

ECONOMIC IMPACTS OF PROTECTING RIVERS, TRAILS, AND GREENWAY CORRIDORS

A RESOURCE BOOK

**RIVERS, TRAILS AND CONSERVATION ASSISTANCE
NATIONAL PARK SERVICE**

1995
Fourth Edition
Revised

U. S. DEPARTMENT OF THE INTERIOR NATIONAL PARK SERVICE

RIVERS, TRAILS AND CONSERVATION ASSISTANCE PROGRAM

Rivers, Trails and Conservation Assistance is a program of the National Park Service which cooperates with states, local governments, and citizen groups to protect and restore river corridors and to establish trail systems. The goal of this outreach program is to share the expertise of the National Park Service with groups working to protect their river, trail and greenway resources.

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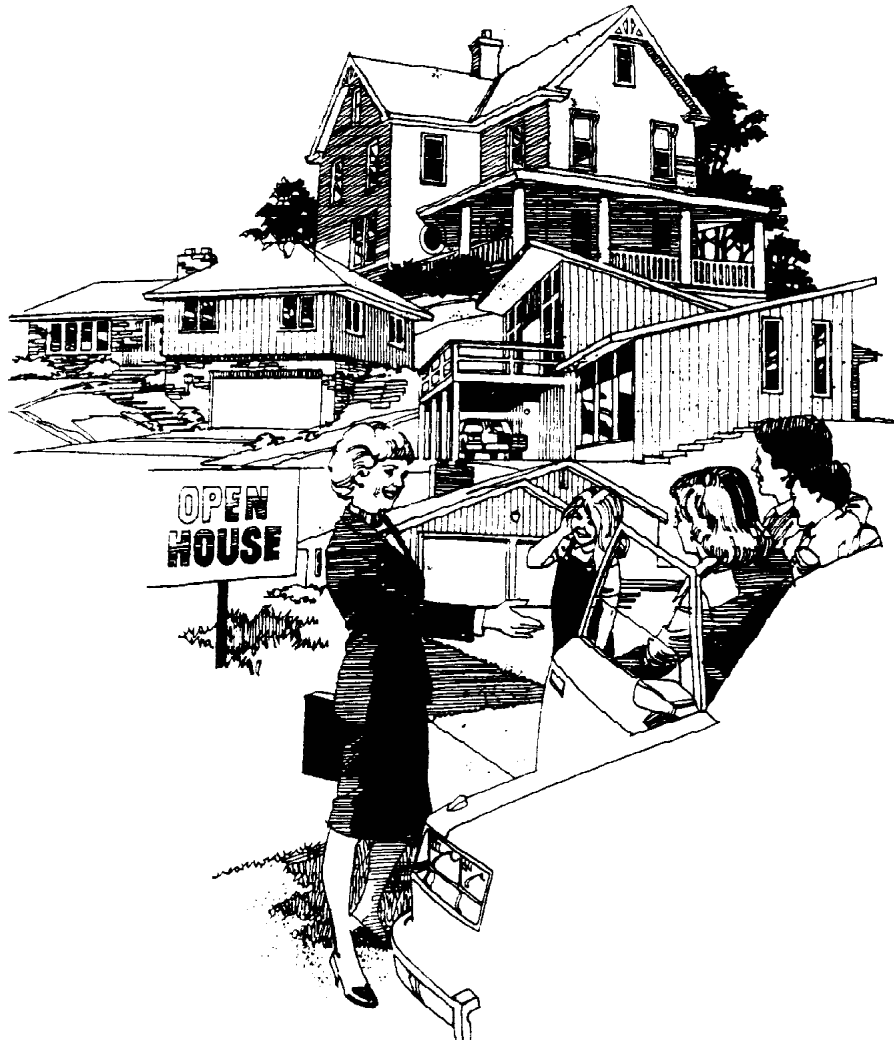
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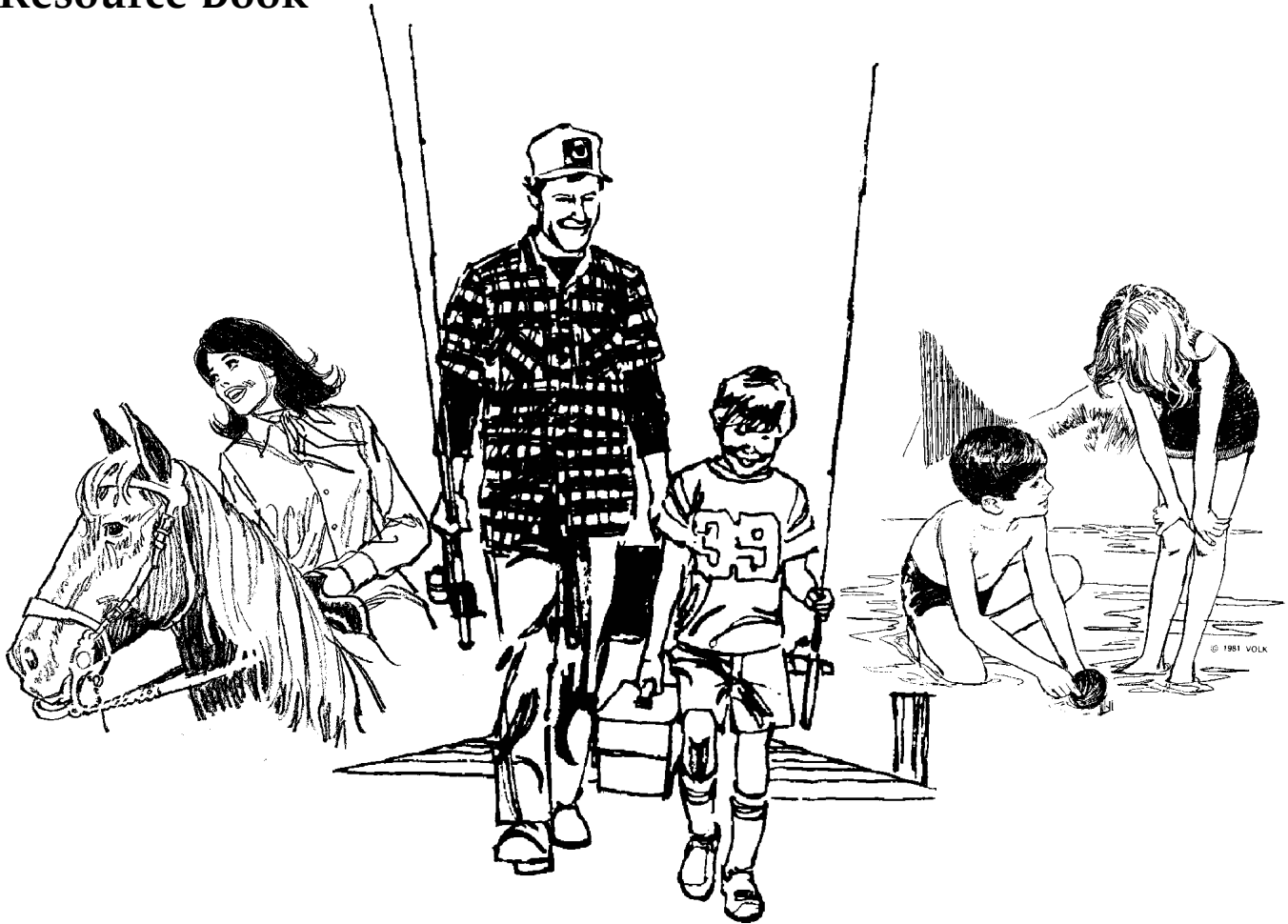
Real Property Values



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What You Need to Know About this Resource Book



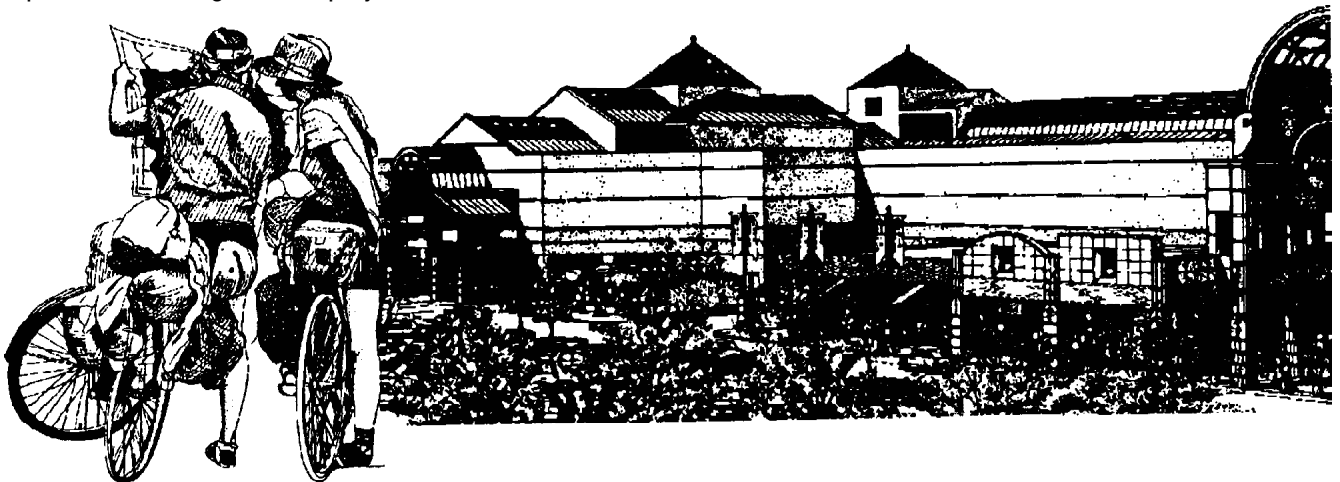
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Rivers, trails, and greenway corridors (linear open spaces connecting recreational, cultural and natural areas) are traditionally recognized for their environmental protection, recreation values, and aesthetic appearance. These corridors also have the potential to create jobs, enhance property values, expand local businesses, attract new or relocating businesses, increase local tax revenues, decrease local government expenditures, and promote a local community. An example which illustrates the range of possible economic benefits is the Delaware and Raritan Multi-Use Trail, built along an abandoned railroad and canal in Central New Jersey.

■ “Property values adjacent to the park and trail have increased, according to James Amon, Executive Director of the D&R Canal Commission. Private businesses have been created in response to user demand. It is now common to see concessionaires and rental establishments catering to the many users of the trail and canal. An historic train station in Lambertville was recently restored into a restaurant and a hotel was built nearby which profits greatly from its trail neighbor. New proposals for trail-oriented development are currently in the works, including a combination canoe and bicycle rental outfitter” (*Railroads Recycled*, Rails to Trails Conservancy, Washington, D.C., 1990).

The Rivers, Trails and Conservation Assistance (RTCA) program of the National Park Service has produced this Resource Book to help local-level planners, park and recreation administrators, citizen activists, and non-profit groups understand and communicate the potential economic impacts of their proposed or existing corridor project.



