2.4 million acres which includes 117 state parks and 2.1 million acres of state forest land. DCNR provides information on the state's ecological and geologic resources and establishes community conservation partnerships. The department provides technical assistance and funding for private forest management, urban forestry initiatives, river conservation and building sustainable communities by supporting trails, greenways, local parks, outdoor recreation, and natural areas. DCNR is responsible for managing the state forests, the largest publicly owned habitat for plants and animals and supporting private forest ownership. DCNR is the coordinating agency for protecting biodiversity. DCNR provides healthy outdoor recreational experiences and interpretive programming.

Pennsylvania Game Commission (PGC) and the **Pennsylvania Fish and Boat Commission (PFBC)** are independent state agencies funded largely by sports license sales and federal excise taxes. The PGC is responsible for Pennsylvania's wild birds and mammals, managing 1.4 million acres and coordinating public access programs which avail 4.5 million acres of private property to public hunting and trapping. The PFBC protects and conserves the aquatic resources and provides fishing and boating opportunities. PFBC manages fish, reptiles, amphibians and aquatic insects. Both agencies establish laws and regulations, improve habitats and educate the public. The **Pennsylvania Historic and Museum Commission** manages state historic sites and associated land resources. They promote protection and preservation of architectural and archaeological resources of the state and its communities

The **Pennsylvania Department of Environmental Protection (DEP)** is the state agency largely responsible for administering environmental laws and regulations which impact local and state decisions. DEP issues permits which impact community growth and development including permits for sewage treatment and water supply facilities. DEP responsibilities include reducing air pollution, protecting drinking water, protecting water quality, regulating wetlands, waste management, recycling, coordinating the state energy initiatives, providing mining regulations and coordinating related funding and grants.

Pennsylvania Department of Transportation (PennDOT) is responsible for highway plans and mass transit. The Pennsylvania highway system includes 120,298 miles of public roads, of which 43,634 miles are state-owned and 76,664 miles are owned by other public entities such as counties and municipalities. PennDOT is directly responsible for the development and maintenance of 39,906 miles of state public roads. Other agencies, such as DCNR, are responsible for 3,199 miles of state roads. PennDOT channels funds for county and municipal roads and establishes standards for public roads. Public involvement is important.

Federal Lands in Pennsylvania: The U.S. Department of Agriculture— **U.S. Forest Service** manages 200 million acres of national forests and grasslands throughout the U.S., of which the Allegheny National Forest consists of 23,100 acres in northwestern Pennsylvania. The **U.S. Department of the Interior (DOI)** manages 500 million acres of America's public lands (1/5th of the U.S.) under a variety of agencies including the **U.S. Fish and Wildlife Service** which in Pennsylvania is responsible for the Erie NWR (8,777 acres), John Heinz NWR at Tinicum (932 acres) and the Cherry Valley NWR. The DOI **National Park Service** manages 29 sites in Pennsylvania including the Appalachian National Scenic Trail, Valley Forge and Johnstown Flood National Memorial.

Pennsylvania Department of Community and Economic Development Governor's Center for Local Government Services serves as a resource for local government officials, developers and citizens interested in community planning - providing valuable tools for economic development and building strong communities. They provide funding for planning and technical assistance and access to numerous planning publications. **PA Department of Agriculture** administers several programs for agricultural preservation and best management practices. **County Conservation Districts**, each led by a volunteer board of directors, studies county natural resource issues and makes decisions which enhance and protect their communities. They address issues dealing with erosion, sediment control and floodplain monitoring.

Activity 2: Pennsylvania Public Lands Worksheet

Name _____

Using the Pennsylvania Tourism and Transportation Map answer the following questions:

1. What is the color and symbol for state park lands?
2. List the state parks located within a two-hour driving radius of your home.
3. What is the color for state forest land?
4. What are the closest state forest lands to your home? (look for forest area names)
5. What recreation activities can you do at Sproul but can't do at Weiser?
6. What is the color for state game lands?
7. What are the game lands closest to your home? (look for the numbers)
8. What is the color for national land?
9. In which counties is the Allegheny National Forest located?
10. What does yellow represent?
11. What does orange represent?
12. List from largest to smallest six of the selected built up areas.
13. Locate and list historic sites within 60 miles of your home.
14. Locate the Appalachian Trail. Where does it enter and leave the state? Where does it go? What agency owns lands adjacent to the trail?
15. What is the color and symbol for rail-trails? Locate several rail-trails. Locate the closest rails-trails to your school or home.
16. What are some important aspects of rail-trails?
17. Locate Bald Eagle State Park. Provide directions from your house to Bald Eagle State Park following main routes. Using the scale, determine how many miles it is.

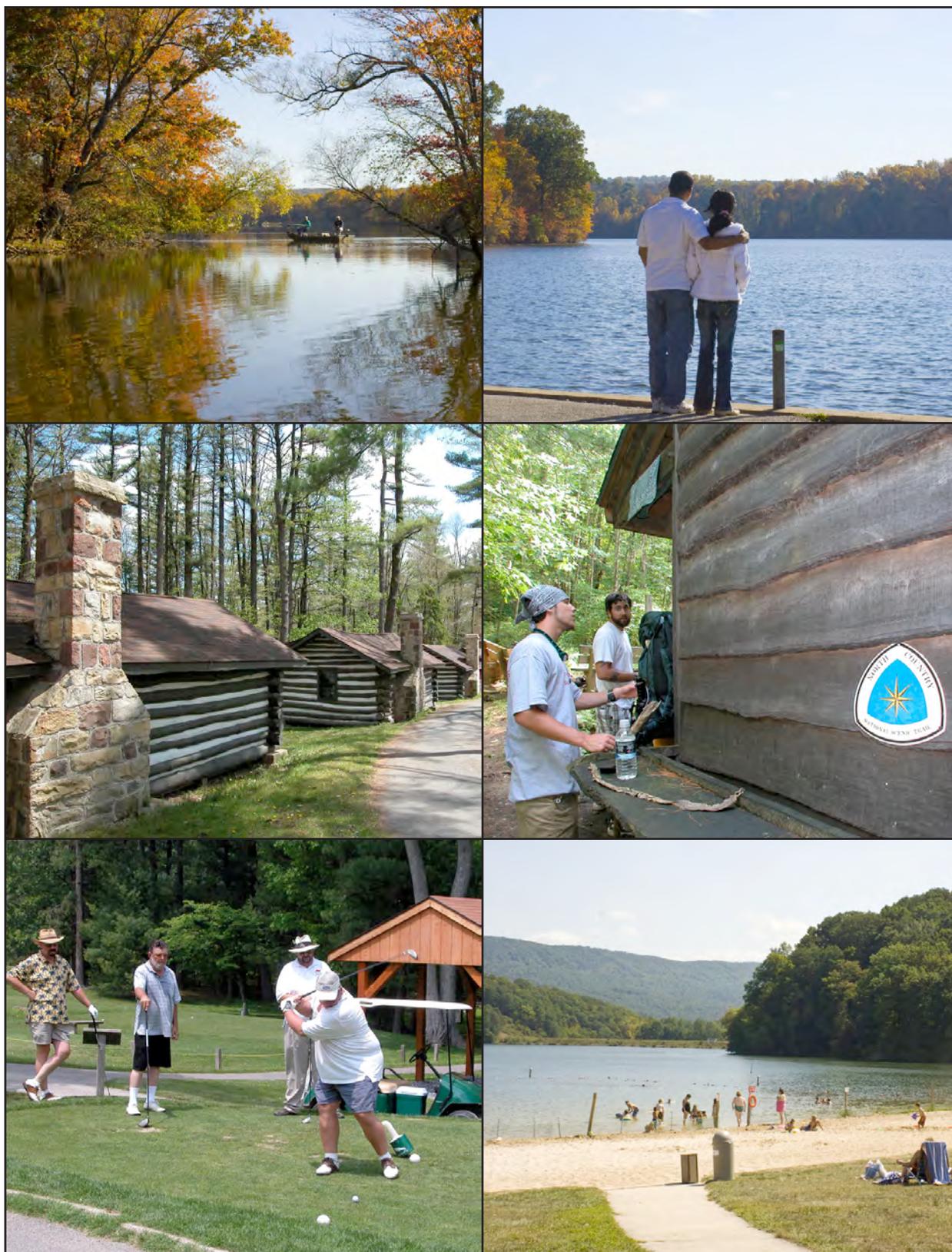
Activity 3: *Recreation Impact Worksheet*

Activity	What Do You Need?	How Does It Impact Natural Resources?	How Can We Manage to Reduce The Impact?
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			

Activity 3: Photos of Recreational Activities - Page 1 (1/3)



Activity 3: Photos of Recreational Activities - Page 2 (2/3)



Activity 3: Photos of Recreational Activities - Page 3 (3/3)



Activity 5: Park Assessment Worksheet and Community Project

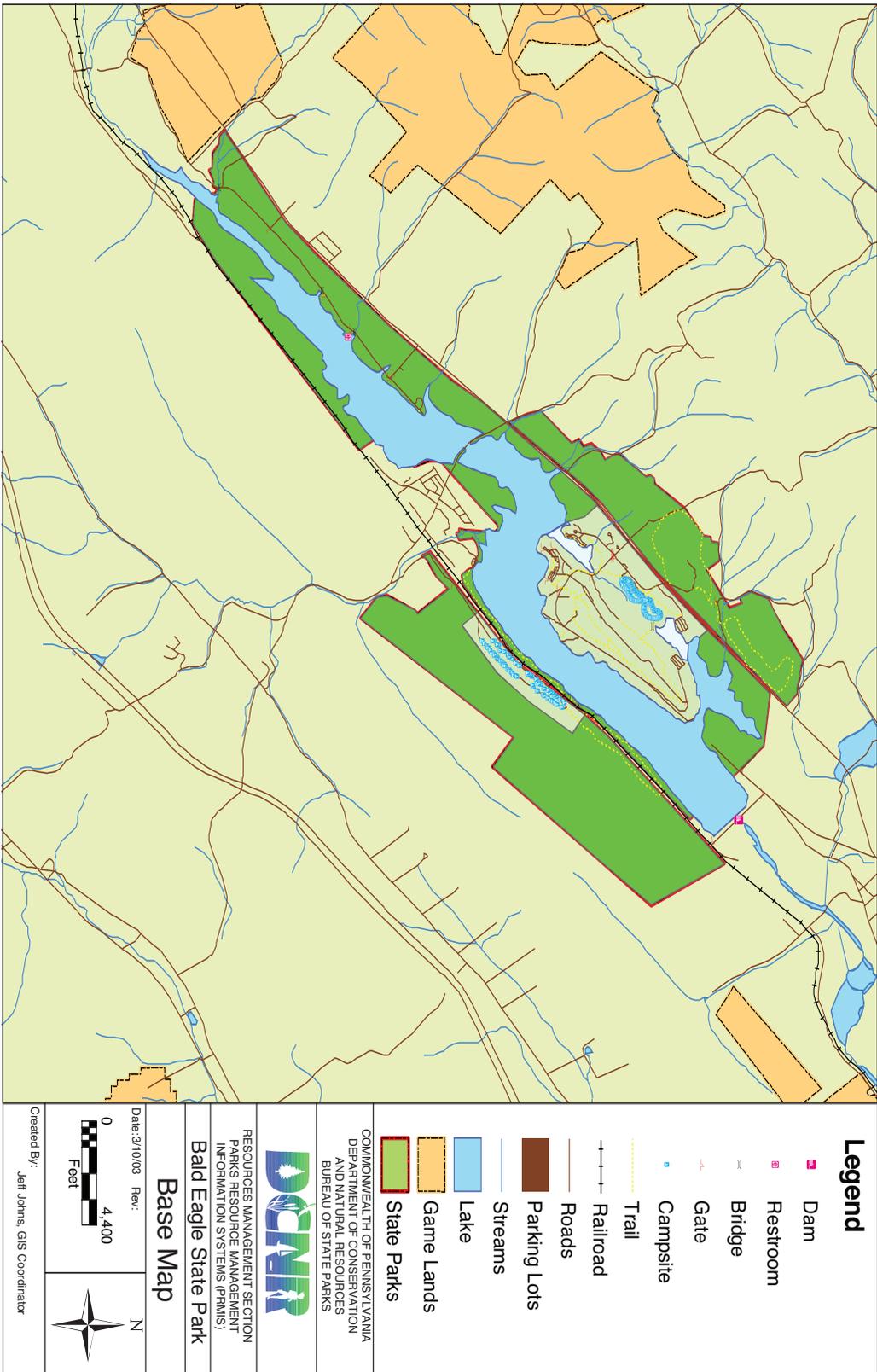
Name _____

This assessment was developed for school project use.

Assessment	Great Plan	Good Plan	Average Plan	Need To Plan
Demonstrate awareness and sensitivity toward natural resources: special habitats, watersheds, forest continuity, groundwater recharge and needs of special species.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 examples (10 points)	Provides 1 example (5 points)
Demonstrate awareness to the needs of diverse visitors (including visitors with disabilities) and improving the quality of life for the communities.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 examples (10 points)	Provides 1 example (5 points)
Demonstrate awareness of present and future education and recreation demands and trends.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 examples (10 points)	Provides 1 example (5 points)
Demonstrate connectivity to communities and natural resources through greenways and partnerships.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 examples (10 points)	Provides 1 example (5 points)
Demonstrate awareness of budget constraints and economic potential.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 example (10 points)	Provides 1 example (5 points)
Demonstrate knowledge of planning tools and conservation concepts for design and construction.	Provides 4 or more examples (20 points)	Provides 3 examples (15 points)	Provides 2 examples (10 points)	Provides 1 example (5 points)
Score _____ (total sum of points)				

Activity 5: Map of Bald Eagle State Park

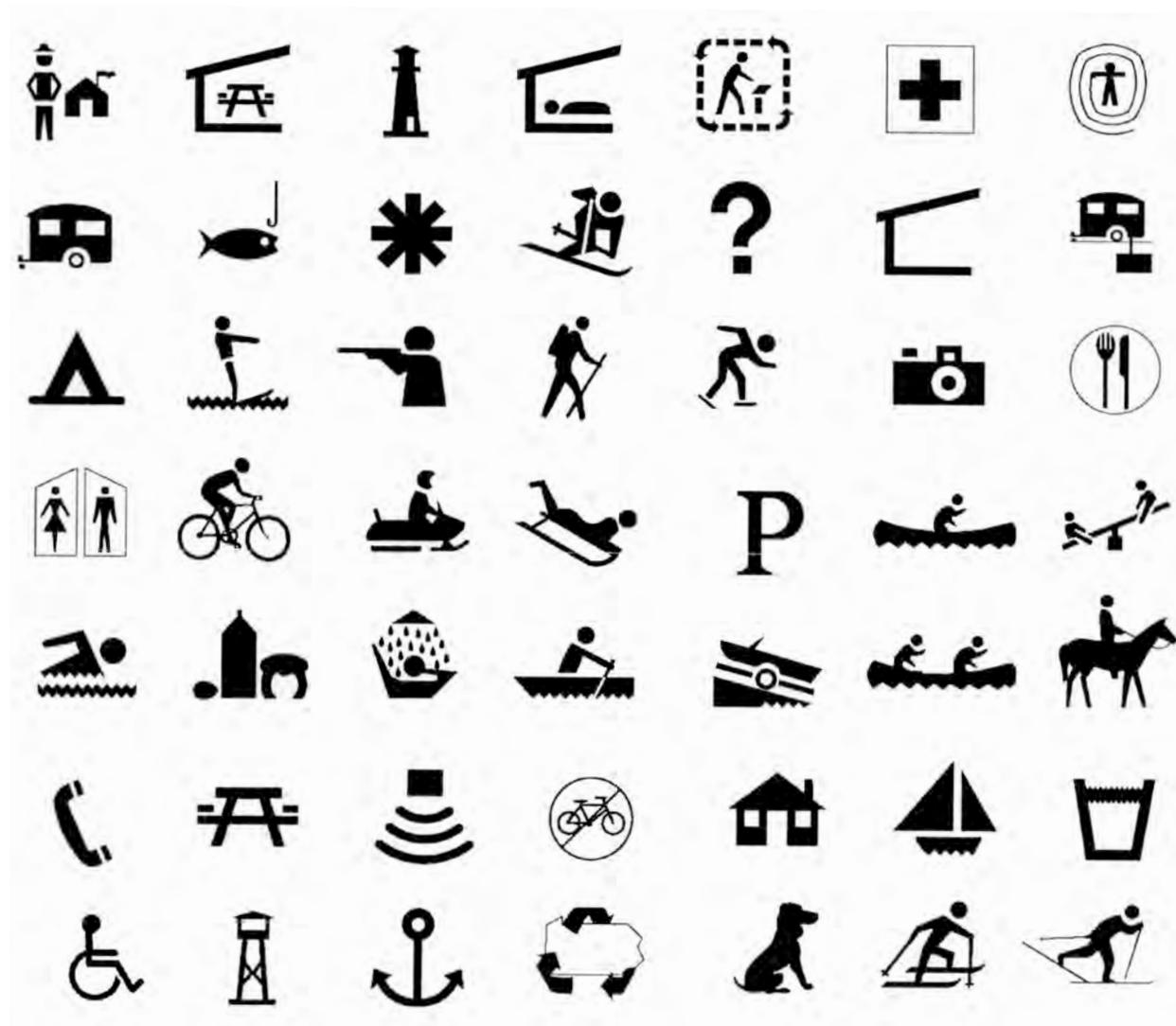
A larger version of this map is located in back pocket.



Activity 5: Map Icons - Page 1 (1/2)

The following are map symbols used by the Bureau of State Parks and the National Park Service. Use the map symbols or create your own icons and draw them on your map to indicate trails, services and recreational activities.