Economics Clearinghouse

An Economics Clearinghouse has also been initiated by RTCA to encourage the exchange of up-to-date information on the economic impacts of rivers, trails and greenways. This Clearinghouse will be a listing of case studies, economic impact analyses, and other reference material. Most of these references, as of 1990, are cited at the end of each section of this Resource Book. For further information regarding the Clearinghouse, contact the Rivers, Trails and Conservation Assistance Program at the address listed at the end of this section.

Purpose of this Resource Book

The aims of this Resource Book are specific and are as follows:

- ☐ Encourage local professionals and citizens to use economic concepts as part of their effort to protect and promote greenways
- ☐ Provide examples of how greenways and parks have benefited local and regional economies
- ☐ Demonstrate how to determine the potential economic impacts of river, trail, and greenway projects
- ☐ Suggest other sources of information

Economic Impacts of Protecting Rivers, Trails and Greenway Corridors is intended to be a compilation of the most recent information on this subject area. Many of the examples, and case studies, and information available focus on more traditional parks, rather than linear parks, trails, and river corridors. However, greenways and traditional parks often provide many of the same amenities. The growing interest in applying economic rationales to support greenway protection efforts will likely result in more economic analyses and studies.

Intrinsic Values

This Resource Book is not intended to diminish the importance of the intrinsic environmental and recreational benefits of rivers, trails, and greenway corridors. The non-monetary value of open space should continue to be the primary emphasis in conservation efforts. In some cases, it may be more appropriate to stress intrinsic environmental benefits rather than spend considerable time and effort conducting economic analyses. In other cases, especially in developing areas, clear communication of intrinsic values *and* potential economic impacts will help decisionmakers recognize rivers, trails, and greenway corridors as vital to the well-being of a community.

Resource Book Format

We endeavored to make this Resource Book “user friendly”. It is not intended to be a definitive textbook on economics. Rather, it is intended to be used as a framework for understanding potential economic impacts of greenways. We used a loose-leaf format to make it easier for you to add economic information about your local project and community.

The Resource Book contains eight sections, each focusing on a different set of economic rationales, and appendices. The sections included in the Resource Book are:

- Real Property Values
- Expenditures by Residents
- Commercial Uses
- Tourism
- Estimating the Effects of Spending
- Agency Expenditures
- Corporate Relocation and Retention
- Public Cost Reduction
- Benefit Estimation

These sections are summarized in Table 1.



Table 1

Summary of Resource Book Sections	
Section	Descriptions
Real Property Values	Presents evidence that greenways and trails may increase nearby property values. Demonstrates how an increase in property values can increase local tax revenues and help offset greenway acquisition costs.
Expenditures by Residents	Explains how spending by local residents on greenway-related activities can help support recreation-oriented businesses and employment, as well as other businesses which are patronized by greenway, river and trail users.
Commercial Uses	Describes the potential for concessions and special events within the greenway, which can boost local business as well as raise funds for the greenway itself.
Tourism	Describes how greenways, rivers and trails which attract visitors to a community support local businesses such as lodging, food establishments, and recreation-oriented services. Greenways may also help improve the overall appeal of a community to visitors and increase tourism.
Estimating the Effects of Spending	Explains direct and indirect effects of greenway-related expenditures and how to estimate economic impacts of your project.
Agency Expenditures	Explains how the agency responsible for managing a river, trail or greenway can support local businesses by purchasing supplies and services. Jobs created by the managing agency may also help increase local employment opportunities and benefit the local economy.
Corporate Relocation and Retention	Presents evidence that the quality of life of a community is an increasingly important factor for retaining and attracting corporations and businesses, and that greenways, rivers and trails can be important contributors to the quality of life. Corporations bring jobs to a community and help support businesses which provide services and products to corporations and their employees.
Public Cost Reduction	Explains how conservation of rivers, trails and greenways may help local governments and other public agencies to reduce long term costs for services such as roads and sewers; reduce costs resulting from injury to persons and property from hazards such as flooding; and avoid potential costly damages to natural resources such as water and fisheries.
Benefit Estimation	Describes how the recreational benefits of rivers, trails and greenways can be estimated in monetary values. Users can be surveyed to estimate the value of a visit to a greenway.

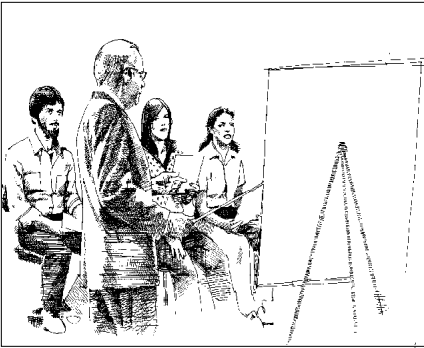
How to Use the Resource Book

A good initial step is to skim the entire resource book to understand the range and scope of the economic concepts and strategies included. Before working through a specific section, you should prepare a detailed description of your greenway project, as well as the geographic area within which economic impacts will be determined. Both the project and geographic area should be mapped and described in a narrative. This will ensure you are working from a consistent information base.

It is also important to address the proposed scale and estimated use of the project because impacts vary for different greenways. Potential economic impacts will largely depend upon the amenities offered, the scale and magnitude of your project, accessibility, level of projected use, and intended users. The greater the size or amenities provided by the project and the heavier the potential use, the greater the potential economic impacts are likely to be. If your goal is to maximize economic impacts, it is important that you keep these factors in mind throughout the planning stages of your project.

Once the project and geographic area are clearly identified and you have reviewed the sections, you should select one or more methods of analysis and work through each applicable section. We recommend you select sections which address primary concerns to your community and decisionmakers.

After you select the appropriate section(s), you should read them carefully. You are encouraged to use references, handbooks, textbooks, or training which may help in understanding the concepts and the strategies. Once again, we remind you that detailed economic studies requiring the services of a trained economist may also be warranted. If an economic issue is likely to be the key factor in the decisionmaker's evaluation of a project, we recommend a trained economist be involved as either a volunteer or paid consultant to evaluate or perform the appropriate analyses.



Assistance from Local Economists

This Resource Book is not intended as a substitute for more detailed economic studies, which may be necessary for larger-scale or controversial projects. Our purpose is to inform individuals and groups working toward corridor conservation about the usefulness of economics in conservation planning, introduce basic economic concepts, and methods of analysis. You are encouraged to seek help from local professionals who have economic credentials to enhance the credibility of your findings.

Possible sources of expertise that may help you include:

- ☐ Economists (banks, marketing firms, large corporations)
- ☐ Economic consulting firms
- ☐ University business or economics classes, masters or doctoral candidates, and their professors
- ☐ Staff with an economics background

Acknowledgements

The idea for the Resource Book was conceived by Ray Murray, Chief of Planning, Grants and Environmental Quality for the Western Region of the National Park Service (NPS). Principal investigative writers and editors for the Resource Book were Ray Murray and Western Region Rivers, Trails and Conservation Assistance staff members Kathleen Williams, Susan Harris, and Ericka Campos. We thank all those who have provided valuable input to this project and who served as our official, hard working reviewers, including Joan Chaplick, John Crompton, John Loomis, Stuart McDonald, William Penn Mott, Richard Trudeau, Keith Hay, Alan French, Bill Carle, John Haines, Gary Guthrie, George Goldman, and Rivers, Trails and Conservation Assistance national and regional staffs. Also, thanks to Eugene Fleming for providing graphic design.

We also thank The Conservation Fund for contributing to the printing of the Resource Book. The Conservation Fund is a national, non-profit, scientific and educational organization dedicated to the conservation and wise stewardship of America's natural heritage.

The American Greenways Program of the Conservation Fund was established in 1987 to meet the informational and service needs of greenway projects at the local, state, and national levels. The program includes, among other things: the publication and distribution of the book *Greenways for America*; in cooperation with the National Park Service, a monograph entitled *The Ecology of Greenways*; a national greenways data base and referral service that will enable individuals, organizations, and public agencies to network with one another; grants for demonstration projects that are models of innovative approaches to financing, economic analysis, or other areas related to greenway planning; and other projects to advance and promote the greenway concept.

National Park Service staff are available to assist in using this Resource Book to protect and promote rivers, trails, and greenways in your community. Your comments, suggestions, and additional case studies for this Resource Book would be greatly appreciated. Please contact the Rivers, Trails and Conservation Assistance Program (RTCA):

Rivers, Trails and Conservation Assistance
National Park Service, Western Region
600 Harrison Street, Suite 600
San Francisco, CA 94107-1372
(415) 744-3975

A list of all RTCA regional offices is included as Appendix D.

Greenway corridors provide a variety of amenities, such as attractive views, open space preservation, and convenient recreation opportunities. People value these amenities. This can be reflected in increased real property values and increased marketability for property located near open space. Developers also recognize these values and incorporate open space into planning, design, and marketing new and redeveloped properties.

Natural open space and trails are prime attractions for potential home buyers in 1995. According to research conducted by American Lives, Inc. for the real estate industry, 77.7 per cent of all home buyers and shoppers in the study rated natural open space as either “essential” or “very important” in planned communities. Walking and bicycling paths ranked third. A community design which offers quiet and low traffic was the top ranked feature.

A research spokesperson commented that consumers are increasingly putting a higher premium on interaction with the environment through inclusion of natural, open space and nature paths. The findings of this most recent study differ greatly from the 1980's preferences, which included tennis courts, swimming pools, and golf courses. (San Francisco Chronicle, January 8, 1995)

Increased Property Values - Quantified

The effect on property values of a location near a park or open space has been the subject of several studies. Statistical analyses have been a common method of attempting to measure this effect. These analyses attempt to isolate the effect of open space from other variables which can affect property values, such as age, square footage, and condition of homes. Isolating the effect of open space can be difficult and results have been varied. Nevertheless, many studies have revealed increases in property values in instances where the property is located near or adjacent to open spaces. Most studies have addressed traditional parks or greenbelts (large open space areas), though a few studies are available for greenways.

■ A study of property values near greenbelts in Boulder, Colorado, noted that housing prices declined an average of \$4.20 for each foot of distance from a greenbelt up to 3,200 feet. In one neighborhood, this figure was \$10.20 for each foot of distance. The same¹⁻³ study determined that, other variables being equal, the average

value of property adjacent to the greenbelt would be 32 percent higher than those 3,200 feet away (Correll, Lillydahl, and Singell, 1978).

■ The amenity influence of greenbelt land on property values also applies to privately held greenbelt land, according to a study of the Salem metropolitan area in Oregon. In this case, the greenbelt was comprised of rural farmland. Greenbelt zoning had been applied to this prime farmland beginning in 1974 in an effort to contain urban sprawl and preserve farmland. The study found that urban land adjacent to the greenbelt was worth approximately \$1,200 more per acre than urban land 1,000 feet away from the greenbelt boundary, all other things being equal. However, rural land values within the restrictive zoning actually decreased in value by \$1,700 per acre (Nelson, 1986).