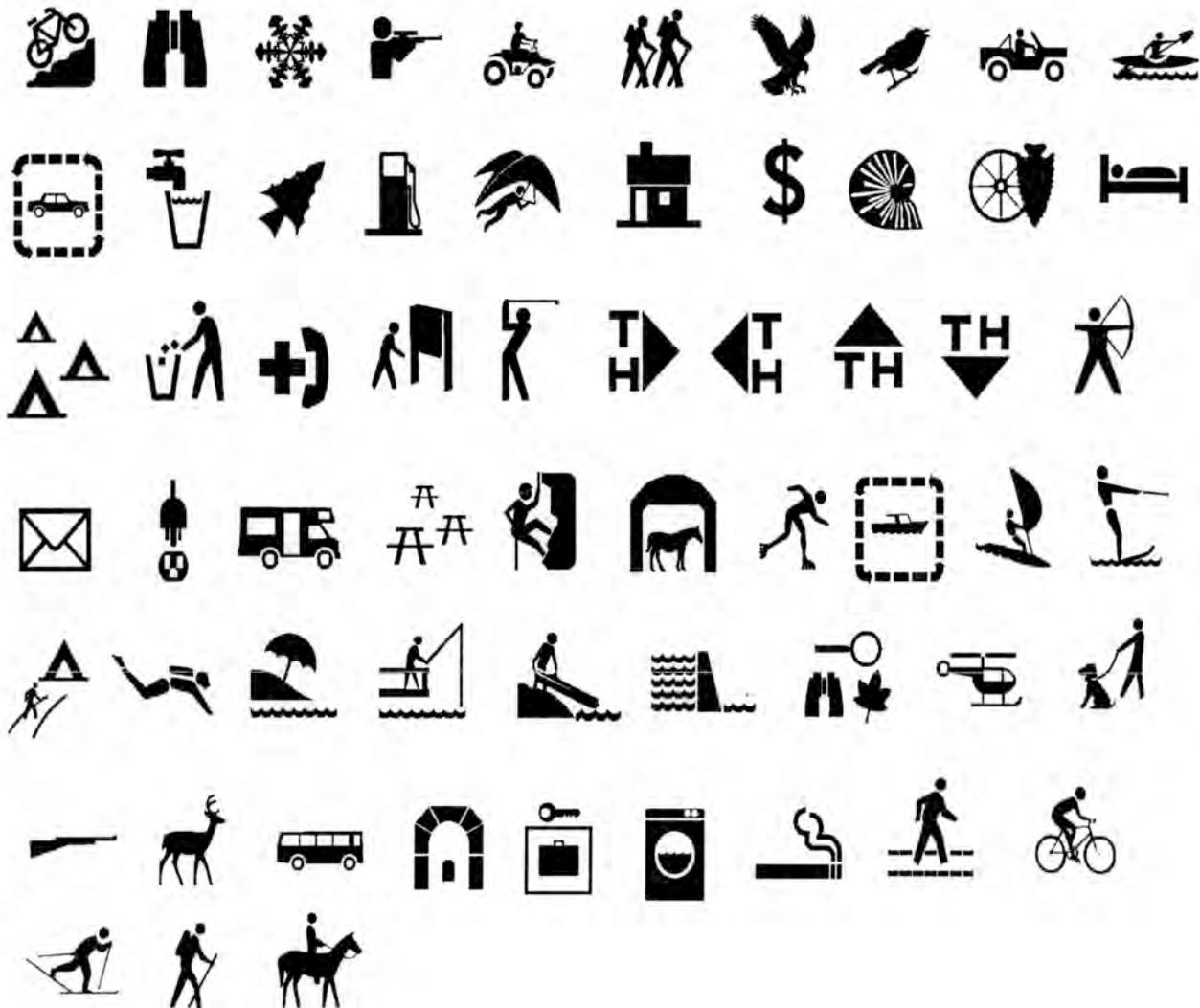
When determining placement of activities, consider protection of special natural and historic features, number of services that the park can handle, the impact on the natural resources, visitor needs and conveniences, proximity to roads and other services and infrastructure such as electricity, water, heat.



Activity 5: Map Icons - Page 2 (2/2)

The following are additional map symbols used by the Bureau of State Parks and the National Park Service. Use the map symbols or create your own icons and draw them on your map to indicate trails, services and recreational activities.

When determining placement of activities, consider protection of special natural and historic features, number of services that the park can handle, the impact on the natural resources, visitor needs and conveniences, proximity to roads and other services and infrastructure such as electricity, water, heat.



Activity 5: Park and Community Resource Inventory Worksheet

Every municipal Comprehensive Plan should contain a basic resource inventory. The resource features should be linear or part of a larger system which eventually could be joined together. The inventory provides information for developing a Map of Potential Conservation Lands.

Resource Inventory	Brief Description
<p>1. Wetlands and Their Buffers. Wetlands and their buffers are important for filtering storm water runoff, removing pollutants and providing critical habitat and wildlife corridors.</p>	
<p>2. Floodways and Floodplains. The Federal Emergency Management Agency publishes a map of these areas. Floodways are located along rivers and creeks. Floodplains are areas expected to be inundated with two or more feet of water at least once in 100 years. Building is limited in these areas.</p>	
<p>3. Moderate and Steep Slopes. Slopes with gradients over 25 percent should be avoided for construction.</p>	
<p>4. Groundwater Resources. Recharge areas are important to allow surface water to seep downward through coarse deposits or where wetlands frequently occur.</p>	
<p>5. Woodlands. Woodlands provide valuable habitat. Woodlands forming tracts of interconnected habitats are valuable resources.</p>	
<p>6. Farmland Preservation. Farmland preservation varies across the state. Forest areas on farmlands are a priority for protection. Former fields can also be converted to wildlife meadows and protected. Soils are a valuable resource. Identifying the type of soils is important for determining land use. For example, when on-site sewage is proposed, the most favorable soils are those where the high water table or impervious layers are four or more feet from the surface.</p>	
<p>7. Natural Resources. Identify significant environmental elements such as species of special concern, geologic features and special natural communities. Natural diversity inventory and county natural heritage inventories help locate general areas for protection.</p>	
<p>8. Historic, Archaeological and Cultural Features. Local historians and historic groups provide valuable information.</p>	
<p>9. Scenic Viewsheds. Scenic road inventories are valuable references for supporting other land protection purposes.</p>	

Activity 5: Park and Community Land Choices Project Review – Page 1 (1/2)

Elements to include in your final project.	100 points total
<p>Step 1: Draw your state park and communities, enlarging your map on poster board. Develop a map key. Use symbols, colors and words to label information. Identify natural areas including wetlands, forests, streams and other natural features. Identify and color code surrounding communities and label towns and townships. Identify and color code quarries, abandoned industrial land, railroads, roads and significant man made features. Color code agricultural lands.</p>	10 points maximum
<p>Step 2: Land Use Vision Statement. Write a land use vision statement for the state park and surrounding community that guides the future development in your park and community. Write your vision in a two-line statement that will describe a direction for land choices in the park and community.</p>	10 points maximum
<p>Step 3: Inventory and Land Management Strategies. Inventory the natural, cultural and historic resources within the park and the surrounding area using the nine elements recommended (Park and Community Resource Inventory Worksheet). Using symbols or colors, identify them on your map.</p> <p>Identify a minimum of three strategies for managing land in the park. Strategies could include recommendations for protecting headwaters, streams, water resources, sensitive natural features, groundwater (e.g. type of paving for parking lots), slope, invasive species, deer management, mosquito abatement and erosion control. Label areas on your map.</p>	15 points maximum
<p>Step 4: Develop Your Park. Design and sketch the education and recreation facilities needed for the activities you want to develop and/or improve in your park. Design and develop the infrastructure to support your visitor services in locations that have the least impact on sensitive natural resources. Demonstrate your awareness of impacts to the natural resources while meeting current visitor trends and expectations.</p>	10 points maximum

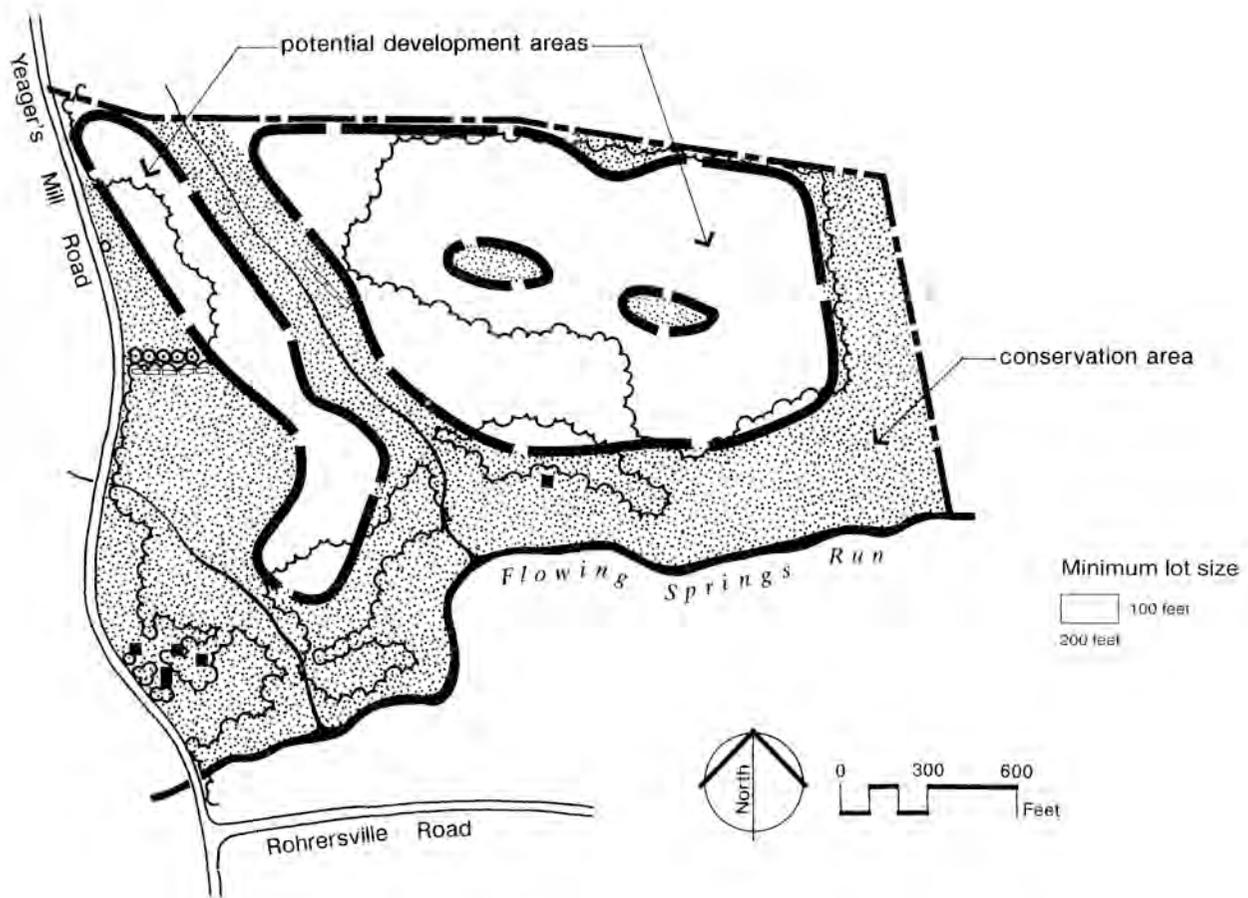
Activity 5: Park and Community Land Choices Project Review – Page 2 (2/2)

<p>Step 5: Green Planning Strategies for the Surrounding Communities. Focus on land use strategies for adjacent lands and surrounding communities. Locate watersheds, forests, farms and sensitive natural habitats. Recommend and identify a minimum of three planning strategies that will help communities protect the green infrastructure in communities surrounding the park. This could include recommended areas for conservation easements, farmland preservation, brownfields development, watershed protection areas, riparian buffer zones and rails to trails. Locate actual and/or hypothetical areas to demonstrate your understanding of the green infrastructure concepts.</p>	<p>15 points maximum</p>
<p>Step 6: Design a Conservation Subdivision. Address a development proposal for 85 acres of mixed woods and fields located along a stream adjacent to the park for a maximum of 42 houses. Groups must demonstrate an understanding of Conservation by Design, ensuring that a least 50 percent of the land is protected as open space. Demonstrate how the subdivision could be connected to the state park and other features through proposed greenways. Draw and label your subdivision on the map.</p>	<p>10 points maximum</p>
<p>Step 7: Recommend Improvements for an Existing Gateway Community. Demonstrate a minimum of three recommendations that will improve the community as a gateway to the park, making it more livable and appealing to residents and visitors. Develop a greenway connection to destination places for visitors and community members. Draw and label your recommendations.</p>	<p>10 points maximum</p>
<p>Step 8: Respond to a Dilemma. Demonstrate knowledge of land use issues and sensitivity to park, community and natural resources when recommending solutions to the community dilemma.</p>	<p>5 points maximum</p>
<p>Step 9: Oral Presentation. Demonstrate positive communication and organizational skills, as well as knowledge of land use concepts.</p>	<p>5 points maximum</p>
<p>Step 10: Discussion. Discuss and list examples of how people can be involved with land choices in your community.</p>	<p>5 points maximum</p>
<p>Visual and Oral Presentation Understanding of Land Use Concepts Extra Credit: Teamwork</p>	<p>5 points maximum 5 points maximum 5 points maximum</p>

Activity 5: Designing a Conservation Subdivision

A developer purchased 85 acres of upland mixed woodlands and fields along Clean Stream, adjacent to the state park. The stream has been designated as having exceptional water quality by DEP. There are gentle and steep slopes falling generally to the south. The land has a mix of mature hardwoods and smaller areas of young hemlock forest. An unusual old stone farmhouse built in 1830 is situated on the southeast corner of the property with outbuildings, believed to be eligible for the National Register of Historic Places. (1 acre = 43,560 square feet, 85 acres = 3,702,600 square feet)

The developer is proposing this conventional development with 42 housing units with a minimum lot size of 80,000 square feet. It could look like the following:



Conservation Subdivision Recommendation

What are your recommendations for a conservation subdivision? Sketch the property and demonstrate recommendations for a conservation subdivision. Minimum lot size could be 32,000 square feet to accommodate septic fields and wells. The developer wants 42 or more housing units.

Activity 5: Public Land and Community Dilemma Cards – Page 1 (1/3)**New Acquisition Park Land**

The state park recently acquired 150 acres of land. It is adjacent to the boundary of the park. This newly acquired land includes the upper reaches of the stream that feeds the lake. It contains wetlands and upland forest. There are rare plants and animals in the wetland area and the stream is designated as Exceptional Value. The area is undeveloped but there is pressure from the state and the community to develop the area for recreational activities. Many options have been presented for consideration. Different people want the area used for different activities. Some want to preserve it as a natural area. Many suggestions have been submitted from the community which include: leave it as a natural area with a few hiking trails, build a large area for camping and family cabins, create ATV trails, construct boardwalks through the wetland for education programs, build a park office, and/or build a large water park. Your group must design a model to show what you propose to do with the land. Your model should demonstrate concern for the sensitive natural areas, a limited budget and ways to serve community and visitor needs.

Town Land

The township planning commission has received a proposal for revising a rundown residential section and shopping area. The area is located on the west side of the town adjacent to the state park on a road that leads to the park entrance. The developer would like to remove the old homes and place 20 new housing units on 50 acres of land. The owner wants to build a shopping mall on the remaining 10 acres along the road into the park. The township invited you to offer recommendations to the plan. You are concerned that the plan maintain the natural viewshed and enhance the entranceway to the park making it more appealing to visitors. You are invited to share your ideas that will allow housing construction in a way that protects larger areas of natural resources and is appealing to home buyers. You are encouraged to offer suggestions for development and alternatives to a strip mall that are more compatible with the natural resources and proximity to the state park. Your group must design a model to show how the 20 housing units could be developed while protecting natural areas. You must address sewage, water, electricity, parking and roadways. Your group must recommend a user-friendly commercial area for the road to the park that would enhance the experience for the state park visitors.

Activity 5: Public Land and Community Dilemma Cards – Page 2 (2/3)**Farm Land**

Your family has had a farm for the last 100 years. Your land borders the south side of the state park. Recently you joined a group that is trying to conserve farmland and open space in your community. They asked if you would like to put your farm into an agricultural preservation program. If it is placed in this program your land must always be used as farmland. Even if you sell your land, it could only be sold to someone who would continue to farm it. You want to farm your land while protecting the natural resources. You would like to keep part of the farm as a conservation easement. This means that an area would be protected for the conservation of the natural resources and would not be farmed or developed. By doing this you also are granted a cut in taxes. Your land includes a hillside with streams. You also have a pond, two barns and three houses on your property. Which areas of the farm will you place in a conservation easement? Design a model to show which land you will designate in the conservation easement, how you will utilize the easement for connections to the state park and demonstrate ways you will protect the natural resources on your farm.

Forest Land

Some of the state forest land in your township will soon be open for ATVs (all terrain vehicles) and other recreational activities. The northern section of the land is on steep slopes. The center section has gentle hills and the southern end is flat. There is a stream that runs north to south. This land is located north of the town. The stream feeds the town's water reservoir and flows into a lake. This land has dirt roads and trails since it is heavily timbered. The deer are abundant and damage small saplings and understory plants. The state wants to promote the area for tourism and encourage ATV use, hunting, hiking, biking and primitive camping. Your group must design a model to show how you propose to improve the forest land and add ATV trails and supporting facilities while minimizing the impact to resources and other users. You are to address the community concerns which include erosion, noise, crowds, impact to wildlife and multi-use especially during hunting season. You are to recommend deer management strategies and suggest additional services and planning for the community to meet the increased needs of visitors.

Commercial Land

A trucking company wants to expand their business by adding parking lots, a motel, tourist services, gas station and restaurant. They are located near the interstate highway along a creek that leads to the state park. This land is upstream of the state park land and includes a wetland and forest area as well as the headwaters of the stream that feeds the park lake.

You have been asked by the planning commission to provide recommendations to the trucking company by designing an area that would have the least amount of impact on the resources and enhance the use of the state park. The community is concerned about the traffic, light pollution, noise, fumes and water pollution. They are concerned that the large paved area could create flooding, heated runoff in the summer and poor groundwater recharge. Some community members hope that the business will provide tourist services to encourage visitors who will stay overnight to view wildlife, ride bicycles and canoe. Consider designing a complex that would enhance natural resources, connect to the state park, address the public concerns and could include trade-offs for the company.

Suggested Audiences

- Citizens
- Community Leaders
- Educators
- Students

Standard Categories

- Environment and Ecology
- Civics and Government

Standard Statements

- 4.8** Humans and the Environment
- 5.2** Rights and Responsibilities of Citizenship
- 5.3** How Government Works

Content Objectives

- Define the meaning of civic responsibility and citizenship
- Analyze services and actions that are good examples of civic actions
- Define Service Learning
- Identify opportunities for action in communities
- Incorporate the model for Project Citizen in changing public policy

Instructional Strategies

- Discussion
- Survey analysis
- Group problem solving
- Presentations
- Demonstration

Assessment Strategies

- Develop a portfolio of action projects

Materials

Included:

- Chart Worksheet
- Object to Action Worksheet
- Community Network Worksheet
- Community Services Worksheet
- Service Learning Project Examples

Time

- 3.0 hours

What is the reason for Pennsylvania Land Choices and the development of the educational initiative that is called Pennsylvania Land and Community Education (PLACE)? The Department of Conservation and Natural Resources supports staff and citizen education that leads to land conservation, thoughtful management of natural resources and the encouragement of sustainable communities.

Education provides insight, wisdom, knowledge and skills for each citizen to gain confidence in their decisions and to make choices that will enhance the quality of life for their community, their state and their nation. It is the goal of Pennsylvania Land Choices to provide activities that help others learn and to encourage the teaching of others as they themselves become active leaders in their communities. It is developed for citizens, community leaders and educators to learn about their role in guiding the future of their communities.

By highlighting the value of the landscape, natural resources, recreational activities, economic stability and historic character that encompass the quality of life that every citizen deserves, PA Land Choices encourages the development of engaged conservation citizens by building a foundation

Ready, Set...Action!

of civic knowledge, public action and the skills of democratic deliberation focusing on local government and community involvement.

Overview

Ready, Set...Action includes three activities:

Activity 1: *iConserve Pennsylvania*

Activity 2: *Conservation Heroes*

Activity 3: *ACTION: Stewardship and Service Learning*

Summary: The ultimate goal of education is to develop responsible citizens. This lesson focuses on the power and responsibility of each individual to become involved in improving his or her community through community action and leadership in conservation.

Involvement can happen at many levels...on a personal level, a community level, a state level, a national level and a global level. The community provides many opportunities for involvement and participation in local leadership. From planting trees to picking up litter to joining an Environmental Advisory Council, people can choose the type of contribution they can afford to make. The local government structure of communities involves elected officials, laws, and enforcement, enabling residents to practice citizenship on a local level involving themselves in the democratic process and the importance of democratic deliberation.

The activities will introduce participants to the DCNR iConservePA website (www.iConservePA.org) that promotes the actions of people who have participated in various conservation activities. Participants will meet heroes who have contributed energy, resources, leadership and commitment to protect land in their communities. Participants will explore a variety of ideas to inspire actions in their own communities. Discussions for teachers on service learning projects and contacts will encourage conservation projects through public schools.

Activity 1

Activity 1:

iConserve Pennsylvania

Summary: The iConserve Pennsylvania activity focuses on identifying the opportunities for participants to become involved in conservation and community projects. It provides the opportunity to describe the types of actions that help communities and to describe the process of becoming involved. The activity focuses on the website developed by the Department of Conservation and Natural Resources: www.iConservePA.org.

Questions: What is the definition of the word “conservation” and what does it entail? What do people look like when they are practicing conservation, stewardship and citizenship? What type of partnerships, tools and skills are needed to conduct conservation projects?

Preparation

- Develop a T chart on a flip chart (p 217).
- Assemble the objects that symbolize various conservation actions.
 - a. Cloth shopping bag
 - b. Faucet aerator
 - c. Bus pass
 - d. Shovel
 - e. Bluebird box
 - f. Borough map or website
 - g. Compact fluorescent bulb
 - h. Recyclable can or bottle
 - i. Voter registration card, paper and pen
- Copy and distribute the Object to Action cards (pp 218-219).

- Provide access to the internet to demonstrate the iConservePA website.
- Copy and distribute the Community Network Worksheet (pp 220).

Procedure

1. *We can define the words “community action” in many ways.*

What are some of the words that we associate with the words “community action” (stewardship, volunteer, service-learning, partnership, citizenship, conservation, voting, writing a letter)? Define the meaning of the word “conservation.” Write the words on a flip chart.

When we say each of those words, we have an image that emerges in our minds based on our experiences. To help others develop a common understanding, it is important to define examples of the word. What does “conservation action” look like? It can be a personal commitment to conserve water by turning off a faucet when brushing teeth. It could be a group action such as joining a watershed organization to clean up litter along stream. It can be a monetary donation to a favorite conservancy or creating a land easement that leaves a profound legacy.

In order for people to understand what is truly meant by the word, a helpful exercise is to develop a tool called a “T” chart. We use it for helping small children learn what is expected, for example, when a teacher says “to listen.” What does it look like when a person is listening? These actions are discussed and modeled. (They look at the person speaking. They might nod their head. They aren’t talking. They pay attention.) This type of discussion helps young children to visualize what it looks like when a teacher says “to listen.”

This tool is useful for older participants and adults in defining and modeling the behaviors that are valued. Defining the word is only part of the communication.

Discussing the behavior provides a clearer understanding of the expectation.

Give each group one of the words listed above. Discuss the word and describe a behavior that represents that word. Add other words to the “T” chart and have the group discuss examples.

2. *Objects can symbolize community actions.* Cut and copy the Object Action Cards. Give a card with a brief explanation to a team of participants.

Have a collection of objects or photos that represent action projects. Assemble objects in the front of the group. Have participants select an object that relates to their card. Explain how that object relates to a conservation action. Discuss conservation actions that are individual actions, household actions, and community actions.

3. *iConserve.* What is “conservation?” A very exciting place to learn about conservation in action is to visit a DCNR website dedicated to conservation in Pennsylvania—www.iConservePA.org.

You will not just read about conservation, you will meet a host of individuals that practice it every day. They are people like you and me. They are people who have developed a life style of conservation from saving water to developing outdoor ethics in children. Each person is considered a “PA iCon.” You too can be a Conservation Icon. You can be listed on the website by registering your commitment to conservation and sending a photo. Conservation can look like many things to many people but the common thread is a commitment to making wise choices in our actions that are positive for the environment and our community. Develop a list of conservation actions from the icons on the website.

Partnerships and resources are very important in developing community initiatives. Using the Community

Network Worksheet, define sources of support and information for your community project.

Activity 2:

Conservation Heroes

Summary: Pennsylvania has a history of conservation heroes. From Gifford Pinchot to Dr. Joseph Rothrock to Rachel Carson, Pennsylvanians have dedicated their lives to protecting natural resources. This activity focuses on current heroes of land protection and conservation highlighted in the publications produced by the Pennsylvania Land Trust Association. By connecting to personal stories, the activity hopes to inspire and motivate others based on the dedication of these land conservation heroes. The activity also includes identifying actions among the participants.

Questions: What stories support the importance of land conservation? What were some of the reasons that people save land? Who is impacted by their actions? Who is practicing conservation in your community?

Preparation

- Copy, cut and distribute copies of Conservation Heroes (p 221) from the book *In Their Own Words* by the Pennsylvania Land Trust Association (www.conserveland.org).
- Copy and distribute the Trading Cards worksheets (pp 222-223) to pairs of participants.

Procedure

1. One meaning of conservation is to protect special places. Our public parks and forests are special places where land management decisions are based on sound conser-

vation practices. What are your favorite natural places?

According to the Pennsylvania Land Trust Association, “conservation is defined as a choice to protect special places for present and future generations. It is a choice to safeguard our water, care for wildlife, preserve productive farmland and forest, and maintain natural beauty. Everyday across Pennsylvania, individuals and families make the conservation choice...Those who conserve their land create a profound legacy. They make a gift that will resonate through time.”

A conservation easement is an agreement between a landowner and a private land trust or government. The agreement limits certain uses on all or a portion of a property for conservation purposes while keeping the property in the landowner’s ownership and control. The agreement is tailored to the particular property and to the goals of the owner and conservation organization. An easement applies to present and future owners of the land. Most easements are donated by people who wish to protect a beloved place.

2. *In Their Own Words* by The Pennsylvania Land Trust Association is a booklet filled with 15 remarkable stories of conservation and inspiration. Four of the stories are summarized on the worksheet. Assign participants to read the stories. Discuss these questions about the people in the stories.

1. *What is common in each of the stories?*
2. *How do the people in the stories view their land?*
3. *Why do people save land?*
4. *Who are the other people or organizations important for land conservation?*
5. *How do you think their decision impacted the surrounding community?*

3. Baseball, football, famous people...trading cards are great ways to honor people who have accomplished something.

Trading cards have been used to highlight sports figures and cartoon heroes. We will use trading cards to recognize conservation heroes. The activity is to make trading cards about real people doing great things. Trading cards could also be used as a research project, having participants develop trading cards about famous people in Pennsylvania history involved in conservation such as Gifford Pinchot, Rachel Carson, Ned Smith, Myra Dock, etc.

Distribute trading card worksheets to the participants. They can work in pairs or individually. You can use the blank cards or use ones that have already been developed. Facilitators could distribute one of each worksheet of trading cards.

If using blank trading cards, develop a set of conservation trading cards by listing a different conservation action on each card. If using the cards that have an action already printed on them, your goal is to find at least one person that has accomplished the task on the trading card. You will meet that person and find out about their contribution to conservation. Write their name on the front of the card. You might want a set number of blank cards which can be used as bonus cards. This can be done in the classroom or in the community. More than one person can be listed on each card. The object of the “game” is to complete all the cards by finding people who have accomplished that activity. Once completed, discuss the results in a large group. Ask questions such as:

- 1. Which activity is the most common? Why?*
- 2. Which conservation activity is not common? Why?*
- 3. How did the conservation activity improve the environment?*
- 4. Which activity has the greatest impact on the environment or community?*

4. Another way to conduct the activity is for each participant or team of participants to distribute a set of conservation trading cards. Read each activity on the back of the trading card or develop new cards with different conservation ideas. The object of this activity is to distribute a card to another person in the room until all your cards are gone. Try to find a person who has not received that specific trading card. This time, it is not important to ask if they have accomplished the action on the card. Give the card to that person so that they must complete the task on the card in less than seven days.

Each person who received a trading card must try to complete the conservation activity during the week. They place their name on the card when they have completed the task. They then return the card to the one who gave them the card. The goal is for the original person to get the most cards returned indicating that those people on the trading cards had conducted their conservation activity.

Activity 3:

Action: Stewardship and Service Learning

Summary: Service to the community is very important. Students learn the value of service by imitating adults involved in their community. There are a multitude of projects that can help improve the community. Motivating people to action is a very important part of PA Land Choices. This activity helps define some of the projects and helps organize initiatives in your community.

Questions: What are the advantages of stewardship projects and service-learning? What is the difference between service-learning and volunteering? What are examples of action projects? How does an individual organize a project to be successful and valuable?

Preparation

- Divide participants into groups and discuss group activities.
- Prepare the Community Services Project Worksheet (pp 224) for each group.
- Prepare Stewardship Service and Learning Project Cards (pp 225-228) for distribution one per group.

Procedure

1. Making changes in the world starts in our own homes and communities. In Stephen Covey's book, *The 7 Habits of Highly Effective People* (New York: Simon and Schuster, 1989), he identifies two different areas of problems and problem solving. There are problems that fall within our "Circle of Influence" or within our "Circle of Concern." Problems that fall within our "Circle of Influence" are those things that we can affect or are able to choose our response. Problems that fall outside our "Circle of Concern" are those that we cannot directly influence but remain a subject of our discontent. The key for community action is to focus on situations that we can influence.

What is Service-Learning? (www.servicelearning.org) "Service-learning is a teaching and learning strategy that integrates meaningful community service with instruction and reflection to enrich the learning experience, teach civic responsibility and strengthen communities."

In the past several years, service-learning has expanded throughout communities, schools and universities. Statistics from 2001 indicate that over 13 million individuals were participating in services to their community that met the criteria for service-learning.

What makes service-learning different from other forms of service is that it must have service objectives plus learning objectives with the intent that the activity change the

learner and the receiver of the service. The activity is connected to self-reflection, self-discovery and the acquisition and comprehension of values, skills and knowledge.

For example, if participants collected trash from a streambed, they are providing a service. To be considered a service-learning project, they will analyze what they found, determine the possible sources, develop possible solutions to improve the situation and act upon those recommendations.

Service-learning is not simply a service project (i.e. food drive). It's not an internship, and it's not necessarily voluntary since in most cases, it is an assigned responsibility just as an exam or a traditional assignment is assigned. Service-learning must be connected to learning objectives and there must be scheduled time for pre-reflection.

Pre-reflection is an exercise accomplished at the beginning of the project. Participants examine their expectations by writing down what they think they will learn and what they hope to learn.

2. Reflection provides a framework for documenting personal growth. There are different techniques for reflection. It can take different forms such as journals, tape recordings, photography, poetry, music and/or dance. Here are some examples of reflection techniques:

- **Reflection** Reflection involves higher level thinking skills. The following are creative methods that provide a framework for reflection. Participants ask three questions:
 - "What?" (identify topic)
 - "So what?" (importance)
 - "Now what?" (steps you did or will take)
- **Graffiti** Place posters of different issues on tables and allow for individuals to rotate around different posters and place comments and ideas.

- **“Get off the fence and take a stand.”** Have participants address an issue by standing on a value line or physically indicate the degree of their opinion from “strongly agree to strongly disagree.” Participants realize that there are varying degrees of values when addressing issues. They are given opportunities to explain why they place themselves where they are. Participants are encouraged to change their location on the value line as they learn how a rain barrel or rain garden can be used to combat storm water runoff.

- **Head+Heart+Hands**

Head: What did you learn? (i.e. explain what you learned about decline of water quality in a local stream)

Heart: How do you feel?

Hands: Describe what you propose to do. (i.e. plant trees, reduce soil erosion)

- **Integral Approach (The dart board).** Address the issues from different perspectives such as that of the participant, community, region, etc. Draw a bulls eye and label each circle with these elements. Throw a wad of masking tape at the bulls eye and start the discussion from that point of view.

Service-learning strengthens knowledge about civic responsibility. It must be developmentally and age appropriate. Effective programs provide diverse perspectives and represent all stakeholders. The project must meet genuine needs in the school or community, have clear goals and have positive impacts. It is important that there is a significant “youth voice.” Youth should take a lead role in defining their project.

- **Think of a Project.** Divide participants into groups. Assign one of the following topics to each group. Their task is to come up with as many ideas for projects relat-

ing to that topic. Explore websites to gather ideas. Develop an ongoing list for future participants.

- Community Improvement Projects
- Habitat Protection Projects
- Endangered and Threatened Species Projects
- Wildlife Management Projects
- Ecosystem Services Projects
- Trees and Forestry Projects
- Tools for Protecting Land Resources

Once you have decided on a project, complete the Community Project Worksheet or follow the framework developed in Project Citizen. Discuss the importance of an organization framework for a successful project.

We the People is a portfolio-based civic education program for children and adult groups promoting competent and responsible participation in local and state government. The program is a catalyst to involve people in public policy by following a step-by-step plan. Workbooks guide participants through the process.

It outlines the following organized framework for participants to use as a guideline:

- Identify a problem in the community that requires an action or public policy solution.
- Gather and evaluate information on the problem.
- Examine and evaluate alternative solutions.
- Develop an action plan.
- Propose public policy and accomplish the solution.

There are two levels of Project Citizen. Each level includes a process-oriented participant text. Level one is for middle-school participants and level two is for secondary and adults. There is a teacher’s guide for each level providing instructions for developing a class portfolio and preparing a simulated public hearing.

Participants develop support for democratic values and principles, tolerance and confidence that they can and do make a difference. It is funded by the US Department of Education by act of Congress. Project Citizen is admin-

istered by the Center for Civic Education and the National Conference of State Legislatures through a network of state and congressional district coordinators throughout the United States.

I know of no movement...*as convincing, as effective, as compassionate as the land trust movement. It is like water, seeping into the most unexpected places; rising, falling, rising, falling, filling the basins of the human heart.*

Terry Tempest Williams
(Writer/Naturalist/Conservation Advocate)



Activity 1: "T" Chart

Word	Definition	What Does It Look Like?
<p>Conservation Volunteer</p>		<p>A person goes to a state park office and asks if there is an opportunity to trim overgrown branches on a trail because it is a favorite place to ride horses and it is becoming overgrown. The person organizes a work day for horseback riders to trim the trail. They decide to make it a monthly event. They work with state park staff to maintain the trail.</p>
<p>Stewardship</p>		<p>A person notices a vacant lot in their community that is an eyesore to the neighborhood. They decide to do something about it. They get permission to improve the site, form a neighborhood committee, write a grant and develop a beautiful little park. Now there are green trees and a bench, a natural play area for children and an island of green that is enjoyed by all.</p>

Activity 1: *Object to Action Worksheet - Page 1 (1/2)*

How does this object represent action? Participants select an object or select cards naming an object. The goal is to describe a community action that involves the object. Explain how you would use the object to improve your community or participate in a conservation action.

<p>Cloth Shopping Bag</p>	<p>Water Faucet Aerator</p>	<p>Bus Pass</p>
<p>Shovel</p>	<p>Bird Feeder/Bird House</p>	<p>Town Brochure and Visitors Map</p>
<p>Light Bulb</p>	<p>Packaging, Aluminum Can, Orange Peels</p>	<p>Voter Registration Card and Pen</p>

Activity 1: *Object to Action Worksheet – Page 2 (2/2)*

<p>Reduce paper waste. It takes one 20-year old tree to make paper for 700 grocery bags. Use cloth shopping bags. Stopping junk mail will also save paper. The average junk mail received in a year per person is equivalent to 1.5 trees. In a class of 30 participants, you could save about 45 trees a year. Eliminate unwanted catalogs by using www.catalogchoice.com</p>	<p>Promote water conservation at home, schools and other public places. If every American installed faucet aerators we could save 250 million gallons of water every day. A normal running faucet uses about 3-5 gallons a minute. Save 9 gallons when brushing teeth. Wash cars by hand instead of a full service car wash and save over 100 gallons each time. Take care of streams.</p>	<p>Promote mass transit. Cars are multiplying faster than people. On an average, 140 million cars in America travel almost 4 billion miles a day and use over 200 million gallons of gas emitting about 4 billion pounds of carbon dioxide in one day. If 1 percent of car owners rode a bus for one day a week, we could save 42 million gallons of gas a year and keep 840 million pounds of CO₂ out of the atmosphere.</p>
<p>Plant native trees. Read about DCNR's TreeVitalize program. Between 1950 and 2008 the forested surface of earth was reduced by 25 percent. Trees provide shade, evaporative cooling and protection. Great for wildlife. Plant riparian zones along streams.</p>	<p>Establish backyard habitats or community gardens for wildlife. Develop a plan for wildlife throughout the community. Maintain bluebird boxes. Plant native species. Provide water in winter. Establish green corridors through your community for wildlife migration.</p>	<p>Develop a brochure for visitors to your community. Develop a green map that indicates places with environmental focus. Questing is the craze. Develop a treasure hunt in your community to help people learn about the best historic places or where to get the best donut. Follow clues and win a prize.</p>
<p>There are over 100 million households in America. If one single compact fluorescent replaced a traditional bulb, the energy of 60 million bulbs would be saved. Substituting a compact fluorescent will keep a half-ton of CO₂ out of the atmosphere over the life of the bulb.</p>	<p>The average American family produces more than 1,200 pounds of organic garbage a year. 70 percent of American garbage is compostable. Precycle and recycle. Packaging waste accounts for about 1/3 of all garbage Americans send to landfill. Reduce, reuse, recycle. Making aluminum from recycled aluminum uses 90 percent less energy than making aluminum from scratch.</p>	<p>Get out to vote. Write letters to your community leaders about things you want to change. Write letters to legislators. Let your voice be heard.</p> <p>Write letters to the editors to educate the public to be more "green." Start a blog to provide daily/weekly tips on how others can conserve natural resources.</p>