■ A recent study of market appreciation for clustered housing with permanently-protected open space in Amherst and Concord, Massachusetts, found that clustered housing with open space appreciated at a higher rate than conventionally-designed subdivisions. Appreciation was measured as the percent increase in open-market sales price. The study compared one clustered development and one conventional subdivision in each community. The clustered homes studied in Amherst appreciated at an average annual rate of 22%, as compared to an increase of 19.5% for the more conventional subdivision. This translated into a difference in average selling price of \$17,100 in 1989 between the two developments. In both Amherst and Concord, the homes in the clustered developments yielded owners a higher rate of return, even though the conventional subdivisions had considerably larger lot sizes (Lacy, 1990).

■ An analysis of property surrounding four parks in Worcester, Massachusetts, showed a house located 20 feet from a park sold for \$2,675 (1982 dollars) more than a similar house located 2,000 feet away (More, Stevens, and Allen, 1982).

■ In the neighborhood of Cox Arboretum, in Dayton, Ohio, the proximity of the park and arboretum accounted for an estimated 5 percent of the average residential selling price. In the Whetstone Park area of Columbus, Ohio, the nearby park and river were estimated to account for 7.35 percent of selling prices (Kimmel, 1985).

■ In the vicinity of Philadelphia's 1,300 acre Pennypack Park, property values correlate significantly with proximity to the park. In 1974, the park accounted for 33 percent of the value of a plot of land (when the land was located 40 feet away from the park), nine percent when located 1,000 feet away, and 4.2 percent at a distance of 2,500 feet. (Hammer, Coughlin and Horn, 1974).

The effects of proximity to open space may not be as simply quantified as in the above studies. Many studies (Brown and Connelly; Colwell, 1986) have found the potential for an increase in property value depends upon the characteristics of the open space and the orientation of surrounding properties. Property value increases are likely to be highest near those greenways which:

- ☐ highlight open space rather than highly developed facilities
- ☐ have limited vehicular access, but some recreational access
- ☐ have effective maintenance and security

■ Similar residential properties near a park in Columbus, Ohio, were compared to determine if proximity to the park affected property values. Conclusions showed properties where the homes that faced the park sold for between seven to 23 percent more than homes one block from the park. Those homes that backed up onto the park sold at values similar to properties one block away (Weicher and Zerbst, 1973).

Some high use areas can actually have a negative influence on adjacent property, but still contribute to increased value of nearby properties. Lyon (1972) showed this relationship, as it pertained to traditional parks, graphically in Figure 1-1 on page 1-6.

Figure 1-1

**Net Effects Curve for Property Value Increases
Due to Proximity to Parks**

The upper graph shows the increase in property values due to proximity to a park. Below that is the effect on property values due to a highly developed and used park.

One implication of these studies might be that increases in nearby property values depend upon the ability of developers, planners, and greenway proponents to successfully integrate neighborhood development and open space. Designing greenways to minimize potential homeowner - park user conflicts and maximize the access and views of the greenway can help to avoid a decrease in property values of immediately adjacent properties.

Increased Property Values - Surveyed

Survey methodology has also been used to document perceived increases in property values. Surveys can be less time-consuming, less expensive, and generally require less specialized expertise than detailed statistical analyses. The following findings are based upon surveys of property owners and real estate professionals.

■ In a recent study, *The Impacts of Rail-Trails*, landowners along three rail-trails reported that their proximity to the trails had not adversely affected the desirability or values of their properties. Along the suburban Lafayette/Moraga Trail in California, the majority of the owners felt that the trail would make their properties sell more easily and at increased values. The other two trails studied included the Heritage Trail in eastern Iowa and the St. Marks Trail in Florida. (National Park Service and Pennsylvania State University, 1992)

■ A study completed by the Office of Planning in Seattle, Washington, for the 12 mile Burke-Gilman trail was based upon surveys of homeowners and real estate agents. The survey of real estate agents revealed that property near, but not immediately adjacent to the trail, sells for an average of 6 percent more. The survey of homeowners indicated that approximately 60 percent of those interviewed believed that being adjacent to the trail would either make their home sell for more or have no effect on the selling price (Seattle Office of Planning, 1987).

■ In a survey of adjacent landowners along the Luce Line rail-trail in Minnesota, the majority of owners (87 percent) believed the trail increased or had no effect on the value of their property. Fifty six percent of farmland residents thought the trail had no effect on their land values. However, 61 percent of the suburban residential owners noted an increase in their property value as a result of the trail. New owners felt the trail had a more positive effect on adjacent property values than did continuing owners. Appraisers and real estate agents claimed that trails were a positive selling point for suburban residential property, hobby farms, farmland proposed for¹⁻⁷

development, and some types of small town commercial property (Mazour, 1988).

■ A survey of Denver residential neighborhoods by the Rocky Mountain Research Institute shows the public's increasing interest in greenways and trails. From 1980 to 1990, those who said they would pay extra for greenbelts and parks in their neighborhood rose from 16 percent to 48 percent (Rocky Mountain Research Institute, 1991).

Increased Property Tax Revenues

An increase in property values generally results in increased property tax revenues for local governments. Many arguments made for park and open space investment claim these acquisitions pay for themselves in a short period of time, due in part to increased property tax revenues from higher values of nearby property. A point to remember, however, is that many jurisdiction's assessments of property values often lag behind market value. Furthermore, in those states which have passed legislation limiting real estate tax increases, such as California's Proposition 13, property tax revenues also lag behind increases in market value.

■ A study of the impacts of greenbelts on neighborhood property values in Boulder, Colorado, revealed the aggregate property value for one neighborhood was approximately \$5.4 million greater than if there had been no greenbelt. This results in approximately \$500,000 additional potential property tax revenue annually. The purchase price of the greenbelt was approximately \$1.5 million. Thus, the potential increase in property tax alone could recover the initial cost in only three years. In the study, the authors did note that this potential increase is overstated in part because actual assessments may not fully capture greenbelt benefits (Correll, Lillydahl, and Singell, 1978).

Construction/Development Perspectives

Proximity to greenways, rivers, and trails can increase sales price, increase the marketability of adjacent properties, and promote faster sales. Clustering the residential development to allow for establishment of a greenway might also

decrease overall development costs and result in greater profits for the developer.

■ McCormick Woods, a 1,400 acre development in Port Orchard, Washington is more than half open space, which includes approximately 200 acres of wetlands and headwaters of streams. Much effort was made to mitigate the impacts of construction through the use of buffers and enhancements made to lakes, ponds and streams within the site. A wildlife sanctuary was established and covenants were created to protect wildlife from domestic pets and prevent homeowners from using pesticides and fertilizers which could runoff into the wetlands. McCormick Woods won a special environmental award in a 1990 Puget Sound competition (Fletcher, 1991).

■ Along Milwaukee's increasingly popular riverfront private development has steadily increased. In the 1980s, a real estate developer built a series of condominiums, including boat slips, along the river. The units have steadily increased in demand and selling price over the years. The river's popularity in this area has grown and it is now one of the highlights of downtown Milwaukee (Woods, 1992).

■ A land developer from Front Royal, Virginia, donated a 50 foot wide seven-mile easement for the Big Blue Trail in northern Virginia after volunteers from the Potomac Appalachian Club approached him to provide a critical trail link along the perimeter of his second-home subdivision. The developer recognized the amenity value of the trail and advertised that the trail would cross approximately 50 parcels. All tracts were sold within four months (American Hiking Society, 1990).

■ Thirty-five acres was set aside as a protected corridor through a 71-lot subdivision for approximately one-half mile of the Ice Age Trail in Wisconsin. The Ice Age Trail Foundation had purchased the parcel when the land became available for sale and was being considered for development. Later the Foundation sold the parcel to a subdivision developer, after placing an easement on the trail¹⁻⁹ corridor. The developer now touts the easy access to the Ice Age

Trail in promotional subdivision brochures (Pathways Across America, Winter 1991).

■ Hunters Brook (Yorktown Heights, New York), a cluster development of 142 townhouse-style condominium units ranging in price from \$170,000 to \$260,000, was designed to capitalize on the amount of open space in the development. The homes were clustered on 30 acres, preserving 97 acres of natural sloping woods, including a dense pine forest. Care had been taken to retain local wildlife, thus adding to the rural setting. One of the developers commented, "It may not be the woods that bring (buyers) to us initially, but it seems to make all the difference when they see what it's like" (Brooks, 1987).

■ In a 1970 study of a 760 square mile area in Maryland, noted planner Ian McHarg projected that uncontrolled development would yield \$33.5 million in land sales and development profits by 1980. Profits resulting from development plans designed to accommodate the same population level, while preserving desirable open spaces, would exceed \$40.5 million. The resulting additional \$7 million translated into an increase in value of \$2,300 per acre for the planned 3,000 acres of open space (Caputo, 1979).

Local ordinances may also provide incentives for developers to set aside open space and habitat areas. In Lee County, Florida an ordinance gives developers incentives to preserve critical habitat. In return for preserving habitat areas, developers are permitted to transfer development rights from the preserved area to other portions of the parcel. Habitat buffer areas can also fulfill applicable open space requirements and can be credited toward regional park impact fees.

How To Use These Rationales in Your Community

Quote examples. Use the examples given in this section in your presentations, portfolios, letters to elected officials, newsletters to the public, and public meetings.

Determine whether any studies have been done. Contact the local university and relevant agencies to see if anyone has documented the effects of greenways on property values in your community. If not, maybe someone is interested in doing so.

Interview real estate sales people, appraisers, and assessors. These professionals have a good idea of how open space amenities affect land values. Ask whether properties near your greenway are easier or more difficult to sell; whether they sell for more or less than other properties; and whether agents use proximity to the greenway in their advertisements. Sample survey questions are listed in Appendix C. If your greenway is planned for a rural or undeveloped area, ask what effect the greenway will have on the development potential of surrounding land. In addition to being knowledgeable, these people can provide valuable community and business support.

Survey local residents. Contact a sample of residents near and adjacent to the greenway. You may be able to get residents' names and street addresses from the Assessors Office. The larger the sample, the more reliable the results, especially if you will be dividing respondents into subgroups.

The information will be easier to synthesize if you construct a standard questionnaire. Make questions clear and concise, and include the full spectrum of potential answers. Make sure the questions you ask elicit the exact information you need. Try to keep interviews to ten minutes or less. Test your interview on co-workers before you begin and get their suggestions on how to improve it. Also test your survey on homeowners. Instruct your interviewers on good interview techniques before they begin interviewing. Take a look at Appendix C for some examples of survey questions.

The greenway may affect different resident groups in various ways. Thus, you may wish to categorize responses by condominium owners or single-family home owners; adjacent property owners versus nearby property owners; long-

term owners versus new residents. Be certain you collect information needed to categorize the responses. These questions should be listed at the end of the survey. Summarize the results of the survey by including the total number of people interviewed and the relative percentages responding to various questions.

Document how the greenway has changed the design of the neighborhood. Where vacant lots existed, are people now building expensive homes? Did development orient houses to face the greenway? Has access from nearby homes changed? Have property owners constructed gate entries to the adjacent greenway where solid fences existed before? Photographs, slides, and videos can be very useful to document these changes. This information will likely be qualitative but helpful, especially if residents who previously opposed the greenway now value their proximity to it.