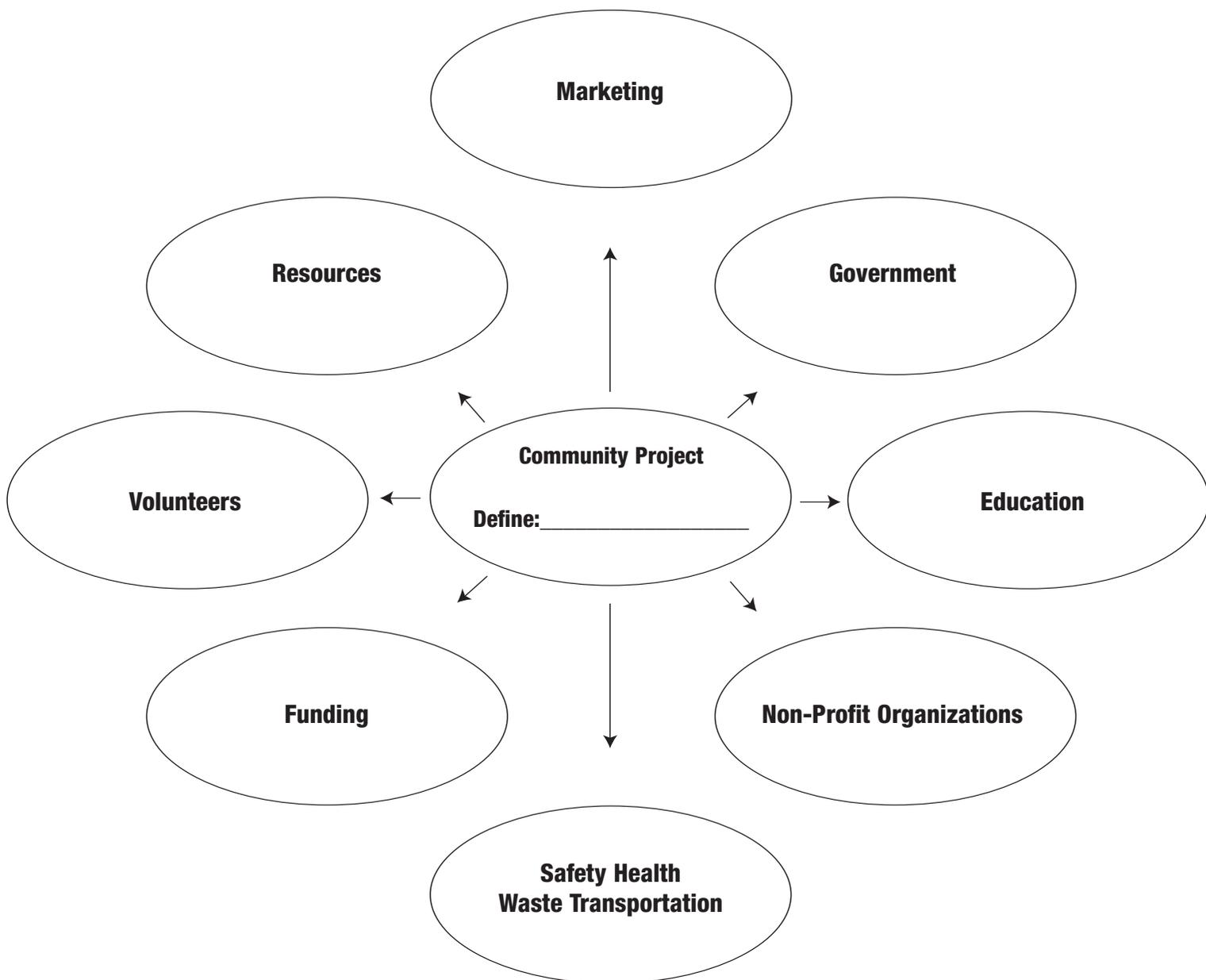
Activity 1: *Community Network Worksheet*

Define Your Project _____

Describe Your Audience and Profile _____

What is the Goal of the Project? _____

What is the Community Network? _____



Activity 2: *In Their Own Words Stories*

Stories from the heart from people who protected land. The following excerpts from *In Their Own Words: Fifteen Stories of Conservation and Inspiration* published by The Pennsylvania Land Trust Association focus on the value of conservation easements. For more information or to receive your own copy, please visit www.conserveland.org.

Jim Holden In 1973, my young family purchased an old dairy farm. The Holden Farm is an olde-style homestead operation. Participating in this process were three generations of our family, all of whom share the love of the land. The land was part of the spectacular French Creek Watershed. We decided to donate an easement of 122 acres of the farm to the French Creek Valley Conservancy to be used as a match for a grant to purchase an adjacent easement. In the end it was only a disappointing 40 acres. Our easement was the first and still is the only easement in Venango County. My son, John, and I led in the formation of a new conservancy—the Allegheny Conservancy.

Lewis and Wanda Irion This land is as much a part of our family as our children and our animals. We feel honored to have the chance to be its stewards. Our family so strongly believes in preserving open space for future generations that we have gone through the easement process two times in opposite ends of the state. We owned special property on the Chester County border at the top of a reservoir. When we moved, we donated a conservation easement. We chose Natural Lands Trust as the watchdog and developed a plan to allow future owners flexibility. We moved to northern Pennsylvania and placed an easement on our new property with the Northcentral PA Conservancy. That will be our legacy.

Faye and Carl Oberheim The land has given our family many years of enjoyment. All three properties border Penns Creek and surrounding mountains. Developments, homes and trailers were beginning to pop up around us. We learned we could protect a variety of the habitats through easements. We contacted Merrill W. Linn Land and Waterways Conservancy and an appraiser, forester, attorney and accountant with easement experience. We chose to have envelopes on each property to allow for changes like a pool or improvements. We have completed two out of three easements so far. It took about a year. We were very fortunate and privileged to work with so many helpful and knowledgeable people.

Beverly Grening Our son, Gregory, was born in Lewistown. He had a tree house in the woods. At about age 3 he wrote a note to a neighbor, who owned the woods, and said “John, Please don’t sell the woods.” Greg grew up and joined the Marines, fought in the first Gulf War in Iraq, returned home and proposed to his high-school sweetheart. Soon after, Greg died in a car accident. We decided to buy the woods Greg had so loved. We contacted the Central Pennsylvania Conservancy. On a beautiful sunny day in June 1996, we dedicated the Gregory Alan Grening Forest Preserve. Thanks to the help of many people, a young boy turned young man, who will never grow old, has his wish that no one will ‘ruin his woods.’

Activity 2: Conservation Hero Trading Cards - Page 1 (1/2)



Activity 2: Conservation Hero Trading Cards - Page 2 (2/2)

Conservation Action
Walk to School

Encourage physical activity among children. Identify and map safe biking and walking routes to schools and other places. Adults also benefit as they accompany the children. Walk to work. If distance allows... walk. Find opportunities to leave the car and walk. Ask others to walk with you. Take a bus or train.

Conservation Action
Create a Green Space

Create a greenway. Save an area at a municipal or state park or by a stream. Develop plans to plant trees or a butterfly garden. Check with Master Gardeners for help. Plant native plants. Develop maintenance plans for watering, fertilizing. Organize volunteers and a volunteer schedule. Check the garden at Kings Gap Environmental Ed. Center

Conservation Action
Happy Trails to You

Do you walk on a trail? Do you canoe on a water trail? Take an interest in helping to maintain the trail. Pick up litter. Help trim branches and manage erosion. Construct signs. Develop a map at the trailhead. Connect trails to towns and other resources. Join an Appalachian Trail Club or check on the web for rails-to-trails initiatives.

Conservation Action
Save a Stream

Check the water quality of a local stream. Map the stream and locate all the factors that could impact the stream. Determine causes of pollution. Develop action plans to improve the stream.

Plant along the stream. Stabilize bank erosion. Protect lands along the stream. Protect headwaters.

Conservation Action
For the Birds

Protect quality habitat for nesting species of birds and food sources for migrating species of birds.

Monitor birds. Set up nesting boxes for birds like Bluebirds, Kestrels, Barn Owls. Set up winter feeders. Join Cornell's Feeder Watch. Join a birding group. Contact a state park for programs.

Conservation Action
Precycle, Recycle, Compost

Find ways to reduce waste right from the start. Use cloth bags. Use glass to refill water bottles. Try to refill instead of buying new. Reuse appliances and other goods. Develop recycling programs and see that it is promoted and "enforced." Compost organics and enrich garden soil.

Conservation Action
Map your Community

Make a green map of your community and label all the green places and all the hazards. Develop a quest to encourage visitors to find out more about your community. Create or join an Environmental Advisory Council.

Conservation Action
Plant a Tree

Any day is a good day for trees. Arbor Day (last Friday in April) is a good time to plan your project and realize how important trees are. Do a tree assessment of the health of each tree in your community. Encourage tree ordinances. Check with an urban forester.

Conservation Action
Water Runoff, Water Conservation

Find ways to curtail storm water management, reducing the force of runoff from paved surfaces and roof tops. Encourage developers to use pervious surfaces. Plant wetland plants in drainage areas. Plant trees in islands at parking lots.

Activity 3 *Community Services Worksheet*

Name _____ **Date** _____

Project _____

1. Does the project meet the following criteria?

- | | | | |
|---|------------------------------|-----------------------------|--------------------------------|
| Do you have time to do this project well? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Maybe |
| Is the project local and within reach? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Maybe |
| Will this project make a difference? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Maybe |
| Does this project provide learning opportunities? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Maybe |
| Are you committed to this project? | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Maybe |

2. Define project goals.

3. Define group member roles and actions.

4. How will this project help your community?

5. Who will be impacted by your project?

6. What do you expect to learn?

7. What is the time frame? Provide specific dates.

8. What resources will you need? How will you fund the project?

9. Who are the people and organizations that will be contacted?

10. What are the safety concerns? How will you practice safety?

11. What are the rewards for meeting your goal?

Examples of Stewardship & Service Learning Projects

- Become a DCNR Volunteer by contacting your local state park or state park forest office. (www.dcnr.state.pa.us)
- Check out iConserve PA, a DCNR initiative at www.iConservePA.org. Get great ideas about conservation and how you can get involved in local projects.
- Check out the Earth Force: Student action initiatives at www.earthforce.org.
- Visit www.pennCORD.org for ideas on how to become involved in your community.

Habitat Protection

- Adopt a stream. Learn how to collect chemical and biological data on a local stream. Determine what you can do to improve the quality of the stream. Participate in volunteer stream monitoring as sponsored by PA Department of Environmental Protection or participate in the Bureau of State Parks Watershed Education program.
- Become a “weed warrior”—help with removal of invasive species and replant with native species.
- Build a butterfly garden at a local park or at your home remembering to plant shrubs and flowers not only for the adult but also those foods preferred by the caterpillars.
- Certify your backyard as a National Wildlife Federation Backyard Habitat. (www.nwf.org/backyard)
- Campaign for protection of a local wetland or ecologically sensitive area. Form a club to save a habitat. “Save the Swamp” is a participant organization from Central Dauphin High School that is involved in protecting a wetland on their school grounds.
- Make and sell bird boxes with proceeds going to an environmental organization.
- Organize and participate in a clean up project: The Great PA Clean Up; Adopt a Highway or sign your school up to be a Litter Free Zone (www.greatpacleanup.org/litterfreeschoolzones.asp).
- Paint a mural depicting local flora and fauna.
- Participate in Participant (PARC) Partners in Amphibian and Reptile Conservation (www.parcplace.org/sparc.html).
- Research and submit to the PA Online Herpetological Atlas at the Indiana University of Pennsylvania (www.webspace.ship.edu/tjmare/herp.htm).
- Participate in the 2nd PA Breeding Bird Atlas (www.carnegiennh.org/atlas/home.htm).

Endangered/Threatened Species

- Participate in Endangered Species Day May 18th activities. The goal of Endangered Species day is to protect our rare, threatened, and endangered animal and plant species (www.stopextinction.org/endangeredspeciesday).
- The Endangered Species Act is a federal law and is the safety net for wildlife, plants and fish that are on the brink of extinction. Upon signing the Endangered Species act on December 28, 1973, President Richard Nixon stated “Nothing is more priceless and more worthy of preservation than the rich array of animal life with which our country has been blessed.” The act is based on three key elements. Listing species as threatened or endangered; designating habitat essential for their survival and recovery; restoring healthy populations of the species.
- Set up a display of locally known endangered/threatened species at the mall or other public arena to bring attention to the importance of protecting habitat.
- Organize a party to celebrate the bald eagle’s removal from the endangered species list. This shows how the endangered species act has benefited one of our country’s most recognized and well known species.
- Adopt an endangered species native to your area. Find out how you can help conserve it, and inform the citizens in your community about your adopted plant or animal with newspaper articles, brochures, buttons, signs, and videos.
- Write letters to your local senators or local newspaper.
- Write and present a play about threatened habitats.

Deer Management/Wildlife Management

- Erect a deer fence and monitor the difference in vegetation inside and outside.
- Participate in a browse study to determine if there is an overabundance of deer in that area affecting native vegetation. Contact a PA Game Commission Biologist for more information.
- Remove invasive trees and shrubs that deter native foraging plants needed by deer.
- Research, construct and install turtle platforms in a local pond.
- Research, construct trail tunnels for amphibians and small mammals.
- Research and establish water sources for wildlife in winter.
- Learn more from the PA Game Commission regarding habitat projects and nesting boxes for such wildlife as turkey, wood duck, barn owl, bats, etc (www.pgc.state.pa.us).

Ecosystem Services

- Adopt and maintain a local hiking trail.
- Stencil storm drains to bring attention to runoff.
- Erect a small windmill or solar panel to demonstrate alternative energy.
- Build and erect a rain barrel and/or rain garden to combat storm water runoff.
- Plant and maintain a community garden.
- Help publicize local farm produce. Buy from local farmers markets (www.buylocalpa.org).
- Organize and lead a green energy tour of local sites that demonstrate green practices.
- Plant a riparian buffer along a streamside.
- Plant trees to hold soil and reduce runoff.
- Sign your school up to be a litter free zone (www.greatpacleanup.org/litterfreeschoolzones.asp).
- Establish a composting site in your community.
- Sponsor programs that provide composting barrels to interested homeowners.
- Establish rain barrels at a local nature center. Teach others about water conservation and the application of rain barrels.

Trees/Forestry

- Organize and plant trees in your neighborhood.
- Participate in Arbor Day activities—always the last Friday in April!
- Plant trees in celebration of something or in memory of someone (www.arborday.org/join/tictim/index.cfm).
- Develop an inventory of the species and trees in your community. Include descriptions.
- Establish a Shade Tree Commission.
- Research and remove invasive plants, and plant native species.
- Research Tree Vitalize and learn how to establish it in your community.

Tools for Protecting Land Resources

- Participate in a community clean up (www.pacleanways.org).
- Organize a community household hazardous waste clean up.
- Recycle in your community.
- Attend township meetings and write letters to township officials about land use issues affecting your community.
- Help institute a community Christmas Tree Recycling program in your township.

Community Improvement Projects

- Develop a Quest: a treasure hunt that leads participants through the community using a set of clues with rewards. Resource: *Questing, A Guide to Creating Community Treasure Hunts* by Delia Clark and Steven Glazer. A guide to creating treasure hunts that teach and share the special places in your community.
- Develop Green Maps of your community. Design maps for specific purposes such as a map to all the gardens in your community, a walking map, a map of historic sites.
- Plant flowers at an intersection or beautify a vacant lot.
- Research, plan and produce a trail brochure for a favorite nature trail.
- Organize a way to beautify buildings. Paint a mural on a building as they did in the city of Reading, Pennsylvania depicting the migration of birds from South America and the faces of children that have migrated to Pennsylvania, sharing common ground.
- Survey trees in your neighborhood and develop a database which includes measurement of size, health, condition, etc.
- Plant trees in a parking lot. Develop a plan for maintenance.
- Stencil street drains with the destination of storm water (www.cbf.org).
- Organize a “Walk to School” Program.
- Promote healthy recreational activities (www.keystonehealthyzone.org).
- Adopt a highway, pick up litter and plant wildflowers.
- Collect and fix donated bicycles to give to younger children.

There must be some force *behind conservation more universal than profit, less awkward than government, less ephemeral than sport, something that reaches into all time and places where men live on land, something that brackets everything from rivers to raindrops, from whales to hummingbirds, from land estates to window boxes. I can only see one such force: a respect for land as an organism; a voluntary decency in land-use exercised by every citizen and every landowner out of a sense of love for and obligation to the great biota we call America. This is the meaning of conservation and this is the task of conservation education.*

Aldo Leopold (Naturalist/Conservation Advocate)

These next pages are a collection of resources that have been compiled to provide additional information on many of the subjects addressed in this book. These resources include educational curricula and materials, organizations and agencies, reports and websites. These resources may be beneficial to educators interested in obtaining additional background information or exploring new ideas for lessons and activities, or for further investigation of the information contained within these pages.

A PA Land Choices website has also been developed to provide an online clearinghouse for related materials. Users may download updated versions of PA Land Choices along with additional resources and tools. Visit www.palandchoices.org today!

Resources

Educational Materials and Curriculum

Better Models for Development in Pennsylvania

Ed McMahon and Shelley Mastran

The Conservation Fund and PA Department of Conservation & Natural Resources

Year: 2005

The book provides examples of how key development principles and ideas can be applied in the state. An excellent resource for communities and education leaders.

Type: Guide/Handbook

www.conservationfund.org

www.dcnr.state.pa.us

Biodiversity—Our Living World: Your Life Depends on It!

Ke Chung Kim

Center for Biodiversity Research, Environmental Resources Research Institute, The Pennsylvania State University, College of Agricultural Sciences.

Year: 2001

This is an excellent educational resource on Pennsylvania biodiversity. It is full of photos and information presented in a creative and interesting manner.

Type: Educational Guide

www.dcnr.state.pa.us/education/Teacher/EducatorBioGuide.htm

Phone: 814-865-6713

Box City, An Interdisciplinary Experience in Community Planning

Ginny Graves

CUBE National Outreach

Provides active opportunities to construct communities and apply planning concepts. Box City Curriculum, Classroom and Festival Pack are available through CUBE/archiSources.

Type: Curriculum

www.cubekc.org

Phone: 913-262-8222 x1

Fee: yes

Community of Choices

The Dunn Foundation

Year: 2001

A 30-minute video about community growth and actions that improve development choices. It is narrated by Edward T. McMahon and produced for the Dunn Foundation's ViewFinders Too, Exploring Community Appearance.

Type: DVD/VHS

www.dunnfoundation.org. The DVD/VHS can be ordered at www.conservationfund.org.

Fee: yes

Community Culture and the Environment, A Guide to Understanding a Sense of Place

U.S. Environmental Protection Agency

Year: 2002

The manual addresses the social and cultural aspects of community-based environmental protection. It provides technical tools for more effectively working with the public.

Type: Educational Guide

www.epa.gov

Creating Sustainable Community Parks, A Guide to Improving Quality of Life by Protecting Natural Resources

Office of Conservation Science, PA Department of Conservation & Natural Resources / Pennsylvania Recreation and Park Society

Year: 2007

Communities are encouraged to design parks and greenspaces utilizing techniques and resources that encourage wildlife, save energy, support native plants and avoid invasive species. Information on designing community parks is available through DCNR.