Document developers' use of open space in designing and marketing their properties. Where have developers incorporated open space into their design plans? Have they provided access (e.g. a bridge, spur trail, undercrossing) from developments to a nearby greenway? Ask them about their perception of the effect of open space on prices, sales or rental time, and the overall market response to their product. Collect examples where proximity to open space has been used in sales advertising. Check real estate listings, magazines, weeklies, and promotional announcements for descriptions of open space amenities.

Document property sale price increases before and after the greenway was established. Obtain sales records for similar properties in the area from at least five years before the greenway was established to five years after. Or, you might contact real estate appraisers for information on property value increases. Real estate brokers may be able to provide general statements on property value trends. After correcting for housing inflation (see Appendix A), compare trends in nearby property values over a ten year period. You may also need to adjust for local housing inflation, which may be higher than the U. S. city average listed in Appendix A. Contact your local regional office of the U. S. Department of Labor and Statistics for more detailed consumer price index information for your community.

Your estimates of property value increases will be more defensible if:

- ☐ you compare similar properties and include as many properties as possible in your sample
- ☐ properties have resold more than once since the greenway was established
- ☐ the greenway (and not a shopping mall, landfill, etc.) has been the only major land use change in the ten year comparison period
- ☐ estimates are discussed with real estate experts

Compare assessed values of nearby properties before and after the greenway was established. Obtain assessed values for nearby properties five years before the greenway was established and for the same properties five years after. Assessed values are usually separated into two categories: improvements and land. Use the land values for comparison and convert to a dollars-per-acre basis.

Care must be taken with this method because assessed values often lag behind market values. You may consider discussing the potential of this method with your Assessor's Office, local appraisers, and real estate specialists familiar with the history of the market. Inflation in housing prices must also be taken into account (see Appendix A and consult your assessor).

Property tax revenue increases may help pay for the greenway. Once again, your state may have passed legislation limiting property tax increases, and in many jurisdictions, assessments lag behind market values. Nonetheless, in the long-term, increases in property tax revenues may help to offset greenway costs. The following illustrates how you might estimate increases in property tax revenues resulting from establishment of a greenway. Please keep in mind, this calculation has been simplified for purposes of example only.

(1) Assuming:

- a) 50 acres of property is to be acquired at \$1,000/acre (also assessed at \$1,000 per acre) to develop the greenway.
- b) The municipality will borrow the full acquisition cost at 5% interest for 20 years.
- c) Total acquisition cost, principal, and interest is \$80,500.

- d) Development of the greenway will increase the value of nearby properties by 5%.
- e) 30 homes (on 1 acre lots) presently valued at \$50,000 each, will be affected by development of the greenway.
- f) Property tax rate is \$3.00 per \$100 in assessed value.

(2) Increased property tax revenues:

- a) Present property tax for 30 homes:
 $30 \times \$50,000 = \$1,500,000$
 $\$1,500,000 \text{ divided by } \$100 = \$15,000$
 $\$15,000 \times \$3 = \$45,000 \text{ per year}$
- b) Increased property tax due to greenway:
 $\$45,000 \times 5\% = \textbf{\$2,250 per year}$
- c) Taxes lost for greenway property:
 $50 \text{ (acres)} \times \$1000 \text{ (assessed value)} = \$50,000$
 $\$50,000 \text{ divided by } \$100 = \$500$
 $\$500 \times \$3 = \textbf{\$1,500 per year}$
- d) Net annual increase in property tax revenues upon acquisition of the greenway:
 $\textbf{\$2,250 - \$1,500 = \$750 per year}$

Commission your own study. If you need specific and highly defensible information, you might consider commissioning your own study. Many of the above studies employed multiple regression statistical analysis, which can require a significant commitment of time and resources. If you have an economist and statistician on staff, they may be able to perform such a study. Otherwise, contact a nearby university. The departments of real estate, resource economics, economics, business, city and regional planning, statistics, or sociology may be able to assist, especially if graduate students need research projects in these departments. Or, if this resource is not available, you can hire experienced consultants.

Sources of Information

Planning/Engineering Departments. Zoning maps, available at local planning departments, will assist you in determining similar properties. Those properties within the same zone must comply with the same standards. The maps may also show public access to the greenway, which will allow the calculation of the distance to such access from different neighborhoods. Your planning or engineering department will likely have aerial photos of the areas adjacent to the greenway. These photos can also be used to identify "like properties".

Real estate agents/local Board of Realtors. These people can be contacted for historic sales data, in addition to discussion of comparable market areas for determining "like" properties. The Board may operate a multiple-listing service which includes records of sales prices, dates of sale, and housing characteristics.

City/County Assessor. Your city or county Assessor's office can be an invaluable contact for qualitative and quantitative data on housing markets, such as how assessed values correspond to market prices, and how greenways and open space affect assessed values. The city or county's Assessor's Office holds records concerning lot sizes and assessed values of taxable properties. They also maintain transfer tax records which include a description of properties which have changed hands. These records are usually attached to deeds.

Banks, Savings and Loan, and other mortgage institutions. If you are dealing with a large market area and mortgage institutions have been operating in the area for a long time, you may be able to access mortgage records for properties near the greenway. These institutions may be reluctant to release specific information, but may be able to advise on trends.

Appraisers/Appraisers' associations. The American Institute of Real Estate Appraisers (AIREA) certifies general appraisers and residential appraisal specialists. (If you look in the yellow pages under real estate appraisers, many will show the MAI symbol, denoting certification by AIREA.) Appraisers in your area may be able to provide historical information, information on appraisal procedures, and how proximity to open space is reflected in appraised values.

Also, representatives of the association may be willing to discuss property value impacts at a city council, planning commission, or board of supervisors meeting. You might choose to enlist a representative for your organization's board of directors or advisory committee.

Corporate location firms. These firms help corporations transfer employees by purchasing a transferred employee's home if the employee is unable to sell it in a specified period of time. Appraisals for these homes help determine how much the firm will pay for the house. Get an opinion concerning the greenway's influence on property values or sales time.

Mail and Telephone Surveys: *The Total Design Method*. This 1978 text by Don Dillman is a good reference for constructing and implementing mail and telephone surveys. Contact your local university library or the publisher, John Wiley and Sons, (908) 469-4400.

Considerations in Using These Rationales

Be careful in constructing your case. Increased property values are more complicated than proximity to the greenway. It also depends upon the greenway's character. The studies in this section show the highest increase in property values occurs in cases where parks highlight open space, with some recreational access and limited use. Open space zoning, without access, also increases adjacent property values. While highly developed and heavily used areas may decrease the value of immediately adjacent property, usually increases the value of property nearby. This diversity highlights the need to make reasonable assumptions, carefully justify them, and explain that your conclusions are only estimates. Talk to as many experts as possible to construct your case and build support. Numbers will withstand scrutiny if they are reasonable, supported by sound logic, and good homework.

Measure the real change in values. When calculating changes in property values, be certain you are measuring those changes that are attributable to the greenway. This means you must always subtract fluctuations in the general housing market from fluctuations in values of property near the greenway.

Be careful in trying to outbid development. Developers may argue you should consider property tax revenues which might be generated if the land

were developed with homes rather than open space. This would generate greater property tax revenues; however, residential development would also result in a greater demand for public services. The costs to the local government for providing these services may exceed the property tax revenues collected. Furthermore, development of the property versus preservation of open space is generally irreversible. (See Section 7, Public Cost Reduction)

Get current information. Recent information will best reflect the character of the current market. If you are looking at assessed values, or sales prices, choose only those that have been updated in the last five years.

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Expenditures by Residents



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This section explains how expenditures by residents on greenway, river, and trail-related activities can help support the economy. Expenditures by residents refers to spending by day users as compared to visitors from outside the local area (see *Tourism* Chapter 5). The section covers overall expenditures on outdoor recreation, and how these contribute to national and state economies. Also discussed, is how resident recreation expenditures can contribute to a local economy. The last subsection lists specific expenditure levels for various river, trail, or greenway-related recreation activities.

This is the first of several sections in the Resource Book which discuss actual expenditures related to greenways, rivers and trails. The other sections - Commercial Uses, Agency Expenditures, and Tourism - focus on the impacts of spending by visitors and the agency(ies) which manage(s) the greenway. The concepts and applications within these sections overlap.

Outdoor Recreation, a Spending Priority

Leisure is often considered to be discretionary, or free time, away from work and other responsibilities, where participants choose and control their activities. Leisure activities can vary from mountain climbing, walking for health, or watching a football game on television. Outdoor recreation is a major component of leisure, usually included in leisure spending figures unless reported otherwise. Outdoor recreation and leisure expenditures can account for a substantial part of people's discretionary spending. People spend more on leisure and recreation than the U.S. Government spends on national defense or housing construction.

■ In 1990, 8.8 million people jogged at least twice a week throughout the year, an increase from 8.1 million in 1987. Nearly \$12 million was spent on athletic footwear in 1990. (U.S. News and World Report, April 1, 1991)

■ In Pennsylvania, residents spent approximately \$11.8 billion or 12.6 percent of their total personal consumption dollars on leisure pursuits in 1981. Of this total, over 47 percent (an estimated \$5.6 billion) was spent for outdoor recreation activity alone. Leisure was the third largest item in personal budgets, exceeded only by housing and food costs (National Park Service, 1983).

■ In 1988, recreation and leisure was the third largest industry in California. More than \$30 billion per year is spent by Californians on recreation and leisure. This amounts to approximately 12 percent, or one of every eight dollars, of total personal consumption expenditures in the state (California Department of Parks and Recreation, 1988).

■ One study estimated that \$620 million is spent annually by California residents for urban recreation activities (playing sports, visiting parks, jogging, bicycle riding). This generates an estimated \$400 million in personal income and 22,800 jobs (Loomis, 1989).

How much outdoor recreation and leisure is attributable to the activities pursued along greenways, rivers and trails? Many outdoor recreation activities can be observed along a greenway. Patterns vary significantly due to factors such as proximity, accessibility, weather, recreation opportunities, income, and educational levels. Greenways are likely to provide increased opportunities for the more popular outdoor recreation activities. According to *Lifestyle Market Analysts*, a new report by National Demographics and Lifestyles Inc., a survey of households in 212 metropolitan areas revealed overall participation rates for several related activities:

- 40.4% Walk for health
- 32.8% Pursue physical fitness/exercise
- 14.9% Bicycle
- 13.75% Boat or sail
- 12.4% Run or jog

Spending by Local Residents

You can define your local economy as the area for which you want to quantify the recreation activity and expenditures related to your greenway project. A greenway project can attract residents not only to the greenway, but also to nearby businesses, and encourage residents to purchase recreation-related equipment and services. These greenway-related expenditures help support the local economy through generation of employment and income.

Specifically, local residents who use the greenway may spend money to get to and from the site, on supplies and equipment to pursue their recreation experience, at on-site concessions and events, and nearby attractions. The magnitude of the impact of these expenditures depends upon the boundary and character of your local economy and the level of spending by local residents.