Type: Guide

www.dcnr.state.pa.us/brc/GreeningPennsylvania.pdf

CUBE: The Center for Understanding our Built Environment

Year: 1999

CUBE is a community-based education organization which provides workshops, curriculum and technical assistance to create an awareness of America's special places and to enable young people and community leaders to take responsible community action.

Type: Website, Educational Resources

www.cubekc.org

Earth Force

It is an organization that engages young people as active citizens to improve the environment and their communities. It provides materials and resources for developing projects for service learning through community action and provides networking opportunities with teams throughout the country, Earth Force provides a framework and program for moving students to action. Pennsylvania Earth Force projects are located in Erie, Pittsburgh and Philadelphia.

Type: Educational Program/Resource

www.earthforce.org

Exploring Environmental Issues: Places We Live

Project Learning Tree

An environmental program for secondary students developed by Project Learning Tree that focuses on land use decision-making. For information and to obtain copies contact PDE Office of Environment and Ecology at 717.783.6995.

Type: Curriculum

www.plt.org, www.pde.state.pa.us

Going Places, Making Choices

National 4-H Council

This is a series of booklets about land use and transportation.

www.fourhcouncil.edu

Phone: 301-961-2800

Green Map

Green Map System

Lessons and activities for designing community maps that share information on energy conservation, recycling, composting, rain barrels, water conservation, organic markets/restaurants and other GREEN highlights of the community. Be sure to check out the Green Map K12 Activity Guide.

Type: Website, Educational Resources

www.greenmap.org

Lessons From the Land

Creative Change Educational Solutions

This is a curriculum developed to educate young people about land use and the role of citizens in shaping a sustainable future.

Type: Curriculum

www.creativechange.net

Fee: yes

A Nice Place to Live: Creating Communities, Fighting Sprawl

National Issues Forum

This material is designed to help citizens take a fresh look at the problems of building and maintaining nice places to live against the forces of sprawl. The issue guide provides an overview of the issue and, to promote public deliberation and citizen action, outlines several perspectives or choices. Free moderator's guide available, additional resources can be ordered.

Type: Educational Materials

www.nifi.org

Pennsylvania Biodiversity: An Educators Guide to Exploring Pennsylvania's Web of Life

Pennsylvania Biological Survey

Year: 1999

Activities are adapted with permission from Biodiversity Basics published by World Wildlife Fund (WWF) as part of Windows on the Wild (WOW). Published by the Pennsylvania Biological Survey.

Type: Educational Guide

Distributed by: Pennsylvania Game Commission, 2001 Elmerton Avenue, Harrisburg, PA 17110

Project Citizen

Center for Civic Education

Year: 2008

This education program is administered by the Center for Civic Education in cooperation with the National Conference of State Legislatures. It is funded by the US Department of Education. The purpose of the program is to help students engage in community projects as a responsibility of citizenship.

Type: Curriculum

www.civiced.org

Phone: 818-591-9321

Project Learning Tree (Pre K- 8)

American Forest Foundation, Project Learning Tree

Year: 2004

This material focuses on the forest as a window to learning and involves hands-on activities that provide students opportunities to investigate environmental issues. For information and to obtain copies contact PDE Office of Environment and Ecology at 717.783.6995.

Type: Curriculum

www.plt.org

www.pde.state.pa.us

Project WILD, K-12 Curriculum and Activity Guide

Project WILD: Council for Environmental Education

Year: 2003

Project WILD is an interdisciplinary conservation and environmental education program emphasizing wildlife. Workshops are coordinated by the Pennsylvania Game Commission. The activity recommended in PA Land Choices is called "Oh Deer!" and is located in Project WILD.

Type: Curriculum/Activity Guide

www.projectwild.org/ProjectWILDK-12CurriculumandActivityGuide.htm

Save Our Lands, Save Our Towns

Tom Hylton

Save Our Lands, Save Our Towns

Save Our Land, Save Our Towns is an organization founded by Pulitzer Prize winning journalist Tom Hylton to facilitate change in regional planning, town design and protection of rural areas through education and advocacy. Save Our Land, Save Our Towns is the title of a book and an hour-long television documentary which has classroom materials. Lessons, activities and a video on Pennsylvania land use are excellent resources for teachers and community leaders.

Type: Book, Video, Classroom Materials

www.saveourlandsaveourtowns.org/classroom.html

Sustaining Penn's Woods—A Sound Use of the Land

Bureau of Curriculum Academic Programs, PA Department of Education

This is a Pennsylvania—specific interdisciplinary program of instructional activities on Pennsylvania forest and land use aligned with the academic standards.

Type: Curriculum

www.hlma.org/pennswoods

Fee: no

ViewFinders and ViewFinders Too

The Dunn Foundation

These are elementary and middle school curricula for students in grades 3–8. They include numerous educational activities with photographs developed by The Dunn Foundation which was founded to address community appearance and community identity.

Type: Curriculum

www.dunnfoundation.org

Email: viewfinders@dunnfoundation.org

Fee: yes

Watershed Education

Bureau of State Parks, PA Department of Conservation & Natural Resources

This program was developed to help use nearby natural resources as a valuable teaching tool for students in grades 6–12. Teacher training is provided as well as field and classroom training provided by Bureau of State Parks environmental educators.

Type: Educational Program

www.watersheded.dcnr.state.pa.us

Phone: 717-783-4356

Reports/Books

Back to Prosperity, A Competitive Agenda for Renewing Pennsylvania

The Brookings Institution Center on Urban and Metropolitan Policy

Year: 2003

This report provides statistics on the demographics, economics, population and trends of Pennsylvania, challenging the citizens to address these concerns and to develop a plan to renew Pennsylvania.

Type: Report

www.brookings.edu/reports/2003/12metropolitanpolicy_pennsylvania.aspx

Fee: yes

Growth and Pennsylvania's Environment: The Facts

Dr. Steven Hayward, Pacific Research institute for Public Policy

The Commonwealth Foundation

Year: 2000

The report provides an perspective of land use issues in Pennsylvania, refuting the data and identifying "sprawl" as a social issue.

www.mail.commonwealthfoundation.org/environment/env02-02.pdf

Questing: A Guide to Creating Community Treasure Hunts

Delia Clark and Steven Glazer

University Press of New England.

A guide to creating treasure hunts that teach and share the special places in your community.

Year: 2006

Type: book

www.upne.com/1-58465-334-5.html

Fee: yes

Organizations and Agencies

American Planning Association

The American Planning Association is a national organization that promotes good planning practices at all levels of community—local, state and national. They offer professional planner certification through the American institute of Certified Planners (AICP). The APA provides a searchable database of youth education resources and a free quarterly e-newsletter for teachers, planners, parents, principals, organizations and citizens. They also have a website tailored for children and include planner profiles, book reviews, games, pictures and more.

www.planning.org

American Planning Association, Pennsylvania Chapter

A nonprofit, nonpartisan organization for professional planners and planning officials as well as other organizations and individuals interested in planning. The Pennsylvania Chapter is a partner of the Pennsylvania Municipal Planning Education Institute (PMPEI) along with the Pennsylvania State University Cooperative Extension which provides training to planning commission members, zoning officers and others.

www.planningpa.org

Coalition for Representative Democracy (PennCORD)

A unique educational, advocacy, and governmental organization committed to renewing the civic mission of Pennsylvanian schools.

www.pennCORD.org

The Conservation Fund

It is an organization dedicated to advancing America's land and water legacy. They conserve land, train leaders and invest in conservation. They produce publications on land conservation and sustainable communities.

www.conservationfund.org

Pennsylvania Department of Community and Economic Development

Governor's Center for Local Government Services provide a number of publications on land use and local government issues.

www.NewPA.com

Pennsylvania Department of Education

Provides educational resources and oversight to Pennsylvania's education community.

www.pde.state.pa.us

Phone: 717-783-6995

Pennsylvania Land Trust Association

The Pennsylvania Land Trust Association is a non profit organization which seeks to protect Pennsylvania's special places and landscapes for today and for generations to come. To increase the quality and pace of land conservation, the association helps conservation practitioners improve their effectiveness, builds public understanding, and advocates for better governmental policy.

www.conserveland.org

United States Environmental Protection Agency, Development, Community and Environment Division

EPA provides an excellent choice of publications on smart growth, stormwater management, urban development and other topics relating to land use.

www.epa.gov/smartgrowth/publications.htm

Phone: 513-891-6561

Additional Links & Resources

10,000 Friends of Pennsylvania

www.10000friends.org

American Farmland Trust

www.farmland.org

Biodiversity Project

www.biodiversityproject.org

The Brookings Institution

www.brookings.edu

Center for Rural Pennsylvania

www.ruralpa.org

ConservationTools.org

www.conservationtools.org

The EAC Network (Environmental
Advisory Committees)

www.eacnetwork.org

Farmland Information Center

www.farmlandinfo.org

GreenTreks Network, Inc.

www.greentreks.org

iConservePA

www.iConservePA.org

Land Stewardship Resource Center

www.landstewardship.org

Land Trust Alliance

www.lta.org

Natural Lands Trust

www.natlands.org

The Nature Conservancy

www.nature.org

Pennsylvania Builders Association

www.pabuilders.org

Pennsylvania Center for Environmental
Education

www.pcee.org

Pennsylvania Game Commission

www.pgc.state.pa.us

Pennsylvania's Greenway Clearinghouse

www.pagreenways.org

Pennsylvania Department of Environmental
Protection

www.dep.state.pa.us

Pennsylvania Fish and Boat Commission

www.fish.state.pa.us

Pennsylvania Horticultural Society

www.pennsylvaniahorticulturalsociety.org

Pennsylvania League of Cities
and Municipalities

www.plcm.org

Pennsylvania Park and Recreation Society

www.prps.org

Pennsylvania State Association of Boroughs

www.boroughs.org

Pennsylvania State Association of Township Supervisors

www.PSATS.org

Smart Growth Network

www.smartgrowth.org

Smart Growth for Westmoreland County

www.smartgrowthpa.org

Trust for Public Land

www.tpl.org

Aerial Photo & Data Resources

The American Geological Institute

Provides dozens of classroom activities, ideas, materials, resources and an Earth Science Week Toolkit which includes some great aerial maps.

www.earthsciweek.org

Pennsylvania Geologic Survey

The Geologic Survey serves the citizens of Pennsylvania by collecting, preserving, and disseminating impartial information on the Commonwealth's geology, geologic resources, and topography.

www.dcnr.state.pa.us/topogeo

ESRI

ESRI is a leading GIS & mapping software developer.

www.esri.com

Pennsylvania Spatial Data Access (PASDA)

Pennsylvania Spatial Data Access (PASDA) is the official public access geospatial information clearinghouse for the Commonwealth of Pennsylvania. Aerial photography, topographic maps, census data, etc. is available through PASDA.

www.pasda.psu.edu

Penn Pilot

An online library of historic aerial photographs of Pennsylvania sponsored by the Pennsylvania Geological Survey.

www.pennpilot.psu.edu

Green Map

Green Map® System promotes inclusive participation in sustainable community development worldwide, using map-making as our medium.

www.GreenMap.org

Email: info@greenmap.org

Department of Conservation and Natural Resources

www.dcnr.state.pa.us

The Department of Conservation and Natural Resources was established on July 1, 1995 and is responsible for maintaining and preserving the 117 state parks; managing 2.1 million acres of state forest land; providing information on the state's ecological and geologic resources; and establishing community conservation partnerships with grants and technical assistance to benefit rivers, trails, greenways, local parks and recreation, regional heritage parks, open space and natural areas.

DCNR provides a wealth of resources and publications to support their mission and goals. To access the publications and resources, visit the DCNR website at www.dcnr.state.pa.us. Each bureau will provide a channel to access publications and other information.

DCNR's Bureau of Forestry oversees one of the largest state forest systems in the nation with more than 2.1 million acres. They produce educational materials and provide educational outreach on urban forestry, native plants, common trees, recreation, forest stewardship and many others. Service Foresters are assigned to each county to advise residents on forest management.

DCNR's Bureau of State Parks manages 117 state parks on over 290,000 acres and protect 22 areas of unique scenic, geological or ecological value. State Parks focus on providing healthful outdoor recreation experiences while conserving natural resources and educating visitors and communities. The website provides access to maps and descriptions of each park and hosts a calendar of events.

DCNR's Bureau of Recreation and Conservation administers a grant program that provides recreation and conservation

grants to local governments and nonprofit organizations each year. They provide an extensive technical assistance program that includes one-on-one consultation, workshops and publications. It also administers Pennsylvania's Heritage Area Program that includes 12 state designated areas with a mission to preserve and enhance natural, cultural, historical and recreational resources to stimulate economic development through heritage tourism.

DCNR's Bureau of Topographic and Geologic Survey, also known as the Pennsylvania Geological Survey, collects, preserves, and disseminates information on Pennsylvania's geology, geologic resources and topography. It also coordinates well information. They provided many of the maps for PA Land Choices. Their website provides access to geologic maps, topographic maps, aerial photographs and geospatial data.

DCNR's Office of Wild Resource Conservation administers the Wild Resource Conservation Fund which aids in the conservation of wild plants and non-game animals and County Natural Areas Inventories. They produce a wealth of educational materials including posters, books, videos, newsletters and patches. *Sustainable Community Parks* is an excellent resource for community park development.

DCNR hosts a website called iConservePA which provides conservation inspiration to citizens throughout Pennsylvania. The vision of the website is to inspire citizens to value their natural resources, engage in conservation practices and experience the outdoors. Visit the site at www.iConservePA.org.

Activity Correlation for National Programs that Complement PA Land Choices

Project Learning Tree, Project WET and Project Food, Land and People are national education programs coordinated through the Pennsylvania Department of Education. They provide excellent activities that relate to the study of land use. Activities may be used independently or as extensions to PA Land Choices. For information on the projects, contact the Pennsylvania Department of Education, 717-783-6994. For teacher workshops at your state park, visit the web site at www.dcnr.state.pa.us/stateparks/education or contact the park directly.

The following are activities from *Project Learning Tree* that address land use:

Did you Notice? (95) In this activity, students will study changes in their local environment over short and long periods and will identify patterns of change.

Improve your place (96) Each living thing has a habitat, a place to live that suits its needs. For human beings the community they live in is their habitat. In this activity, students are encouraged to take action to improve their community by making some positive environmental changes.

Where are the Cedars of Lebanon? (94) Throughout history, people have depended on natural resources for survival. The availability of food, water and resources to build shelters has determined where humans have settled and how cultures evolved over time. In this activity, students will explore how ancient civilizations developed systems for using their natural resources.

There Ought to be a Law (58) In democratic societies, citizens have the power to influence the lawmaking process. In this activity, students will find out how local laws are made and how they can get involved in the process.

Planning the Ideal Community (55) In this activity, students will explore the elements that compose a human community. They will survey the area around their school, looking for community systems that help them live there. Then they will plan an ideal community that meets all the needs of its members.

I'd Like to Visit a Place Where... (54) In this activity, students will explore the concept that recreation areas are essential elements of a community. By working on a project to improve a local park, they will also learn about the community's system for managing open spaces.

On the Move (53) In this activity, students will examine transportation systems, which are vital to their community.

400-acre Wood (50) In this activity, students will play the roles of managers of a 400-acre piece of public forest. Through these roles, students will begin to understand the complex considerations that influence management decisions about forestlands.

The following are activities from *Project Food, Land and People*:

What Will the Land Support? (Page 337) Students play a board game to simulate changes in land use. They discover the effects of change on the carrying capacity of land.

Cows or Condos? (Page 395) After reading a case study, students use a problem-solving model to understand the complex issues of urbanization of agricultural land. They analyze similar situations in their areas and pose possible solutions.

The following are activities from *Project WET*:

Sum of the Parts (Page 267) Students take responsibility for development of a piece of land and demonstrate how everyone contributes to pollution of a river.

Common Water (Page 223) Students analyze the results of a simulation to understand how growth and development over time place demands on natural resources.

Color Me A Watershed (Page 223) Through interpretation of maps and understanding calculations of runoff, students observe how development can affect a watershed.

The Price is Right (Page 333) Students learn about economics and environmental planning as they calculate the cost of building a water development project.

Humpty Dumpty (Page 316) Students discuss the challenges of environmental restorations projects.

Back to the Future (Page 293) Students analyze streamflow monitoring data to determine the safest location for a future community.

Project Wild and other wildlife activities are developed and coordinated through the PA Game Commission. For more information, visit www.state.pa.us.

The following are activities from *Project Wild*:

Project Wild K-12 Curriculum and Activity Guide is a national curriculum sponsored in Pennsylvania by the PA Game Commission. “Oh Deer!” is one of the activities that is recommended in PA Land Choices. To obtain a list of workshops for Project Wild, contact the PA Game Commission www.pgc.state.pa.us.

Project Wild Curriculum Guide for Grades 9 – 12, Science and Civics: Sustaining Wildlife, Council for Environmental Education, 2002

PA Land Choices provides us *the basis and essential guidelines for making wise and thoughtful decisions on how to best utilize our land and the associated resources.*

John W. Norbeck (Director, Pennsylvania State Parks)

Pennsylvania Department of Education

Act 48 Credits for Teachers Alignment to Pennsylvania Academic Standards

For current information on academic standards, assessment and professional development please visit the PDE website at www.pde.state.pa.us.

"One of the greatest challenges facing current and future citizens is the wise use of our land. Rather than allowing important decisions to be made by special interests for the sake of short-term economic reasons, citizens must realize that they have unprecedented influence in the process of determining how precious land resources can and should be used for maximum sustainability and the common good.

PA Land Choices is an excellent resource for Commonwealth schools in helping to build productive and contributive citizens."—Jeff Zeiders, *Social Studies Advisor, Pennsylvania Department of Education.*

The Bureau of State Parks is approved to provide Act 48 credits to teachers participating in PA Land Choices Workshops. PA Land Choices has aligned the activities to specific content areas:

- Civics and Government
- Environment and Ecology
- Geography
- Mathematics
- Reading, Writing, Speaking and Listening

Pennsylvania established state academic standards, which are benchmark measures that define the essential elements students should know and be able to do at the end of specific grade levels beginning in grade 3. The sequential nature of the academic standards reflects the need to define the rigorous academic content that students will be expected to achieve.

The standards consist of standard categories designated as numbers. Each category has standard statements designated by a capital letter such as A., B., or C. Standard statements have bulleted items known as standard descriptors. The standards are state regulations and as such must be used as the basis for curriculum and instruction in Pennsylvania's public schools.

In addition to the state academic standards, the Department of Education, as directed by the State Board of Education, adopted Assessment Anchors for each subject and grade level. Assessment Anchors are a subset of the state academic standards. They define the academic content and skills that are assessed by the PSSA.

Pennsylvania Land Choices is aligned to many academic standards. The following is a partial list of standard statements and the associated chapters.