If a new resource is created which attracts visitors, or non-residents, then outside dollars may be brought into your local economy. River, trail and greenway resources which attract visitors can stimulate economic activity and create new jobs and income. These non-resident expenditures are discussed in the Tourism section of the Resource Book.

Trends and Expenditures by Activity

The following discussion provides information on trends associated with uses of greenways and provides evidence where spending associated with greenway-related activities has been quantified. Activities include wildlife-related recreation, river boating, trail-related recreation, and traditional park pursuits.

Fish and wildlife-related recreation

- Fishing
- Hunting
- Birdwatching
- Wildlife photography

River boating

- Rafting
- Rowing
- Kayaking
- Canoeing
- Motorboating
- Sailing
- Sailboarding
- Houseboating
- Jet skiing

Trail-related recreation

- Walking
- Jogging
- Hiking
- Volksmarching
- Roller skating/in-line skating
- Bicycling/mountain bicycling
- Horseback riding
- Cross-country skiing

Traditional park pursuits

- Photography
- Camping
- Hosteling
- Attending special events
- Concerts
- Festivals
- Driving for pleasure

Fish and Wildlife-Related Recreation. Activities associated with fish and wildlife-related recreation include: fishing, hunting, birdwatching, and wildlife photography. According to the U.S. Fish and Wildlife Service, 108.7 million people in the United States took part in wildlife-related recreation in 1991. Expenditures by these participants were \$59 billion. Of these total expenditures, 70 percent was spent on fishing and hunting (U.S. Fish and Wildlife Service, 1993).

■ In 1991, hunting, fishing and wildlife viewing resulted in \$5.3 billion of annual spending in California. Of the 9.2 million people participating in wildlife-related recreation, 32 percent fished, 6 percent hunted and 71 percent pursued wildlife viewing (U.S. Fish and Wildlife Service, 1993).

Sport fishing is one of the most popular outdoor recreation activities in the U.S. A steady increase in fishing has occurred nationwide, from 17.6 percent of the U.S. population in 1955 to nearly 22 percent in 1991. In 1991, just over 35 million U.S. residents spent \$24 billion on salt and freshwater fishing. Average expenditures per person for fishing have been estimated at approximately \$700

per year (U.S. Fish and Wildlife Service, 1993). Start up expenditures for fly fishing equipment can range from \$500 to \$2000. Demand for fishing is expected to continue to increase.

■ In the Pacific Northwest (northern California, Oregon, Washington and Idaho), Pacific salmonids including trout, steelhead, salmon and char support commercial and recreational fishing industries that produce over \$1 billion in personal income per year and more than 60,000 jobs in the region. These figures include the economic impact of wild fish and hatchery fish, all of which ultimately depend on the integrity of the habitat that supports them (Oregon Rivers Council, 1992).

Viewing wildlife was another rapidly growing recreation activity in the 1980's and is the most common form of wildlife recreation in California, where nearly 75 percent of state residents participate.

■ As reported by the U.S. Fish and Wildlife Service, 30 percent of the total national wildlife-related recreation expenditures (\$18.1 billion in 1991) was related to wildlife viewing and photography (U.S. Fish and Wildlife Service, 1993).

■ The typical birdwatcher spends \$13 per day, with almost half spent on food and beverages, one-fourth on gas and oil, and most of the remainder on lodging. Spending by birdwatchers contributed a total of \$27 million in wages and business income to California's economy in 1987. A total of nearly 2,000 California jobs are supported by birdwatchers (Loomis and Unkel, 1989).

Interest in wildlife viewing should continue to increase over the next decade in areas where urbanization, education, and income levels continue to rise.

River Boating. Recreational river boating is one of the nation's most popular outdoor activities and includes rafting, rowing, kayaking, canoeing, motorboating, and more recently, jetskiing. In the last two decades a dramatic growth in whitewater boating has been evidenced (Shelby and Lime, 1986). Use of wild and scenic rivers in national forests more than doubled in the six years between 1976 and 1984 (Feuchter, 1984).



■ In Colorado, river running brings in more than \$50 million annually to the state's economy and fishing contributes over \$1 billion annually (Finken, 1988).

■ Americans purchased approximately 90,000 canoes in 1988, a fourteen percent increase over purchases in 1985 (Ingrassia, 1989). Canoeing by residents and visitors contributes \$20.1 million per year to the Arkansas economy. Overall economic impact of outdoor recreation in Arkansas is \$1.5 billion per year (Wilson, 1986).

It has been forecasted that there will be participation by a wider segment of society in river boat activities and that there will be increased representation by family groups. There is also likely to be longer participation throughout people's lifetimes, increased numbers of participants from older age groups, and increased sport expertise and equipment ownership. These trends are expected to increase the demand for quality river trips and for challenging whitewater experiences, technical innovation in creating new river equipment, better skill and safety instruction, and more sponsored events (Lime, 1984).



Trail-related Recreation. Much of the population enjoys trail-related recreation such as: walking for pleasure and health, jogging, hiking, volksmarching, bicycling, rollerskating, in-line skating, horseback riding, and cross-country skiing. Research has shown walking and hiking have played a significant role in the nationwide growth in outdoor recreation. There are over 26 million day hikers in the U.S., and over half the American public says they walk for pleasure (Spitzer, 1988). Also, running has increased significantly since the early 1960's. According to a national recreation survey conducted for 1982-1983, over 25 percent of the U.S. population ran for conditioning during that time period (Van Horne, et al., 1985).

■ Trail users of three rail-trails generated a total economic impact of over \$1.2 million for each trail, according to the recent study *The Impacts of Rail-Trails*. These trails were used mostly by people living nearby who visited frequently. "Users spent an average of \$9.21, \$11.02, and \$3.97 per person per day as a result of their trail visits to the Heritage, St. Marks, and Lafayette/Moraga Trails respectively." (Moore, et al 1992).

■ Maryland's North Central Rail Trail, a 20-mile corridor through Baltimore County has become quite popular in the last few years. Use of the trail increased from 10,000 visitors in 1984 to 450,000 in 1993. The trail supports approximately 264 jobs statewide. Goods purchased in 1993 for uses related to the North Central Rail Trail were valued at over \$3.38 million (Maryland Greenways Commission, 1994).

Bicycling attracts people of all ages and interest in this activity is retained from childhood into later years. With the aging of the U.S. population, bicycling will likely retain its popularity as a "lifetime" activity. In the United States, the rate of participation in bicycling tripled since the early 1960s. By the end of 1993, there were more than 100 million bicyclists in the United States. This represents an increase of over 33 percent in the last ten years (Bicycle Federation of America, 1994). Bicycles are used for commuting to work as well as pleasure and fitness. There were 2.7 million bicycle commuters in the U.S. in 1987, more than double the number in 1982.

All-terrain bicycle use, or mountain bicycling has recently emerged as a very popular form of bicycling. In the United States, mountain bicycle ownership increased dramatically from 200,000 in 1983 (Hecker, 1989) to more than 25 million in 1992, up 20 percent from 1991 (Bicycle Institute of America). The communities of Marin County, California, Moab, Utah, and Durango, Colorado all vie for the title of "mountain bicycling capital of the U.S.", according to a recent article in the *Independent Journal* (Western Trail and Bikeway News, 1994).

■ The Hart-Montague Bicycle Trail in Michigan follows along 20 miles of the eastern coast of Lake Michigan. In 1992, six months of bicycle use along the trail increased business for several owners by 25 to 30 percent. Trail passes brought in revenues of approximately \$40,000, up 33 percent from revenues in 1991 (Aardema, 1992).

■ A 1991 survey of trail users in Oil Creek State Park in Venango County, Pennsylvania revealed that each cyclist spent an average of \$25.86 per visit/day. (Pennsylvania Economy League, 1993)

In-line skating has also become extremely popular in the U.S. in just the past few years. The original intent of these skates in the U.S. was for summer hockey training. They were quickly adapted as a sport unto themselves and from 1991 to 1993 participation in the sport increased from approximately 6 million to 12.5 million in the U.S. (NSGA, 1994).

■ In 1993, 4.6 million pair of skates were sold, generating \$310 million (Sports Style Magazine, 1993). The industry estimates a 30 percent increase in skates sold and dollars generated in 1994.

Another rapidly growing trail-related activity is cross-country skiing which experienced an 80 percent increase during the period between the 1982 to 1983 and 1987 to 1988 ski seasons. Over 50 percent of participants interviewed were between the ages of 25 and 44 and over 50 percent had skied less than five years (Ski Industries America, Inc., 1988).

Since the 1960's, participation in horseback riding has been fairly constant, with a greater number of participants being female. Horseback riding is a very high expenditure activity.

■ The Heritage Trails Fund estimated the total amount contributed by equestrians to the economy of California and local communities to be \$1.8 billion dollars. This is based upon a horse population of over one million, and includes annual costs for feeding, license fees, trucks and trailers, horse shelters, and other horse equipment.

How to Use These Rationales in Your Community

Demonstrate how leisure and recreation expenditures are important in your state, region, or community. Cite some of the examples given to show how people value recreation and open space opportunities. Gather similar information for your state, region, or community and present them at meetings and in publications.

Quote the above examples to show how greenway-related expenditures are important to other economies. The examples provided focus upon a variety of aspects of how recreation/open space expenditures support local, regional, state, and national economies. If appropriate, local examples can be

found and listed. Choose the activities relevant to your planning area; the size of the economy, and the type of impact.

Recognize the multiplier effect of greenway expenditures. The effect of greenway spending is multiplied as local businesses patronized by greenway users purchase supplies and services from manufacturers and other businesses. This concept is further discussed in Section 6 Estimating the Effects of Spending, under the subsections “Direct, Indirect and Induced Effects” and “Multipliers.”

Compare the economic effects of the greenway to those of another facility or program. Compare the number of jobs supported or created by your greenway to those supported by a well-known local employer.

Discuss effects of decisions that could alter visitation. Many activities such as natural area restoration, fish habitat improvement, increased publicity, better access, etc, can increase recreational use. If such activities are proposed, calculate the effects of such a change. Use this information as base data for illustrating how changes in management (supply) or visitor needs (demand) affect the greenway’s impact on the local economy.