Academic Standards for Reading, Writing, Speaking and Listening

1.2.8 and 11 Reading Critically in All Content Areas (All lessons)

1.6. Speaking and Listening (All lessons)

1.6.8 and 11.A Listen to others (ask clarifying questions, synthesize information)

1.6.8 and 11.B Listen to selections of literature (relate to previous knowledge, predict, summarize, define new words)

1.6.8 and 11.C Speak using skills appropriate to formal speech situations (presentations)

1.6.8 and 11.D Contribute to discussions

1.6.8 and 11 E Participate in small and large group discussions and presentations

Academic Standards for Mathematics

2.3. Measurement and Estimation

2.3.8.F Use scale measurements to interpret maps or drawings (Lesson 2)

2.3.8.G Create and use scale models.(Lessons 2, 4, 5, 6)

2.5. Mathematical Problem Solving and Communication

2.5.8.B Verify and interpret results using precise mathematical language, notation and representations, including numerical tables, ...charts, graphs and diagrams (Lessons 2, 5)

2.6. Statistics and Data Analysis

2.6.5.A Organize and display data using pictures, tallies, tables, charts, graphs (Lesson 2)

Academic Standards for Environment and Ecology

4.2.Renewable and Nonrenewable Resources

4.2.10.B Evaluate factors affecting availability of natural resources (Lessons 2, 5, 6, 7)

4.7.Threatened, Endangered and Extinct Species

4.7.7. C Explain natural or human actions in relation to the loss of species (Lessons 2, 5, 6, 7)

4.7.12. C Analyze the effects of threatened, endangered or extinct species on human and natural systems (Lesson 5)

4.8. Humans and the Environment

4.8.7.A Describe how the development of civilization relates to the environment (Lessons 2, 5)

4.8.7.B Explain how people use natural resources (All lessons)

4.8.7.C Explain how human activities may affect local, regional, and national environments (All Lessons)

4.8.7.D Explain the importance of maintaining the natural resources at the local, state, and national levels (Lessons 3, 5, 6)

4.8.10.A Analyze how society's needs relate to the sustainability of natural resources (Lessons 2, 4, 5)

4.8.10.B Analyze the relationship between the use of natural resources and sustaining our society (Lesson 2, 4, 5, 7)

4.8.10.C Analyze how human activities may cause changes in an ecosystem (All lessons)

4.8.10.D Explain how the concept of supply and demand affects the environment e.g. relationship between population density (Lessons 2, 5)

4.9. Environmental Laws and Regulations

4.9.7.A Explain the role of environmental laws and regulations (Lessons 2, 3, 4, 5)

4.9.10.A Explain why environmental laws and regulations are developed and enacted (Lessons 2, 3, 4)

Academic Standards for Civics and Government

5.1. Principles and Documents of Government

5.1.6.J Describe how the government protects individual rights and promotes the common good (Lessons 2, 5, 6)

5.1.9.J Explain how law protects individual rights and the common good (Lessons 2, 3, 4)

5.2. Rights and Responsibilities of Citizenship

5.2.9.B Describe the rights, responsibilities and participatory role of citizens in the local, state, and national level (All lessons)

5.2.9.C Delineate skills used to resolve conflicts in society and government (Lessons 1, 2, 3, 5)

5.2.9.E Explain the importance of political process to competent and responsible participation in civic life (Lessons 3, 4, 5, 6, 7)

5.2.12.B Analyze the rights, responsibilities and participatory role of citizens at local, state, and national levels of government (Lessons 3, 4, 5, 6, 7)

5.2.12.C Analyze the triggers of conflict in society and techniques to resolve them (Lessons 2, 4, 5, 7)

5.3. How Government Works

5.3.6.C Explain how government actions affect citizens' lives (Lesson 3)

5.3.6.D Explain how local, state and national governments implement their services. (Lessons 3, 4, 5, 6)

5.3.9.D Explain how independent government agencies create, amend and enforce regulatory policies. (Lessons 3, 4, 5, 6)

Academic Standards for Geography

7.1. Basic Geographic Literacy

7.1.6.A Describe geographic tools and their uses (Lesson 2)

7.1.12.A Analyze data and issues from a spatial perspective using the appropriate geographic tools. (Lesson 2)

7.1.6.B Describe and locate places and regions: Physical features, human features, community connections to other places. (Lessons 2, 4, 6)

7.3. The Human Characteristics of Places and Regions

7.3.6.A, C Describe the human characteristics of places and regions by their population characteristics; settlement characteristics (Lessons 2, 4)

7.3.9.A, C Explain the human characteristics of places and regions by their population characteristics; settlement characteristics (Lessons 2, 4)

7.4. The Interactions Between People and Places

7.4.6.A, B Describe the impacts of physical systems on people and the impacts of people on physical systems (e.g. creation of state parks and forests) (Lessons 2, 5, 6)

7.4.9.A, B Explain the impacts of physical systems on people and the impacts of people on physical systems (e.g. increasing development) (Lessons 2, 5, 6)

Standards-Aligned Systems

Much research has been conducted as to what makes a great school. There are many intangible components. However, research supports the notion that great schools and school systems tend to have six common elements.

To advance students and enable them to meet expectations, the Department of Education has developed a framework for learning which is called a “Standards-Aligned System”. Each content area will address this framework for learning.

PA Land Choices is supportive of the Standards-Aligned Systems.

The Standards-Aligned Systems is a framework for organizing the components of great schools.

- Clear Standards—Clear, high standards that establish what all students need to know and be able to accomplish
- Fair Assessments—Fair assessments aligned to the standards
- Curriculum Framework—A framework specifying Big Ideas, Concepts, and Competencies in each subject area/at each grade level
- Instruction—Aligned instruction--aligning instruction with standards involves identifying strategies that are best suited to help students achieve the expected performance
- Materials and Resources—Materials that address the standards
- Interventions—A safety net/intervention system that insures all students meet standards

A Model for a Standard-Aligned System

Social Studies: Civics and Government

Social Studies recognize the central role of Pennsylvania's schools in developing useful and contributive citizens. In Pennsylvania, Social Studies are closely defined as four academic disciplines:

1. Civics and Government—Civics and Government education designed to shape engaged citizens rests on three main pillars that define the structure from K-12. The pillars are:

- A. The Rights and Responsibilities of Citizenship*
- B. Participating in Our Communities, the Commonwealth, and the United States*
- C. Participating in a Global Society*

2. Economics

3. Geography

4. History

These concentration areas are not meant to stand alone. They are interrelated fields that assist students in understanding how many forces shape their lives, their opportunities, and their relationships to the world around them.

Civics and government has completed a framework for demonstrating a Standard Aligned System (SAS). This is an example of the SAS framework for the sixth grade level. This framework is available on the PDE website for each grade level.

It is important to address the value of PA Land Choices to the content, standards, essential questions and “big ideas” for students in 6th grade:

Big Ideas

- Citizens understand their rights and practice their responsibilities in a democratic society.
- Showing respect for others and acting responsibly are necessary to promote the common good.
- All citizens are equal before the law.
- Active citizens understand the workings of government and use that knowledge for the common good.

- An active citizen is a life-long learner.
- Just because information appears on the television, radio or internet or comes from a friend or acquaintance doesn't make it true.

Concepts

- Communities are established for the common good, bringing people and resources together to confront the problems that face them.
- Community and individual rights are established in constitutions (Pennsylvania and United States), laws and regulations.
- Each level of government has specific operations and duties.
- Each level of government has a specific process for settling conflicts.
- Each level of government has a specific process for addressing the basic needs of people in a society.
- In a democratic society, the rule of law establishes the foundation for fairness and cooperation.
- Every citizen possesses means to influence government
- Citizens must be wise consumers of the information available to them.

Concepts

By the close of their high school careers, Pennsylvania students will know and be able to:

- Register and cast a vote and assist others in voter registration
- Exercise the rights and responsibilities accorded to them
- Exhibit respect for the rule of law and its role in serving the common good

- Engage in service to the community and participate in government
- Solve problems and work within the rules and operations of government
- Refine skills in developing critical research skills and information filters
- Employ civil discourse in discussing issues and solving problems with other citizens

Given these goals, students in this age group should be able to:

- Describe branches and levels of government at the local, state, and national levels
- Delineate rights and obligations as a citizen in a representative democracy
- Demonstrate a knowledge of Pennsylvania's role in shaping U.S. representative democracy
- Compare the Preamble of the Pennsylvania Constitution to the Preamble of the United States Constitution. Note the similarities and differences and the ideas that are to guide the behavior of citizens of Pennsylvania and the United States
- Develop a chart listing the rights of citizens in the community in which you live, of citizens of the Commonwealth of Pennsylvania, and of citizens of the United States. Note areas of overlap and contradiction
- In both structured and unstructured settings, students will demonstrate respect for others by taking turns, helping others, sharing, being polite, showing respect for authority
- Recognize the rights of other students to have opinions that are different in class meetings
- Recognize others right to advocate for opinions that differ from one's own as measured by peer and adult interactions

- Given a civic dilemma, students will demonstrate empathy and respect for different beliefs in the various segments of society
- Demonstrate environmental stewardship: recycling, conservation of resources, and the reduction of waste

Essential Questions

The following are the essential questions on Civics and Government for the sixth grade. PA Land Choices provides activities to address most of the following essential questions.

- What is civic participation and how can I be involved?
- How can I make a positive difference?
- How do local governments, state governments and national governments determine how to allocate scarce resources in order to meet the unlimited wants and needs of citizens?
- How do citizens effectively communicate with legislators, officers, and the legal system?
- What goods and services should government provide? Who should pay for them? Who should benefit from them? Who should decide?
- How do members of a community interact to help each other meet their basic needs?
- What are the roles of a citizen in our democracy/republic?
- How does one develop and express well-informed opinions or positions?
- Why do we need government?
- Is public safety or individual freedom more important in our society?
- How does our current standard of living impact the lives of others around the world?

Pa Land Choices provides *that rare opportunity where students are empowered to promote citizen-driven government, conservation and long-term sustainable communities.*

Students quickly learn that they can influence policy on important political, social, and economic processes by participating in democratic principals and by embracing the knowledge, information and insights provided in this valuable interdisciplinary curriculum.

William Sweeney (Jacobsburg EE Center Program Supervisor)

Pennsylvania Coalition for Representative Democracy (PennCORD)

www.pennCORD.org

The Pennsylvania Coalition for Representative Democracy (PennCORD) is a partnership that is jointly led by the National Constitution Center, the Pennsylvania Bar Association, the Pennsylvania Department of Education and the Governor's Office of the First Lady.

PennCORD represents a unique union of educational, advocacy, and governmental organizations that are committed to improving civic education for students in grades K-12, with emphasis on the six recommended approaches of the Carnegie Corporation's Civic Mission of Schools Report (2003). The coalition has united some of the strongest civic education organizations in the state of Pennsylvania in an effort to move from a fragmented approach to a united, community-based call for improved civic learning opportunities in the commonwealth's educational systems.

I strongly believe that civic education is elementary in the lives of our children and must be taught and learned early on. I feel this as a parent, and as a judge; if not just as a citizen. It is up to us to inspire an informed intellectual and emotional connection that teaches our children about their historical past so that they can use it wisely to fashion their future. Our democratic process will remain strengthened only by devoting our energies to fostering an early interest and maintaining continued understanding for the future citizens of our great democracy.

It is essential that our children develop a better understanding of the ideals and principles of democracy, freedom and our government. By broadening their scope of civic learning, I hope to better prepare them to fully embrace their rights and responsibilities, so they will become active, participatory citizens. After all, civics—and our children—are Pennsylvania's path to a promising future.

As First Lady of the Commonwealth and a federal judge, I have always believed that it is critical that those we leave behind be given the tools, skills and values to enrich their lives, but I fear that our children are being short-changed in their understanding of what it means to be a participatory citizen in the United States. Our approach to teaching children must concentrate not only on the three Rs, but also on the five Rs—including rights and responsibilities of citizenship. At home and at school, parents and teachers respectively, have the valuable opportunity to take up the mantle of civic learning. We must embrace our role as instructors of the next generation, teaching our children to value the role of citizen envisioned by our Constitution.

I invite you to further explore "Civics & Citizenship" for suggested ideas for parents to help their children continue the learning experience. I have compiled a list of videos, books, teacher resources, as well as civic related websites. Additionally, take the time to engage your children by starting a critical conversation.

Judge Marjorie O. Rendell

First Lady of the Commonwealth of Pennsylvania

Credits and Acknowledgments

PA Land Choices is a result of many years of teaching and promoting natural resources, land conservation, citizen responsibility and the importance of community involvement. It is a culmination of the work of dedicated and professional staff who serves the Commonwealth - its communities, its resources and its people while advancing the goals of the Department of Conservation and Natural Resources.

The 2009 edition of PA Land Choices is the result of collaboration between the Department of Conservation and Natural Resources and the Pennsylvania Land Trust Association with the support of countless individuals, staff, teachers, organizations and agencies.

Thanks to those who have contributed, inspired and reviewed:

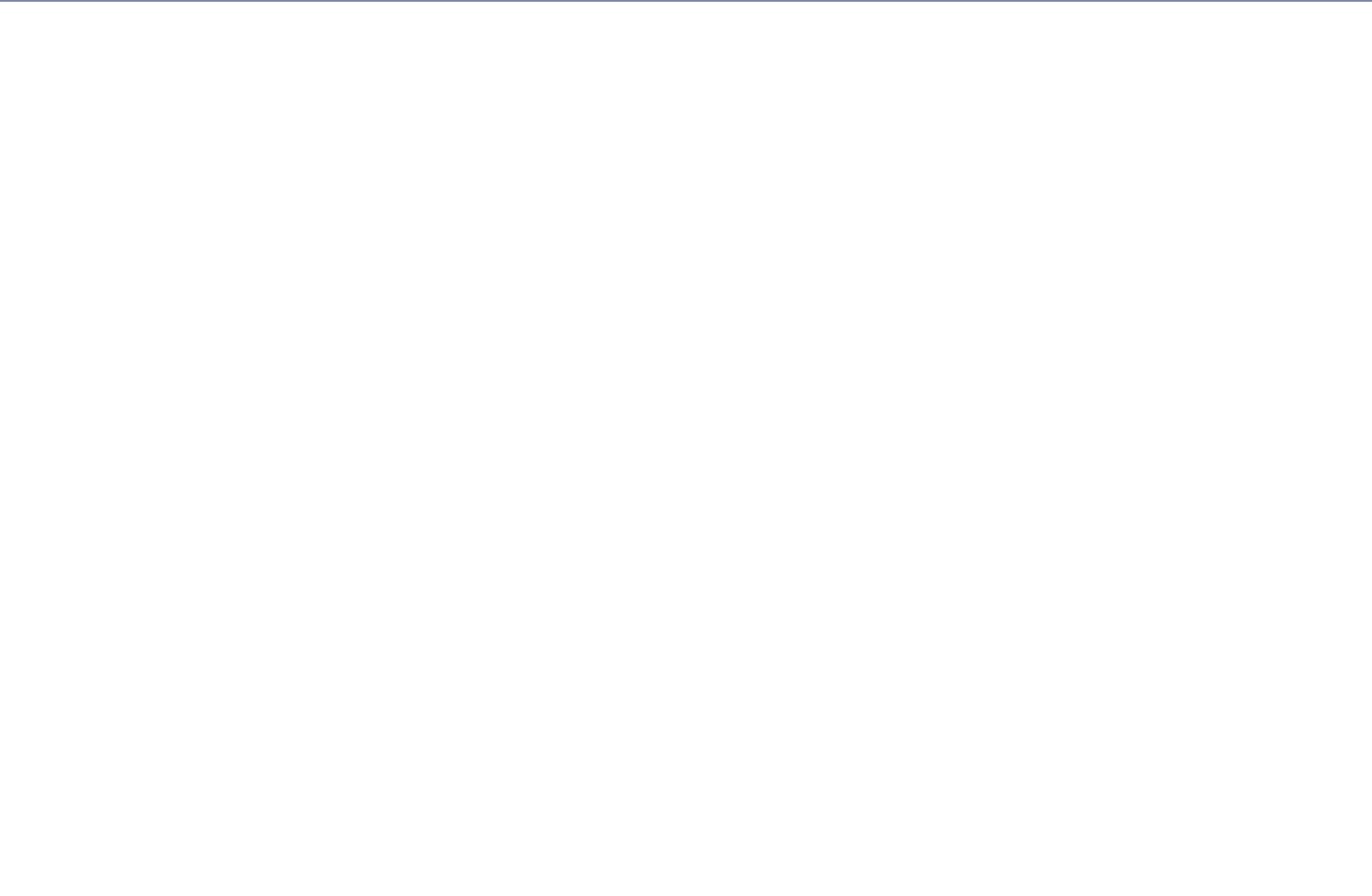
Theresa Alberici	Cindy Dunn	Meredith Hill	Becky Lewis	Erin Rasor	Eleanor Sweeney
Linda Armstrong	Joan Dupes	Sarah Hopkins	Mary Lorah	Shellhamer	William Sweeny
Mark Atwood	Burt Ellsworth	Ann Hutchinson	Rex Lord	Spring Reilly	Frances Stein
Matt Azeles	Beverly Enco	Thomas Hylton	Andy Loza	Eric Rensel	Will Taylor
Rachel Baur	Jim Eppley	Linda Ingram	Pat Lupo	Carissa Reilly-Longo	Bonnie Tobin
Leigh Beamesderfer	George Facer	Jeff Johns	Dale Luthringer	Louis Ritrovato	Vangellow Family
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Rachel Billingham	Fred Gast	Silas Johnson	Diane Madl	Charlotte Ruhl	Barbara Drbal
Kevin Bittner	George Fasic	Johnson Family	John Mauser	Ruppert Family	Wallace
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Terry Brady	Roger Fickes	Mike Jones	Nancy Mendes	Sarah Ruppert	Meg Welker
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			Dale Prinkey	Adrian Stouffer	

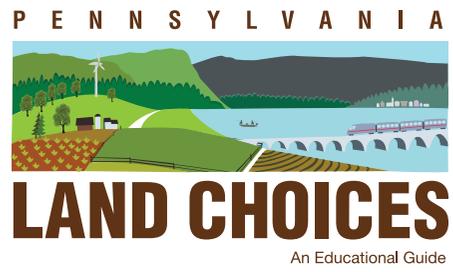
We gratefully acknowledge the work and dedication of Estelle Ruppert, PA Land Choices Coordinator and author and Nicole Faraguna, Pennsylvania Land Trust Association, editor and project manager. We also recognize the hours and contributions of Jason Smith and Scott Boggs of Fathom Studios and illustrator Charles Beyl. Without their dedication, there would not be a professional version of this document to help support statewide land conservation and community education.

Close your eyes *and tap your heels*

*together three times and think to
yourself 'there's no place like home.'*

Glinda (The Good Witch)





Pennsylvania Land Choices is an educational guide full of activities for building connections to natural resources, communities and the planning process. Developed by the Pennsylvania Department of Conservation and Natural Resources, it was written for community leaders, planners and teachers, providing a step-by-step process for teaching citizens about changes in Pennsylvania's communities and the important role of each citizen in making choices that will benefit future generations and the future of the commonwealth. It is adapted for use in public schools and is aligned to the state academic standards. It is developed to be used by all citizens who are motivated to learn more about their role in making healthy, sustainable communities.

Key Features: Step-by-step educational activities and supporting information, full color photos for activities and worksheets, excellent maps, graphs and resources, workshops provided by trained facilitators, useful websites and resources, Pennsylvania specific information, motivational case studies and action ideas

Activity 3: Digital Shaded-relief Map

BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY

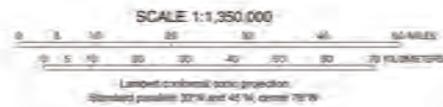
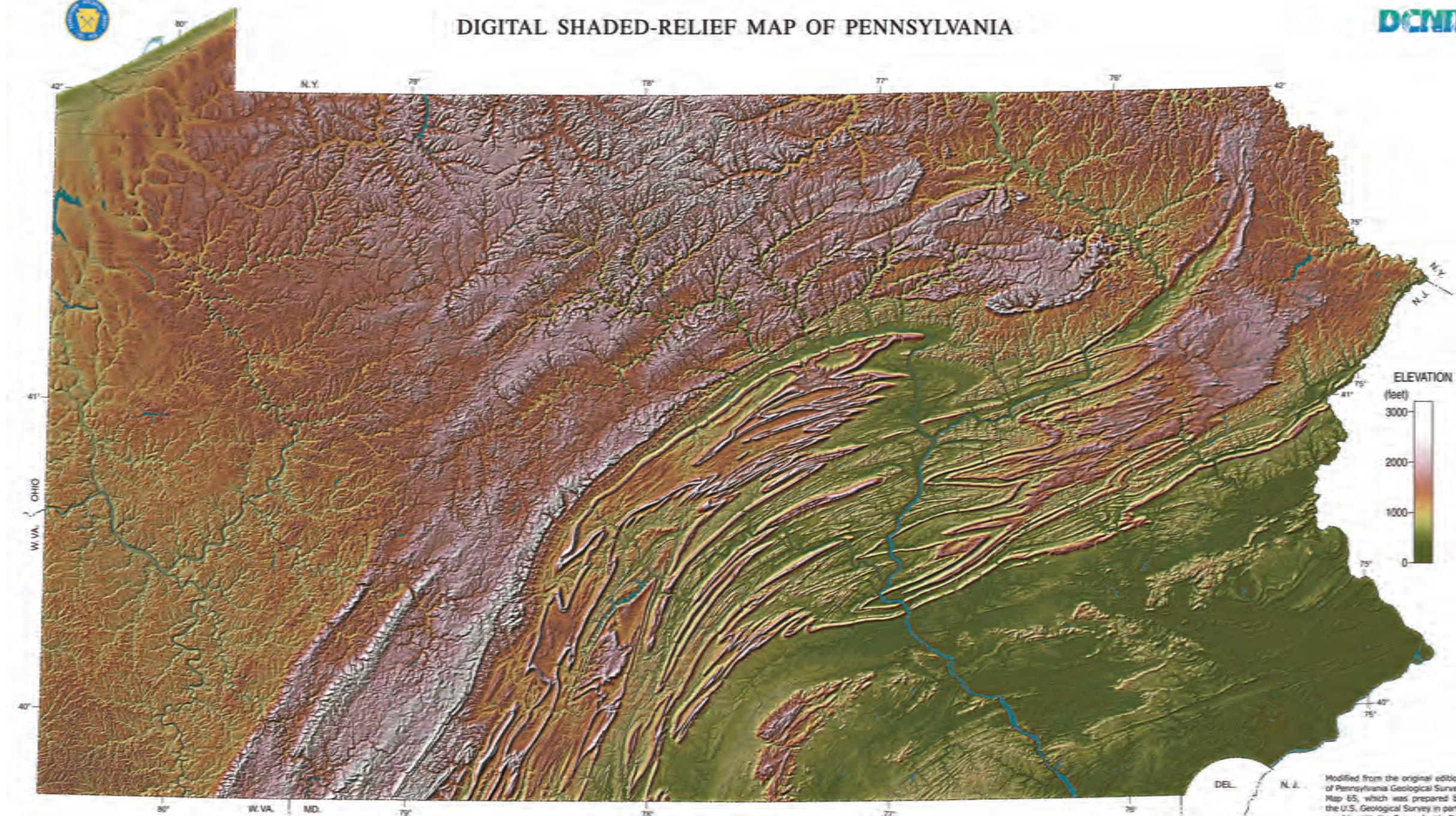


COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

MAP 65
TABLED EDITION



DIGITAL SHADED-RELIEF MAP OF PENNSYLVANIA



This shaded-relief map of Pennsylvania was made from the 1999 National Elevation Dataset, a U.S. Geological Survey product designed to provide national elevation data in a seamless form with a consistent datum, elevation unit, and projection. Unlike shaded-relief maps that were painstakingly hand drawn or airbrushed in the past, this map was made using automated techniques that allow the user to calculate the slope of the ground, assign colors, and render an accurate, objective, and yet pleasing three-dimensional picture that has

the effectiveness of a shaded-relief portrayal. The National Elevation Dataset covers the entire United States. The data values represent elevations for points that are spaced approximately every 30 meters, except in Alaska, where the spacing is 60 meters. Elevation data are an essential part of many earth-science applications, such as providing shaded-relief background for a variety of maps, selecting land-cover categories, and using geographic information systems to analyze drainage networks and watershed delineations.

Modified from the original edition of Pennsylvania Geological Survey Map 65, which was prepared by the U.S. Geological Survey in partnership with the Pennsylvania Bureau of Topographic and Geologic Survey, Department of Conservation and Natural Resources, and published at scale 1:500,000.

Activity 3: Geologic Shaded-relief Map

BUREAU OF
TOPOGRAPHIC AND GEOLOGIC SURVEY



COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

MAP 67
THIRD EDITION



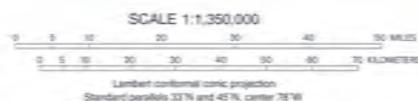
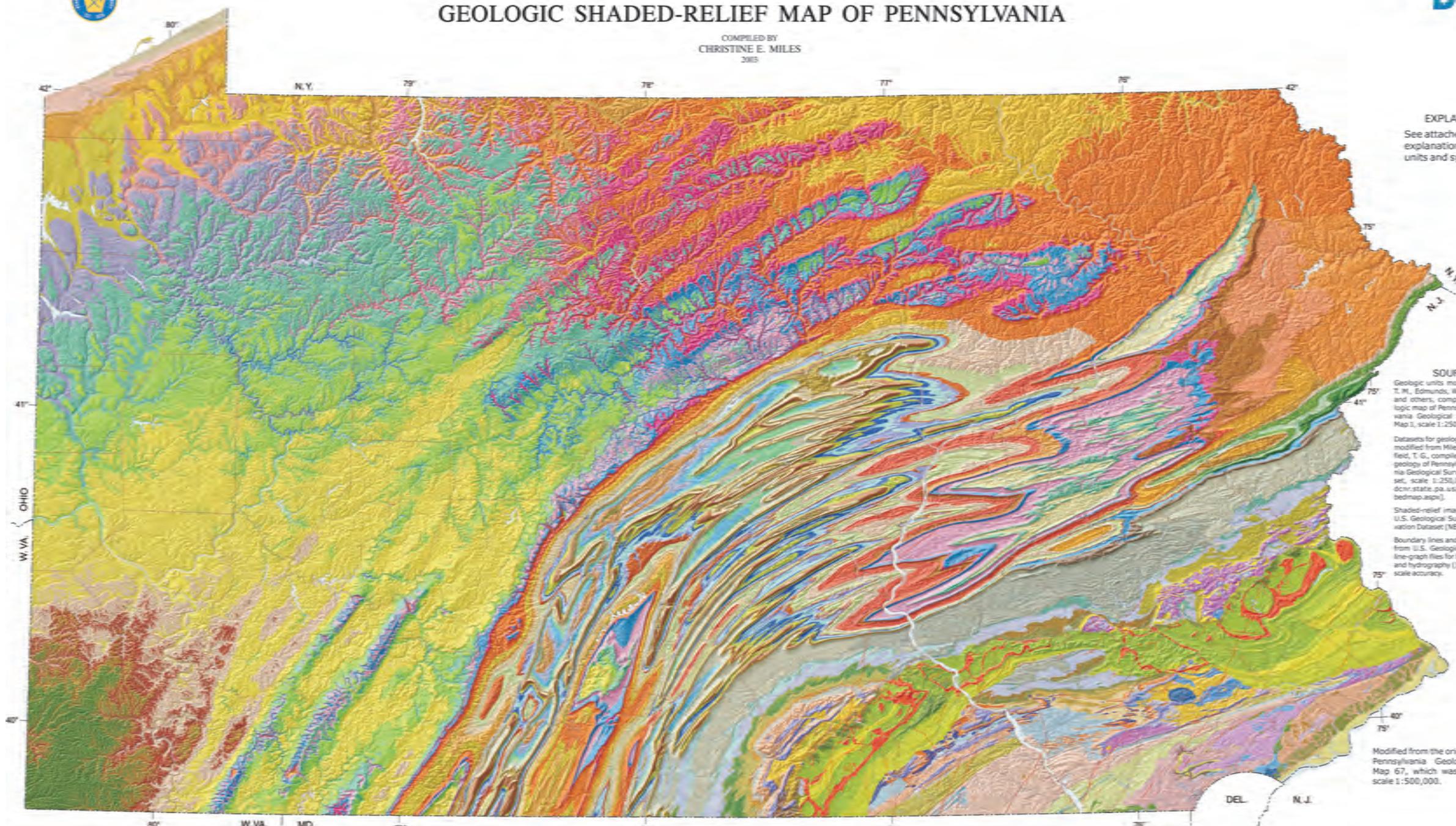
GEOLOGIC SHADED-RELIEF MAP OF PENNSYLVANIA

COMPILED BY
CHRISTINE E. MILES
2005

EXPLANATION
See attached sheets for
explanation of geologic
units and symbols.

SOURCES
Geologic units modified from Berg,
T. W., Edmunds, W. E., Geyer, A. R.,
and others, compilers, 1980, Geo-
logic map of Pennsylvania: Penn-
sylvania Geological Survey, 4th ser.,
Map 1, scale 1:250,000, 3 sheets.
Datasets for geologic units and faults
modified from Miles, C. E., and Blah-
field, T. G., compilers, 2003, Bedrock
geology of Pennsylvania: Penn-
sylvania Geological Survey, 4th ser., data-
set, scale 1:250,000 (<http://www.dcnr.state.pa.us/topogeo/map1/bedmap.aspx>).
Shaded-relief image prepared from
U.S. Geological Survey National Elevation
Dataset (NED) (1999).
Boundary lines and streams modified
from U.S. Geological Survey digital-
line-graph files for boundaries (1995)
and hydrography (1994), 1:100,000-
scale accuracy.

Modified from the original edition of
Pennsylvania Geological Survey
Map 67, which was published at
scale 1:500,000.



The beauty and complexity of Pennsylvania's geology and topography are strikingly portrayed on this geologic shaded-relief map. The map was prepared from several digital datasets, primarily the National Elevation Dataset (NED) for Pennsylvania, a product of the U.S. Geological Survey that provides regional elevation data for points spaced about every 30 meters, and the dataset for bedrock geology, a product of the Pennsylvania Geological Survey that contains geologic units and faults based on the 1980 state geologic map. The elevation data were used to generate the shaded-relief image, which

gives the map its three-dimensional appearance. The geologic units were generalized, and the colors of the units were made transparent by digital procedures so that they appear to be "draped" over the relief. The geologic shaded-relief map may be admired simply for its striking combination of colors and textural patterns, but users may also see in the map a new perspective on the regional distribution of geologic units, structural patterns, and topography, as well as the relationship between the geologic units and the regional landforms of the state.

EXPLANATION

QUATERNARY HOLOCENE Sands of Presque Isle PLEISTOCENE Trenton Gravel	TRIASSIC SOUTH-CENTRAL AND SOUTHEASTERN PENNSYLVANIA Limestone conglomerate Quartz fanglomerate	PERMIAN Greene Formation Washington Formation	MISSISSIPPIAN SOUTHWESTERN, CENTRAL AND EASTERN PENNSYLVANIA Mauch Chunk Formation WESTERN PENNSYLVANIA Shenango Formation through Cayuga Group, undivided NORTHERN, WESTERN, AND CENTRAL PENNSYLVANIA Burgoon Sandstone CENTRAL-WESTERN PENNSYLVANIA Burgoon Sandstone through Cayuga Group, undifferentiated EASTERN AND CENTRAL PENNSYLVANIA Pocano Formation
TERTIARY MIOCENE Pensauken and Bridgeton Formations, undifferentiated Bryn Mawr Formation	PENNSYLVANIAN APPALACHIAN PLATEAU AND BROAD TOP REGION Monongahela Group Conemaugh Group Allegheny Formation Pottsville Formation Allegheny and Pottsville Formations, undivided	DEVONIAN MIDDLE AND LOWER CENTRAL AND EASTERN PENNSYLVANIA Mahaningo Formation Marcellus Formation CENTRAL AND EAST-CENTRAL PENNSYLVANIA Onondaga and Old Port Formations, undivided	SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Wills Creek Formation Bloomsburg and Mifflintown Formations, undivided (Mifflintown Formation not present east of Perry County) Clinton Group Tuscarora Formation
CRETACEOUS LOWER(?) Palapsco(?) Formation	MONTGOMERY AND BUCKS COUNTIES Bramswick Formation Ludington Formation	ANTHRACITE REGION Llewellyn Formation Pottsville Formation	ORDOVICIAN CENTRAL PENNSYLVANIA Junata Formation Bald Eagle Formation Reedsville Formation Coburn Formation through Loyburg Formation, undivided Belleville and Auzanum Formations, undivided Hitzman and Stonehenge/Lark Formations, undivided
JURASSIC Kimberlite Sedimentary strata above Jacksonwald and Aspers basalt flows (see scale maps in Series and Adams Counties) Diabase	ADAMS, YORK, AND DAUPHIN COUNTIES Gethysburg Formation Heidlersburg Member of Gethysburg Formation Gethysburg conglomerate	DEVONIAN AND SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Keyser and Tonoloway Formations, undivided Keyser Formation through Mifflintown Formation, undivided Keyser Formation through Clinton Group, undivided Onondaga Formation through Pocano Island Formation, undivided EASTERN PENNSYLVANIA Salsmillik Falls Limestone through Pocano Island Formation, undivided	PRECAMBRIAN SOUTH MOUNTAIN Metabasalt Metamyolite Greensboro schist EASTERN PENNSYLVANIA Metadiabase Anorthosite Granitic, felsic, and intermediate gneisses, undivided Banded mafic gneiss Graphitic felsic gneiss Felsic and intermediate gneisses, undivided Hornblende gneiss Mafic gneiss Felsic to mafic gneiss
TRIASSIC(?) Quarryville Diabase	LANCASTER, LEBANON, AND BERKS COUNTIES Hammer Creek Formation (includes Hammer Creek conglomerate) MONTGOMERY AND BUCKS COUNTIES Bramswick Formation Ludington Formation ADAMS, YORK, AND DAUPHIN COUNTIES New Oxford Formation (includes New Oxford conglomerate) BERKS, CHESTER, MONTGOMERY, AND YORK COUNTIES Stockton Formation (includes Stockton conglomerate)	DEVONIAN UPPER WESTERN PENNSYLVANIA Berea/Cory Sandstone through Riceville Formation, undivided Berea Sandstone through Venango Formation, undivided Venango Formation Chadokoin Formation Grand Shale Northeast Shale	DEVONIAN AND SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Keyser and Tonoloway Formations, undivided Keyser Formation through Mifflintown Formation, undivided Keyser Formation through Clinton Group, undivided Onondaga Formation through Pocano Island Formation, undivided EASTERN PENNSYLVANIA Salsmillik Falls Limestone through Pocano Island Formation, undivided

EXPLANATION

DEVONIAN UPPER WESTERN PENNSYLVANIA Berea/Cory Sandstone through Riceville Formation, undivided Berea Sandstone through Venango Formation, undivided Venango Formation Chadokoin Formation Grand Shale Northeast Shale	DEVONIAN MIDDLE AND LOWER CENTRAL AND EASTERN PENNSYLVANIA Mahaningo Formation Marcellus Formation CENTRAL AND EAST-CENTRAL PENNSYLVANIA Onondaga and Old Port Formations, undivided	DEVONIAN AND SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Keyser and Tonoloway Formations, undivided Keyser Formation through Mifflintown Formation, undivided Keyser Formation through Clinton Group, undivided Onondaga Formation through Pocano Island Formation, undivided EASTERN PENNSYLVANIA Salsmillik Falls Limestone through Pocano Island Formation, undivided	SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Wills Creek Formation Bloomsburg and Mifflintown Formations, undivided (Mifflintown Formation not present east of Perry County) Clinton Group Tuscarora Formation	ORDOVICIAN CENTRAL PENNSYLVANIA Junata Formation Bald Eagle Formation Reedsville Formation Coburn Formation through Loyburg Formation, undivided Belleville and Auzanum Formations, undivided Hitzman and Stonehenge/Lark Formations, undivided
SOUTH-CENTRAL PENNSYLVANIA Catskill Formation Forekrobs Formation	DEVONIAN UPPER WESTERN PENNSYLVANIA Berea/Cory Sandstone through Riceville Formation, undivided Berea Sandstone through Venango Formation, undivided Venango Formation Chadokoin Formation Grand Shale Northeast Shale	DEVONIAN AND SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Keyser and Tonoloway Formations, undivided Keyser Formation through Mifflintown Formation, undivided Keyser Formation through Clinton Group, undivided Onondaga Formation through Pocano Island Formation, undivided EASTERN PENNSYLVANIA Salsmillik Falls Limestone through Pocano Island Formation, undivided	SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Wills Creek Formation Bloomsburg and Mifflintown Formations, undivided (Mifflintown Formation not present east of Perry County) Clinton Group Tuscarora Formation	ORDOVICIAN CENTRAL PENNSYLVANIA Junata Formation Bald Eagle Formation Reedsville Formation Coburn Formation through Loyburg Formation, undivided Belleville and Auzanum Formations, undivided Hitzman and Stonehenge/Lark Formations, undivided
WESTERN PENNSYLVANIA Berea/Cory Sandstone through Riceville Formation, undivided Berea Sandstone through Venango Formation, undivided Venango Formation Chadokoin Formation Grand Shale Northeast Shale	DEVONIAN UPPER WESTERN PENNSYLVANIA Berea/Cory Sandstone through Riceville Formation, undivided Berea Sandstone through Venango Formation, undivided Venango Formation Chadokoin Formation Grand Shale Northeast Shale	DEVONIAN AND SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Keyser and Tonoloway Formations, undivided Keyser Formation through Mifflintown Formation, undivided Keyser Formation through Clinton Group, undivided Onondaga Formation through Pocano Island Formation, undivided EASTERN PENNSYLVANIA Salsmillik Falls Limestone through Pocano Island Formation, undivided	SILURIAN CENTRAL AND EAST-CENTRAL PENNSYLVANIA Wills Creek Formation Bloomsburg and Mifflintown Formations, undivided (Mifflintown Formation not present east of Perry County) Clinton Group Tuscarora Formation	ORDOVICIAN CENTRAL PENNSYLVANIA Junata Formation Bald Eagle Formation Reedsville Formation Coburn Formation through Loyburg Formation, undivided Belleville and Auzanum Formations, undivided Hitzman and Stonehenge/Lark Formations, undivided