Table 2-1

Estimated Start-up Costs by Activity (Per New Entrant)			
Activity	Purchase	Low-end Cost	Mid-Range Cost
Bicycling	Bicycle	\$ 300	\$ 800
	Helmet	50	50
	Lock	30	30
	Bicycle Rack		25
	Bicycle Pack		50
	Water Bottle		10
	Shoes		45
	Clothing		50
	Car Rack		150
	Total	380	1,210
Hiking	Shoes/Boots	45	120
	Socks	10	15
	Daypack	20	40
	Water Bottle	5	5
	Total	80	180
Birdwatching	Binoculars	50	150
	Spotting Scope		200
	Field Guide	10	50
	Camera, lenses, etc		1000
	Total	60	1,780
Cross-country Skiing	Skis	85	250
	Boots	40	90
	Bindings	10	30
	Poles	15	30
	Wax	15	60
	Clothing		100
	Gaiters		25
	Total	165	505
Horseback Riding	Lessons	250	250
	Hard Hat	40	40
	Boots	100	100
	Crop	15	15
	Horse		1,000
	Tack		500
	Boarding (annual)		2,400
	Total	405	4,305
Skating	Inline Skates	100	210
	Wrist Guards	20	20
	Knee and Elbow Pads	40	60
	Helmet	50	50
	Total	210	340

Estimated Start-up Costs by Activity (Per New Entrant)			
Activity	Purchase	Low-end Cost	Mid-Range Cost
Canoeing	Canoe	250	500
	Life Jacket	40	50
	Paddles	100	100
	Car Rack		150
	Foul Weather Gear		1,000
	Drybags		
	Safety Equipment		
	Total	390	1800
Kayaking	Kayak	700	700
	Paddle	90	90
	Drysuit	200	200
	Sprayskirt	50	50
	Helmet	40	40
	Safety Equipment		75
	Car Rack		150
	Total	1,080	1,305
Rafting	Raft	1,500	3,000
	Frame	250	250
	Oars	200	200
	Safety Equipment	150	150
	Life Jackets (for 4)	200	200
	Car Rack		100
	Clothing (for 4)		200
	Lessons/Training	475	475
	Total	2,775	4,575
Fishing Cold Water	Rods, reels, line	90	200
	Flies, lures, tackle	60	150
	Accessories	70	200
	Waders	70	150
	Total	290	700
Fishing Warm Water	Rods, reels, line	65	150
	tackle	45	150
	Accessories	70	200
	Total	180	500

Sources of Information

Recreation and Sports Associations. The National Sporting Goods Association (NSGA) publishes survey results of participation in 53 sports throughout the nation. The most recent publication, "Sports Participation in 1993," contains two series. Series I gives statistics on 26 competitive sports such as baseball, while Series II shows information on sports like roller skating. Another publication, "Sporting Goods Market in 1994," includes average prices paid for equipment, shoes, and clothing for 26 sports. Contact the NSGA, at (708) 439-4000 for this information.

Information can also be obtained from individual recreation organizations. A partial listing of national organizations, their location, and phone number, is below. Contact state and local recreation associations in your area for additional information.

American Hiking Society
Washington, D.C. (703) 255-9304
American Nature Study Society
Homer, NY (607) 749-3655
American Recreation Coalition
Washington, D.C. (202) 662-7420
American Rivers
Washington, D.C. (202) 547-6900
Heritage Trails Fund (Equestrian and Hiking)
Walnut Creek, CA (415) 672-5072
League of American Bicyclists
Baltimore, MD (301) 539-3399
National Organization for River Sports
Colorado Springs, CO (719) 579-8759

The National Recreation Survey. This is a summary of the results of a national household interview survey conducted in 1982 and 1983. The survey covered the current participation status of 36 recreation activities. Expected trends in participation were also covered. Information concerning the survey can be obtained from the Recreation Resources Assistance Division, National Park Service. Contact Merle Van Horne at (202) 343-3780. It is important to note, however, recreation activities have changed during the last decade (i.e. mountain bicycling has experienced dramatic growth) and that recreation activities may be different in your area.

Media. Recreation is covered by the news almost daily. Look for feature articles and relevant information. Review newspapers, periodicals, and newsletters for information relevant to trends, activities, and expenditures that could be useful in building your case. Keep a file of related clippings.

Considerations When Using These Rationales

Realize the policy implications of your data. This information can be helpful in setting economic development policy. Knowledge of who spends the most, where these people are from, and what services they desire, can assist in providing direction for development or changes aimed at increasing the economic benefits to an area. Bear in mind that more is not necessarily better, especially in sensitive resource areas, which might be adversely impacted by overuse. Make protection of the greenway resources your bottom line and manage use accordingly.

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Commercial Uses



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Greenways can provide business opportunities, locations, and resources for commercial activities. These activities may include on-site concessions, permittees, partnerships between the managing agency and other groups, special events, and commercial filming activities. Compatible business ventures can provide a wide range of visitor services and facility improvements.

Documenting and estimating the economic impacts of the commercial uses associated with rivers, trails, and greenways can be useful in promoting your corridor project. Demonstrating these impacts might also help to expand a project or provide information to assist greenway promotion in other communities.

Concessions, Permittees, and Partnerships

Concessionaires, permittees, and partnerships are recruited and usually bid for the right to provide a range of on-site visitor services which a public agency chooses not to operate. Typical examples include food services, recreation equipment rentals and sales, lessons, lodging, and convenience items. These services directly serve and enhance the recreational experience of greenway users.

Concessions, permittees, and licensees are usually privately operated entities, mostly for-profit though sometimes non-profit, that operate on public land by authorization of the managing agency or group. A partnership is similar, but most often involves non-profit entities. These activities can have a significant effect on a local economy.

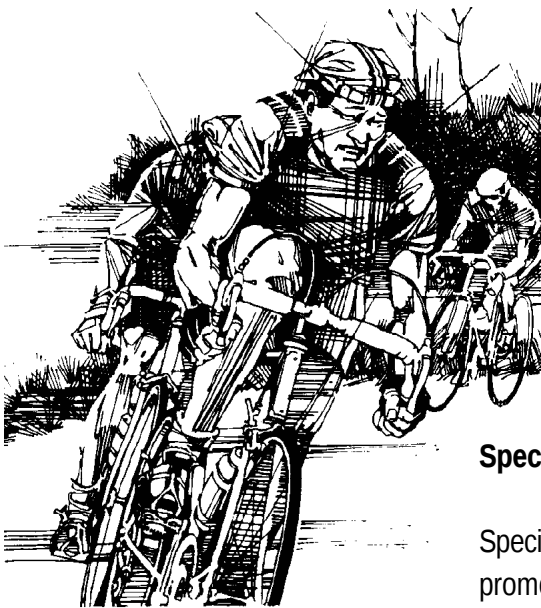
- Along the lower Colorado River (Arizona), thirteen concessionaires under permit to the Bureau of Land Management generate more than \$7.5 million annually in gross receipts, with a major spinoff effect in the local economy (Bureau of Land Management, 1987).

- Golden Gate National Recreation Area (GGNRA), a National Park Service unit in San Francisco, California, has contracts with ten primary concessionaires. Total 1988 gross revenues for these concessionaires were over \$16 million, over 25 percent of which was spent on payroll. GGNRA also has cooperative agreements with non-profit park partners who operate within park boundaries.

The seven primary partners generated over \$6 million in total revenue in 1988, almost half of which went for payroll, which provided local jobs (National Park Service, 1989).

Revenues may also be generated through agricultural leases within a greenway. For example, grazing leases on lands owned by the California State Department of Fish and Game in Northern California generated net revenues averaging more than \$10,000 per year from 1981 through 1989. Cattle grazing on a portion of these lands, located at Earl and Talawa Lakes, was used as a resource management tool to restore and improve habitat for the endangered Aleutian Canada Goose. The revenues generated from grazing were then utilized to improve recreation on the site.

Another type of partnership has been appearing across the country between private utility companies and trail managing entities. Telecommunications companies, for example, have made agreements to route fiber-optics within the trail corridor in return for compensation, which can often help in building and maintaining the trail. Other potentially compatible utilities that might generate income include: cable television wires, gas pipelines, electric transmission and distribution lines (Ryan, 1993).



■ The Northern Virginia Regional Park Authority has a twenty year license agreement with AT&T for thirty miles of fiber-optics routing along the Washington and Old Dominion Rail Trail. The annual fee from AT&T is used to cover capital improvements for the trail (McCray, 1994).

■ The trail managing entity of Wisconsin's Glacial Drumlin Trail issued a ten-foot wide perpetual easement to U.S. Telecom, which paved the 48-mile trail (\$375,000 value) in exchange for use of the corridor (Ryan, 1993).

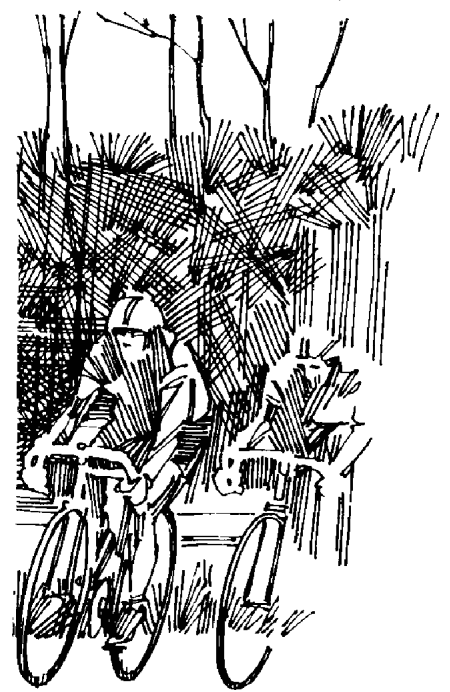
Special Events

Special events not only generate revenues to sponsors and the community, but promote the greenway itself to residents and visitors.

■ Eppie's Great Race consists of a 6 mile run, 12.5 mile bike ride, and 6.35 mile paddle down the American River in California. The Sacramento County Department of Parks, Recreation and Open Space sponsors this annual event, held along the American River Parkway. All proceeds are donated to Adaptive Leisure Services (ALS). The 1989 Great Race raised \$40,000 and race donations to date total over \$260,000. These proceeds have allowed ALS to expand programs to meet the leisure interests and needs of persons with disabilities (County of Sacramento, 1989).

■ The 12th annual "Great Race" in Pittsburgh attracted 12,807 runners to the city. Those runners living outside Pittsburgh, but within Allegheny County, spent an average of \$14.40 on race-related items, with 54 percent spent within city limits. Pennsylvania runners travelling to the race from beyond Allegheny County spent an average of \$28.29 within Allegheny County, 75 percent of which was spent within Pittsburgh. Not only did the event attract runners to the city of Pittsburgh, but it is estimated that over 40 percent of all travelling parties brought at least one non-runner to the event. In fact, one estimate showed that those runners living outside city limits brought over 4,000 spectators to the event.

■ Overall, the 1987 Great Race generated an estimated direct economic impact of \$220,000 within Allegheny County. Adding registration fees paid by race participants, this total exceeds \$330,000. This total does not include spectator expenditures except for those spectators brought by runners. Thus the overall total expenditures associated with the event would likely be much higher (Gitelson, et al., 1987).



Special events can also be used to raise money and promote the greenway or trail itself. Such events can serve as a catalyst to gain support, strengthen volunteer organizations, and raise public awareness of your project. You should report this economic activity as testimony of support for your greenway.

■ “Take a Walk on the Wild Side Ice Age Trail Hike-A-Thon”, in Wisconsin, drew over 1,200 hikers and raised \$30,000, against \$15,000 in expenses. The Ice Age Trail Council and Ice Age Park and Trail Foundation sponsored the event to raise money to support the development and maintenance of the trail, raise public awareness, and strengthen organizations by providing a rallying point. Marketing techniques included distribution of several thousand posters featuring a “hiking mammoth,” advertisements and a feature article in Wisconsin Silent Sports, and a steady stream of articles in state and local newspapers (Pathways Across America, Fall 1988).

■ The San Joaquin River Parkway and Conservation Trust in Fresno, California, organizes a variety of annual events to raise money for the Trust. One of the most successful events was “Evening on the River,” which featured dinner and entertainment at \$100 per person. This event raised approximately \$10,000. Another popular event is a bike rally, featuring a variety of distance rides, which raises public awareness of the Parkway in addition to money. The Executive Director of the Trust, Donn Furman, stresses the key to successful events is to get as many sponsors as possible. Sponsors can donate t-shirts, food, printing, and other services. Sponsors help to defray event costs, thereby increasing the amount you raise for the greenway (Donn Furman, 1990).

■ The Greenway and Nature Center of Pueblo, one of the most active trail-related organizations in Colorado, sponsors several events annually, as well as renting bicycles and rafts. One special event is the Bluegrass Festival and Crafts Fair. This event not only raises public awareness and money for the Greenway and Nature Center, it also provides opportunities for local artisans and food establishments (Tim Merriman, Executive Director, Greenway and Nature Center of Pueblo, 1990).

Filming and Advertising

Unique and scenic areas are desirable as location backdrops for movies, television, and photo sessions for magazine and newspaper advertising. Fees paid to use these areas, in addition to the money spent locally by film production crews during filming sessions, are beneficial to the managing local agency and the local economy. Media exposure of a river, trail, or greenway can also help to promote the area and attract visitors.

■ Movies and television shows, commercials and advertisements filmed on land under the jurisdiction of the Bureau of Land Management in Utah have added income to Moab, Kanab and other Utah communities (Bureau of Land Management, 1987). Over 100 movies and television shows have been filmed in and around Kanab. Moab even has a Movie Locations Auto Tour guide (Jarvik, 1994).

How to Use These Rationales in Your Community

Show how concessions and events have affected other communities.

Use some of the examples given to show how concessions and events have benefited other communities.

Estimate concession expenditures. If you have concessions at your greenway, determine the following:

1. How much do they pay in contractual fees to the managing agency? This amount could be considered a revenue offset that the agency would otherwise have to collect in taxes or other means.
2. What is their gross revenue? This is the amount the concessions collect from greenway visitors which is likely to cycle through the local economy.

3. What percentage of revenues are likely from non-residents?

When you have defined your “economy,” ask concessionaires to estimate what percentage (annual average) of gross revenues is likely from visitors from beyond the boundaries of the economy.

These non-resident concession expenditures are considered “new dollars,” and a stimulus to the local economy.

4. How much of the concessionaires’ gross revenue goes toward payroll? How many jobs are provided?

Estimate impacts of partnerships. If you have cooperative agreements with businesses or non-profit groups who operate in your greenway area, follow the same procedure outlined for concessions to determine their economic impacts.

Estimate the impacts of special events. If an upcoming event involves ticket sales, the total number of visitors and their expenditures can be calculated. Get data on gross receipts as a measure of economic activity. If you have the opportunity to determine whether ticket buyers live within the economy, you will be able to determine resident versus visitor expenditures.

If an upcoming event involves a promotion and operating budget, estimate the percentage of the total budget that is spent in the local economy. Include expenditures from event sponsors, promoters, and contributors. Add this amount to the gross revenues realized by concessionaires or non-profit entities involved.

If the event does not have ticket sales, you may wish to conduct a survey of visitors. The purpose of the survey is to estimate how much visitors spent while attending the event and how much was spent within the local community. You might also compare resident and visitor expenditures. Suggested questions for questionnaires are listed in Appendix C. A survey will be easier to conduct if there are only a few exit points. If there are many exit points, interviews can be conducted within the event area. You should devise a systematic sampling method to avoid biasing results.

Once you have conducted a survey and analyzed the findings, you can multiply the average amount spent by the total number of people attending the event. This will give you an estimate of the total direct economic impact within your community. This assumes that the dollars spent are on local businesses. If event concessions, their employees, and suppliers are from beyond the local economy, the local economic effects may be negligible.

If it is not feasible to conduct a survey, you might interview the event sponsors or promoters about the general characteristics of event participants. They may be able to give you information you can use as the assumptions necessary for your estimates.

Determine impacts of filming and advertising. If you have filming activities on your greenway, estimate permits paid, or donations, and the average expenditure per employee, per day, in the local economy. Many of these businesses operate on well defined budgets. Interview firms about their range of average location shoot costs and the variables involved. Multiply by total number of employees and total filming and production days in the local economy for total film and advertising-related expenditures in the local economy.

Promote greenway events. If you are not already doing so, use and promote special events in newsletters, brochures, fliers, and magazines. Remember, events bring people who will discuss their experience at your greenway with their family and friends when they return home. Word-of-mouth can be a powerful and cost-effective means of promoting your greenway.

Sources of Information

Activity and Club Magazines. Magazines such as *Walking Magazine*, *River Runner*, etc., usually have listings and/or advertisements for events related to these activities and may be interested in covering your event, or publishing a news release that you provide. Regular review of these magazines may also give you ideas for events you could plan for your greenway. These magazines may also identify clubs and organizations which regularly sponsor special events. Such groups could be encouraged to promote your river, trail, or greenway by using it as an event site or staging area.

Operations. Fees paid to public agencies to operate businesses within greenways are a matter of public record. Contact the appropriate agency. Annual financial reports of concessionaires, permittees, and licensees to public agencies will provide information on how funds are spent. You might also contact them directly for more information.

Considerations in Using These Rationales

Develop guidelines for commercial uses. Some areas of your river, trail, or greenway project may be incompatible with commercial uses. Protection of the resource should be your first priority. You should carefully determine which areas are less sensitive and would allow commercial use. Determine appropriate levels of use. Issue permits based on preferred levels of visitor use and type of experiences you want to provide. Attach restrictions to the permit to ensure adequate protection of the resource.

Use good survey methods. The better the survey method, the more useful the results will be. Plan your information gathering to best utilize the resources available. A local community college or university may be interested in helping with surveys as a class project. (See also “Sources of Information” in Expenditures by Residents, Section 2).

Be careful. Document your assumptions and calculations, and back them with sound logic. Peer review of your calculations is a must. If you have staff members with some background in economics or finance, their review and support would be especially important.

Be sensitive. Private businesses may not wish to have their records a matter of public record as it may be perceived as potentially harmful to their competitive business position. While gross receipts and franchise, contract and permit fees are usually a matter of public record, levels of profit may not.

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Agency Expenditures



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This section of the Resource Book presents how the expenditures of the agency responsible for managing a river, trail, or greenway can contribute to the local economy. Agency expenditures contribute to economic activity, providing payrolls and support to a myriad of businesses.



Level of Expenditures

The managing agency supports the local and regional economy by providing jobs and purchasing supplies and services to develop, operate, and maintain the greenway and related improvements. Benefits to the local community are greater if supplies and services are purchased from local businesses. The following examples illustrate the level of expenditures which potentially impact the local community. Expenditures must be reviewed in detail to determine how much is spent locally.

■ The 1993 operations budget for the North Central Rail Trail in Baltimore County, Maryland reached almost \$192,000. These state expenditures provided for salaries, maintenance, contractual services and utility bills (Maryland Greenways Commission, 1994).

■ The American River Parkway accounted for over \$1 million in expenditures by the County of Sacramento Parks and Recreation Department in fiscal year 1989-1990. This 5,000 acre greenway includes 23 miles of paved trails and over 50 miles of riding and hiking trails. Approximately \$600,000 of the expenditures were made for services and supplies, and \$450,000 for salaries and benefits. Expenditures on services and supplies range from professional planning services to paper products (Wright-Woodruff, 1990).

■ Boulder Creek Corridor in Boulder, Colorado, is maintained by both the City Public Works Department and the Parks and Recreation Department. The Park and Recreation Department's groundskeeping maintenance generates annual expenditures of \$6,000 for salaries and \$3,000 for services and supplies per mile. The Transportation Division of Public Works spends \$1,600 in salaries and \$850 per mile for trail maintenance (Barnett, 1990).

■ A 1978 study completed for the East Bay Regional Parks District in California, assumed that for every \$1 received by the District in tax funds, grants or gifts, \$3 was returned to the community through supplies, contracts, equipment, payroll, and transportation (Spickard, 1978). In 1989, the East Bay Regional Park District spent over \$27 million for employee salaries and benefits (Cobb, 1989).

Employment generated by a greenway project can be targeted by the managing agency to benefit particular needs of the community. For example, programs may be implemented to employ population segments suffering from high unemployment.



■ In response to community needs for youth employment and job training, the city of Battle Creek, Michigan, and the Urban League joined in a program to hire youths to construct the city's Linear Park. The program provided employment and training for approximately 200 youths over four summer seasons between 1984 and 1987. The Urban League of Battle Creek was responsible for hiring, while city staff performed planning and engineering (Kracht, 1990). This program not only provided employment, but helped the youth develop work skills and a "sense of pride in their contribution to the City of Battle Creek in general and the Linear Park in particular" (City of Battle Creek, 1985).

■ Youth and the environment are also brought together under the California Conservation Corps (CCC). Each year the CCC employs approximately 2,000 young adults, 18 to 23 years old, to work on conservation projects sponsored by local, state, federal government, and non-profit organizations. This mutually beneficial program not only provides young adults with employment and the development of work skills, it also gives conservation-related organizations access to an affordable labor force. Corps' accomplishments include: construction or rebuilding 2,500 miles of trails, nearly four million work hours in park improvement, and more than 900 miles of stream clearing for salmon and trout migrations (California Conservation Corps, 1990).

Local Business Support

Agency expenditures are more important to some businesses than others. Some businesses or contractors may be dependent upon local recreation/open space agencies for a significant portion of their revenues.

■ In one year, local recreation agencies in Illinois spent \$136 million in a diversity of economic sectors. The top ten sectors were utility services, insurance, vehicles, sporting goods, lumber and building materials, legal agencies and service, swimming pool supplies, chemical lubricant and gasoline supplies, food purchases, and play ground equipment (Sheffield, 1986).

■ A T-shirt printing shop in the St. Louis area estimated that 15 to 20 percent of their 1987 revenues came directly or indirectly from the area's municipal agencies and that this market was increasing (Sheffield, 1988).

■ The sporting goods manufacturing firm, Wilson, noted that park and recreation agencies directly or indirectly supported as much as 30 percent of the company's corporate/domestic sales (Sheffield, 1988).

How to Use These Rationales in Your Community

List specific greenway-related expenditures. Determine all agencies and groups directly involved in managing the greenway. List expenditures for their greenway-related activities. Itemize annual expenditures by activity. Examples of expenditure categories are: planning, acquisition, development, operation, and maintenance. Include all annual expenditures for personnel, supplies, and equipment. For each, estimate the percentage of these expenditures which are made within the local economy. Annual expenditures can be calculated either for the calendar year or fiscal year. Calculate the total expenditures made within the local economy and the number of jobs provided. If your greenway has not yet been implemented, go through the same process, but project future annual expenditures.