EXPLANATION

ORDOVICIAN WESTERN GREAT VALLEY Martinsburg Formation Chambersburg Formation St. Paul Group Beckmantown Group CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Hamburg sequence Martinsburg Formation Heehy Formation through Anville Formation, undivided Beckmantown Group EASTERN GREAT VALLEY Martinsburg Formation Jacksonburg Formation Beckmantown Group	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PROBABLY LOWER PALEOZOIC Pegmatite Anorthosite Granitic gneiss and granite Mafic gneiss Ultramafic rocks Beach Bottom Slate and Cariff Conglomerate, undivided Peters Creek Schist Marburg Schist Octoraro Formation "Glenam Wissahickon" Formation Wissahickon Formation Waterfield Marble Starrs Creek Metabasalt Cockeysville Marble Setters Quartzite	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PRECAMBRIAN SOUTH MOUNTAIN Metabasalt Metamyolite Greensboro schist EASTERN PENNSYLVANIA Metadiabase Anorthosite Granitic, felsic, and intermediate gneisses, undivided Banded mafic gneiss Graphitic felsic gneiss Felsic and intermediate gneisses, undivided Hornblende gneiss Mafic gneiss Felsic to mafic gneiss
ORDOVICIAN AND CAMBRIAN Conestoga Formation	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PROBABLY LOWER PALEOZOIC Pegmatite Anorthosite Granitic gneiss and granite Mafic gneiss Ultramafic rocks Beach Bottom Slate and Cariff Conglomerate, undivided Peters Creek Schist Marburg Schist Octoraro Formation "Glenam Wissahickon" Formation Wissahickon Formation Waterfield Marble Starrs Creek Metabasalt Cockeysville Marble Setters Quartzite	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PRECAMBRIAN SOUTH MOUNTAIN Metabasalt Metamyolite Greensboro schist EASTERN PENNSYLVANIA Metadiabase Anorthosite Granitic, felsic, and intermediate gneisses, undivided Banded mafic gneiss Graphitic felsic gneiss Felsic and intermediate gneisses, undivided Hornblende gneiss Mafic gneiss Felsic to mafic gneiss
ORDOVICIAN AND CAMBRIAN Conestoga Formation	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PROBABLY LOWER PALEOZOIC Pegmatite Anorthosite Granitic gneiss and granite Mafic gneiss Ultramafic rocks Beach Bottom Slate and Cariff Conglomerate, undivided Peters Creek Schist Marburg Schist Octoraro Formation "Glenam Wissahickon" Formation Wissahickon Formation Waterfield Marble Starrs Creek Metabasalt Cockeysville Marble Setters Quartzite	CAMBRIAN CENTRAL GREAT VALLEY AND NORTHWEST PENNSYLVANIA Richland Formation through Schappellstown Formation, undivided Stitz Creek and Buffalo Springs Formations, undivided Zook's Corner Formation Ledger Formation Kinzers Formation Lower (Middle?) Cambrian Chertion rocks, undivided Ebrook Formation WESTERN GREAT VALLEY AND SOUTH MOUNTAIN Shadygrove Formation Zuelliger Formation Ebrook Formation Waynesboro Formation Tombstown Formation Arlington and Harpers Formations, undivided Chickies Formation	PRECAMBRIAN SOUTH MOUNTAIN Metabasalt Metamyolite Greensboro schist EASTERN PENNSYLVANIA Metadiabase Anorthosite Granitic, felsic, and intermediate gneisses, undivided Banded mafic gneiss Graphitic felsic gneiss Felsic and intermediate gneisses, undivided Hornblende gneiss Mafic gneiss Felsic to mafic gneiss

SYMBOLS
 Fault
 Dikes
 Stream or river
 Water body
 County boundary
 State boundary

Activity 3: Land-cover Map

BUREAU OF TOPOGRAPHIC AND GEOLOGIC SURVEY

COMMONWEALTH OF PENNSYLVANIA DEPARTMENT OF CONSERVATION AND NATURAL RESOURCES

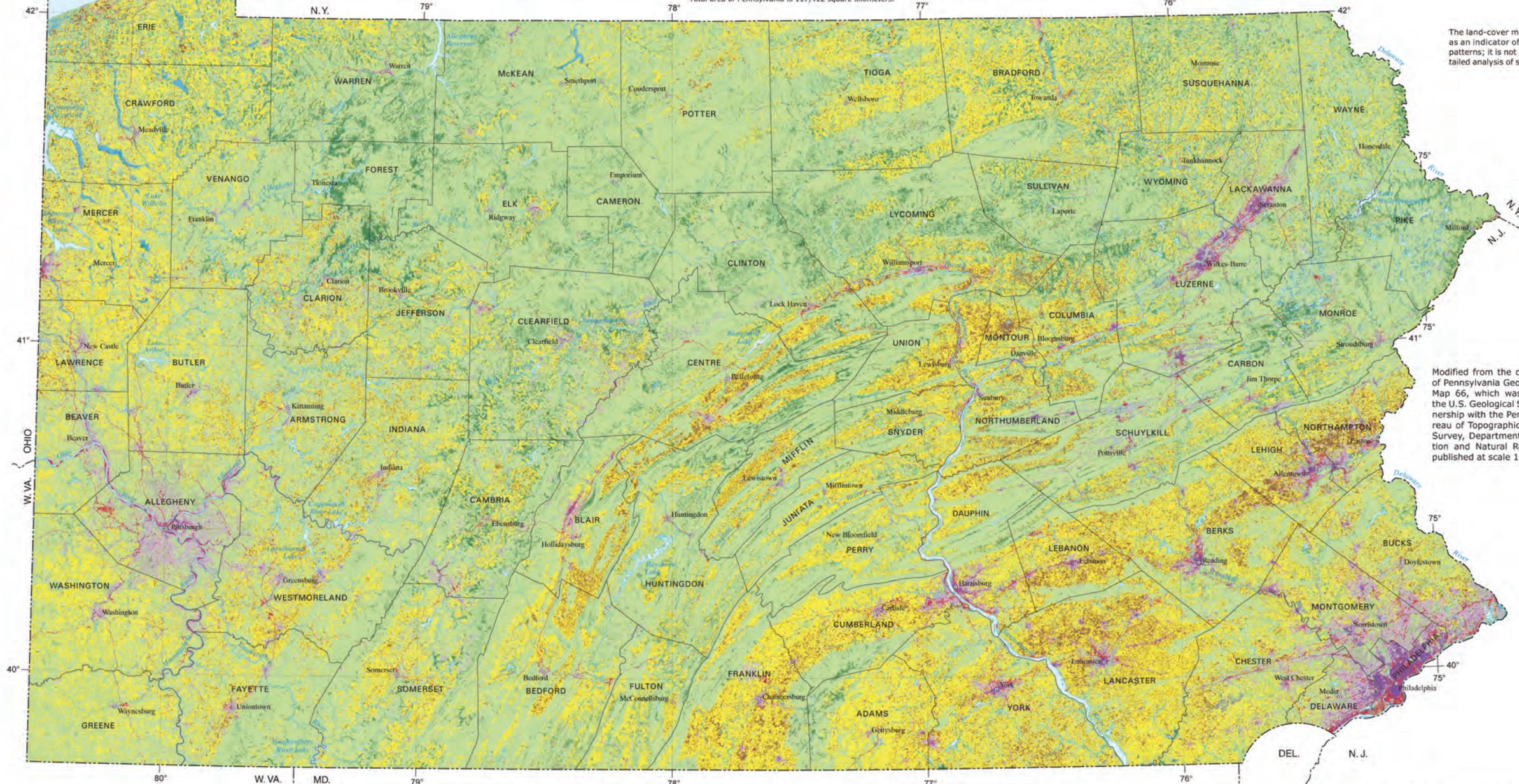
MAP 66 TABLOID EDITION



LAND-COVER MAP OF PENNSYLVANIA

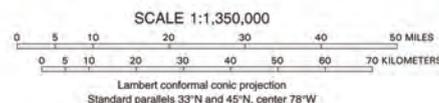
DEVELOPED		FORESTED UPLAND		HERBACEOUS PLANTED/CULTIVATED		BARREN		WATER AND WETLANDS			
	Low Intensity Residential 3,003 sq km 2.56%		Deciduous Forest 60,965 sq km 51.92%		Pasture/Hay 26,147 sq km 22.27%		Bare Rock/Sand/Clay 2 sq km 0.01%		Open Water 2,703 sq km 2.30%		Woody Wetlands 739 sq km 0.63%
	High Intensity Residential 458 sq km 0.39%		Evergreen Forest 5,313 sq km 4.53%		Row Crops 5,747 sq km 4.89%		Quarries/Strip Mines/Gravel Pits 934 sq km 0.79%		Emergent Herbaceous Wetlands 233 sq km 0.20%		
	Commercial/Industrial/Transportation 1,311 sq km 1.12%		Mixed Forest 9,336 sq km 7.95%		Urban/Recreational Grasses 214 sq km 0.18%		Transitional 307 sq km 0.26%				

Total area of Pennsylvania is 117,412 square kilometers.



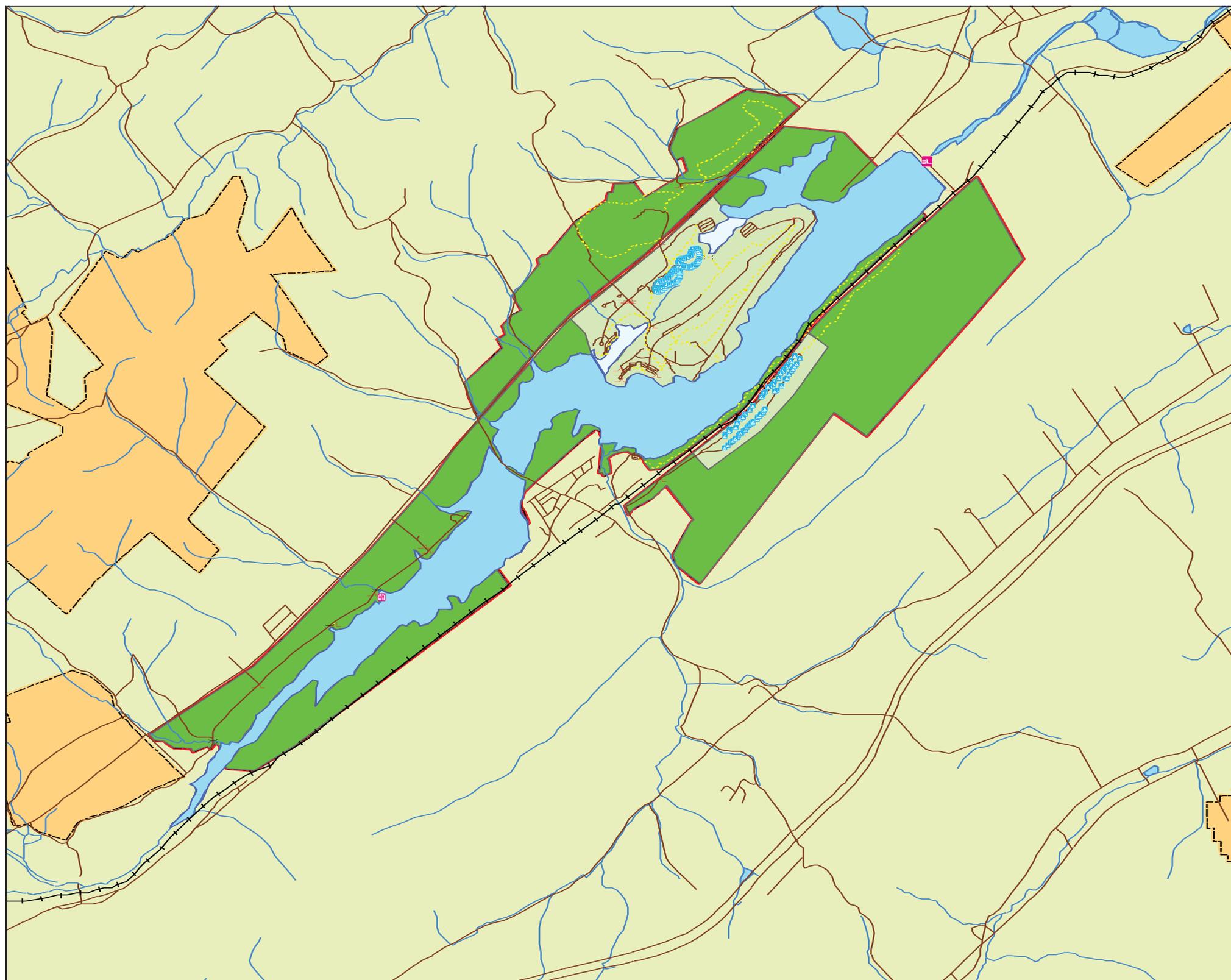
The land-cover map is best taken as an indicator of broad regional patterns; it is not intended for detailed analysis of small areas.

Modified from the original edition of Pennsylvania Geological Survey Map 66, which was prepared by the U.S. Geological Survey in partnership with the Pennsylvania Bureau of Topographic and Geologic Survey, Department of Conservation and Natural Resources, and published at scale 1:500,000.



The land cover shown on this map was produced from the 1992 National Land Cover Data (NLCD) for Pennsylvania, a product of a cooperative project between the U.S. Geological Survey and the U.S. Environmental Protection Agency to produce a consistent land-cover data layer for the conterminous United States. The NLCD was developed from Landsat Thematic Mapper (TM) imagery recorded primarily during the summer months of 1986 to 1993 and having a spatial resolution of 30 meters. Eleva-

tion data, population density data, and National Wetlands Inventory data were used to refine the land-cover classifications. Water bodies were derived from U.S. Geological Survey digital line graphs (1:100,000-scale). The NLCD may be used for a variety of regional applications, including watershed management, environmental inventories, transportation modeling, fire risk assessment, and land management. For more information on the NLCD, see <http://landcover.usgs.gov/natl/landcover.php>.



Legend

- Dam
- Restroom
- Bridge
- Gate
- Campsite
- Trail
- Railroad
- Roads
- Parking Lots
- Streams
- Lake
- Game Lands
- State Parks

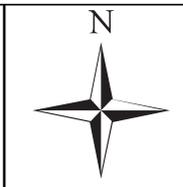
COMMONWEALTH OF PENNSYLVANIA
DEPARTMENT OF CONSERVATION
AND NATURAL RESOURCES
BUREAU OF STATE PARKS



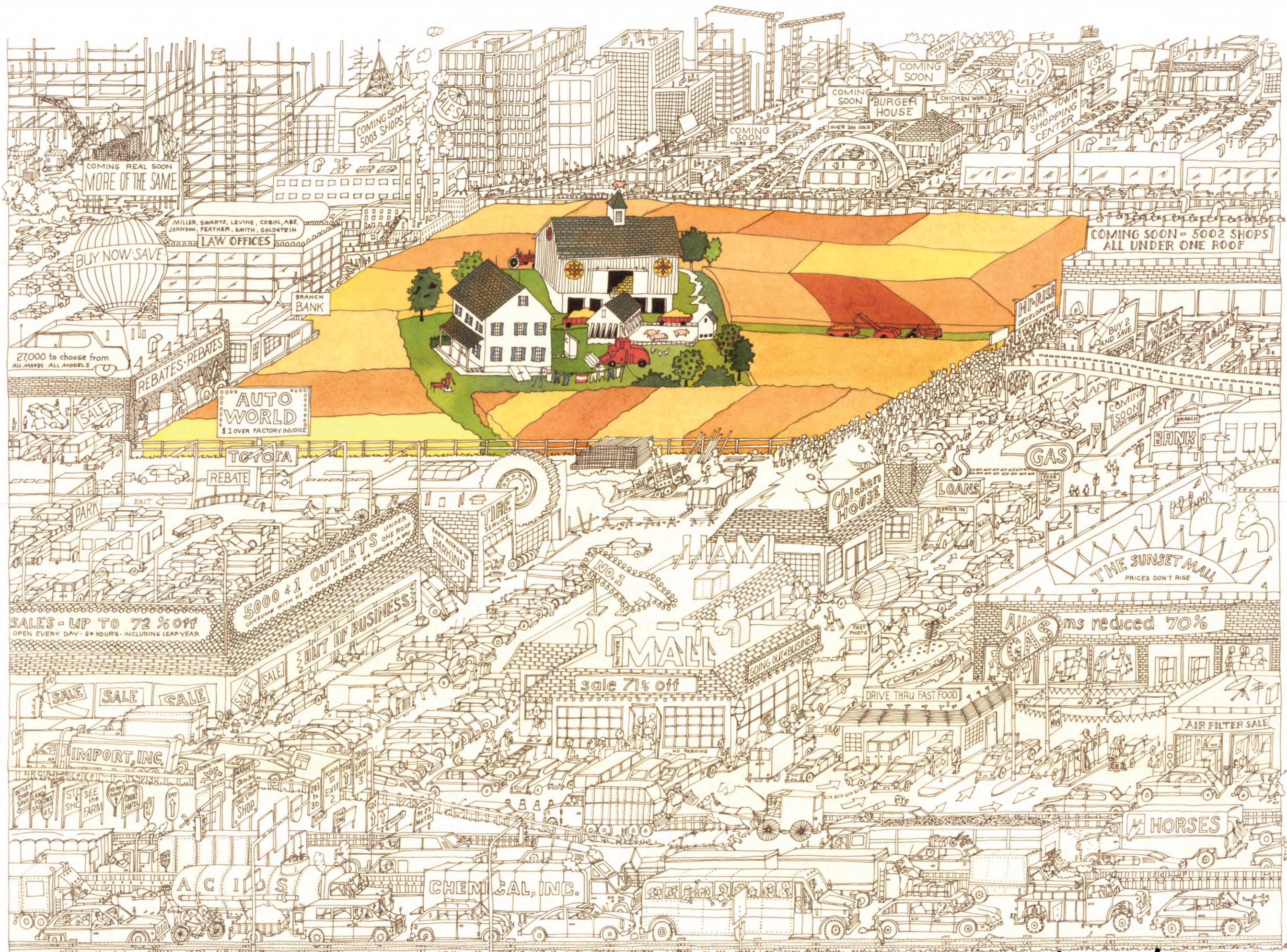
RESOURCES MANAGEMENT SECTION
PARKS RESOURCE MANAGEMENT
INFORMATION SYSTEMS (PRMIS)

Bald Eagle State Park

Base Map



Created By:
Jeff Johns, GIS Coordinator



94/160

THE LAST STRAW

B. JOHNSON