Apportion other greenway-related expenditures. Some agency expenditures will be for administration, personnel, supplies, and equipment that may be used only partially for the greenway. If this is the case, estimate the proportion attributed to the greenway and catalogue these expenditures. If these are annual expenditures, figure the percentage of time staff or equipment is involved and apportion the expenditures accordingly. For heavy equipment, or other long-term investments, you need to calculate the annual cost of the investment. This is also termed “annualizing” and may include calculations for depreciation. Ask accounting or finance specialists for the appropriate figures to convert long-term expenditures to annual costs. Total the annual expenditures that can be attributed to the greenway and add to the costs calculated for the greenway-specific expenditures given above. This total is the direct impact of greenway-related agency expenditures.

Calculate greenway-related employment. Keep track of the number of employees necessary to operate the greenway. The managing agency should be able to provide employment figures. Seasonal jobs should be converted to full-time, year-round equivalents. For example, three four-month seasonal positions can be counted as one full-time, year-round position.

Many greenways involve multiple managing agencies since the corridors pass through different political jurisdictions. Be sure to add up the jobs and expenditures of all managing agencies and their respective suppliers and contractors.

If possible, determine which city or county greenway employees reside. Divide the total number of employees into percentages based on where they reside. Since employees typically spend most their paycheck in the community they live in, this will give a good indication which jurisdiction benefits from greenway-related expenditures.

Determine greenway-dependent businesses. Talk to businesses that receive agency expenditures. Determine what proportion these expenditures comprise of the businesses’ total revenue. Keep this information on file.

Communicate results. Use a simple graphic format to show how expenditures and jobs are supported by greenway managing agencies, their suppliers, and contractors. Computer desk-top graphics can be very effective, particularly for

pie-charts and bar-charts. You can also show the distribution of economic activity by jurisdiction.

Sources of Information

Public and non-profit agency budgets are a matter of public record.

U.S. Census. Census documents list average incomes for different occupations, by specific areas. Call your local library's government documents department for the appropriate volume and location.

Budget and Finance Specialists. Agency budget and finance specialists are the experts on what and where greenway expenditures are being made. These specialists might also be helpful in case methodological questions arise.

Considerations in Using These Rationales

Interpretation of expenditure information. You may wish to give stronger emphasis to the other impacts of your proposed project before discussing agency expenditures. This information might be used to show how expensive the greenway will be. The bottom line, however, is that agency expenditures can help support local businesses and should not be considered a drain on the local economy. This rationale is best for a greenway that has already been implemented. It is also good for situations where agency programs are threatened by cut-backs. Calculate how many jobs would be lost due to cutbacks.

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Tourism



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Greenways, rivers and trails which attract visitors from outside the local area can stimulate the local economy. This section begins with examples stressing the importance of natural and cultural areas for attracting visitors, followed by examples showing how rivers, trails, and greenways can contribute to the travel and tourism sectors. The last subsection demonstrates how corridor projects can increase tourism appeal and marketing potential of a local community.



The Travel Industry

Travel and tourism is the leading employer in several states and has been predicted to be the leading industry in the United States and the world by the year 2000. Travel is also a leading industry and source of jobs within regions and local communities, and is increasing in relative economic importance. Expenditures for travel and tourism impact transportation, lodging, eating establishments, retail, and service businesses. These expenditures support jobs, personal income, and government tax revenues.

- Travel industry employment for 1989 increased by nearly 3 million jobs from 1988. This employment includes air transportation, intercity highway travel, eating and drinking establishments, hotels and motels, and amusement and recreation services. The travel industry has continually out-performed the overall economy in creating new jobs. (U.S. Travel Data Center, 1989, 1990).

- In 1992, travel-generated visitor expenditures in California reached approximately \$52.8 billion. These expenditures generated \$938 million in local taxes, \$2 billion in state taxes, 668,000 jobs and \$11.5 billion in payroll expenditures.

For purposes of this section, “travel and tourism-related expenditures” refer to those visits that originate from beyond the boundaries of your local economy. Typically, these are trips from at least 50 miles away and any trips which may involve an overnight stay. Expenditure patterns for visitors are usually higher than for local users. Spending by residents is discussed in Section 2 of this Resource Book.

A greenway, which provides local opportunities and enhances tourist draw, can be an important asset to your community. Recent trend analyses show that



weekend trips to nearby areas are on the increase, while the traditional two-week summer vacation is on the decline for today's travellers. This is due to the job complications of two-income families, limited time budgets, interest in more specialized recreation experiences, increased mixing of personal and business travel, and year round schools.

Natural/Cultural Areas Attract Travellers

Outdoor recreation, natural, historical, and cultural resources are increasingly important attractions for travellers. Ecotourism is an environmentally responsible form of travel in which the focus is to experience the natural areas and culture of a region while promoting conservation and economically contributing to local communities (Adventure Travel Society, 1994). Ecotourism is one of the fastest growing areas of the travel industry. According to the *Travel Industry World Yearbook*, in 1992 ecotourism comprised 10 to 20 percent of all travel (Bangs, 1992).

■ A poll commissioned by the President's Commission on Americans Outdoors found that natural beauty was the single most important criterion for tourists in selecting a site for outdoor recreation (*Scenic America*, 1987).

■ In a recent report, the governors of five New England states officially recognized open space as a key element in the "quality of life" in their region. They credited "quality of life" as providing the foundation of a multi-billion dollar tourism industry and bringing rapid economic growth to the region (Governor's Committee on the Environment, 1988).

■ Ramsey Canyon Reserve and the San Pedro National Conservation Area (RNCA) in southern Arizona attract a significant number of visitors from outside the local area. Approximately two-thirds of the visitors to these sites are from outside of Arizona and approximately 5% are from the United States. These visitors bring economic activity not only to southeastern Arizona, but to the state as a whole. The typical non-resident visitor to Ramsey Canyon spends \$55 per day in Sierra Vista, while a non-resident visitor to the San Pedro RNCA spends \$51 per day in Sierra Vista. The total eco-

nomic impact in the Sierra Vista area associated with nature-based visitors to Ramsey Canyon and the San Pedro RNCA is estimated at nearly \$3 million per year (Crandall, Leones, and Colby, 1992).

■ Several kayak outfitters have teamed up with environmental groups working to protect and enhance the quality of the San Francisco Bay in northern California. This cooperative effort has resulted in naturalist-lead kayak tours of the bay which raise funds for the effort to improve the ecological integrity of the bay (Sunset Magazine, 1994).

In 1988, 75 percent of all travel was for pleasure. Outdoor recreation and entertainment are growing in importance and accounted for 41 percent of pleasure travel, while 34 percent was attributed to visiting family and friends. Business travel accounted for 17 percent of all travel in 1988, with the remaining 8 percent attributed to personal and other reasons.

Travellers are also increasingly attracted to educational-oriented experiences provided by cultural and historic sites. Along with recreation and beautiful natural sites, tourists cite cultural heritage as one of three major reasons they travel to specific locations (U.S. Travel Data Center, 1991).

One of the fastest growing areas of tourism includes cultural and historic community festivals, events, and competitions. This will be a boon to community-based tourism. Greenways and trails can provide a link between historic and cultural sites. For example, the Azalea Trail in Mobile, Alabama, serves as a city beautification project and attracts tourists. Because preservation of these historic sites serves as a stimulus for tourism, there can also be significant impacts to the local economy.

■ A 1993 study by the Travel Industry of Association of America shows that 35 percent of 1500 respondents intended to visit an historic site while on vacation. A separate study notes that visitors stay a half-day longer and spend \$62 more at historic sites than at other locations (Wall Street Journal, 1993).

■ In less than a decade, the establishment of Lowell NHS in Massachusetts, spurred the economic renewal of a repressed

economy. The city of Lowell is prosperous and vibrant today. Investment by the public sector has totalled \$122.7 million (including \$18.7 million from the National Park Service to establish the National Historic Site.) For every \$1 of public investment there has been a total private investment/return of \$7. (Cassandra Walter, Superintendent Lowell National Historic Park, 1989)

Attributing Expenditures to Rivers, Trails and Greenways

Greenways, rivers, and trails can have varied levels of tourist draw. They can be travel destinations in themselves, encourage area visitors to extend their stay in the area or enhance business and pleasure visits. The “level of tourist draw” determines the appropriate proportion of the visitor’s time and travel expenditures that can be attributed to the greenway. If visitors extend their trip an extra night to visit a greenway, the additional night’s lodging and meals can be attributed to the greenway.



■ San Antonio Riverwalk is considered the anchor of the tourism industry in San Antonio, Texas. Tourism is the second largest economic sector in the city, accounting for \$1.2 billion annually. An auto survey concluded that the Riverwalk is the second most important tourist attraction in the state of Texas (Richard Hurd, San Antonio Department of Parks and Recreation).

■ In 1988, users of the Elroy-Sparta Trail in Wisconsin averaged expenditures of \$25.14 per day for trip-related expenses. Total 1988 trail user expenditures were over \$1.2 million. Approximately 50 percent of the users were from out-of-state, and the typical user travelled 228 miles to get to the trail (Schwecke, et al., 1989).

■ In Montana, an estimated 75,000 visitors to the upper Missouri Wild and Scenic River, and Lewis and Clark National Historic Trail, contribute \$750,000 annually to the economy of the area around the 149 mile river corridor (Bureau of Land Management, 1987).

■ Once trail construction is complete along Sonoita Creek in Patagonia State Park, near Nogales, AZ, the trail is projected to bring \$150,000 into the area from increased visitation. The Arizona

State Parks Board purchased seven square miles of riparian habitat along Sonoita Creek from Rio Rico properties who planned to build homes on the site (University of Arizona Water Resources Center, 1994).

■ More than 600,000 Americans took a bicycle vacation in 1985. Touring cyclists, when travelling in a group, spent \$17 per day (camping), and \$50 per day (staying in motels). Cyclists travelling alone spent an average of \$22 per day (camping) and \$60 per day (motels) (Moran, Wilkinson, and Fremont, 1988).

■ River recreation in Oregon is one of the activities that attracts people from other areas. In the Columbia Gorge region (consisting of the Hood River and Wasco Counties), revenues from transient lodging taxes grew just over 25 percent during 1992/93, following a similar increase of approximately 21.4 percent in the previous fiscal year (Oregon Tourism Division, Economic Development Department, 1994).

■ Anchorage, Alaska hosted two U.S. National X-Country Skiing Championships in 1991. It was estimated that the competitors and their companions, totalling approximately 1,000 people, in these two events spent almost \$1,200,000 during the course of the competitions, both of which lasted just over one full week (Hill, 1991).

■ The Gauley River is a high quality whitewater rafting and kayaking resource in West Virginia. It is growing in popularity and increasing its economic impact on the surrounding region. Dam releases provide whitewater opportunities on a 24 mile stretch of the Gauley for 10 to 25 days in the fall. The rafters, during this short season, generate almost \$20 million in economic activity in the region. Every \$1 spent per visitor day generated \$2.27 of sales in the state. Each visitor day generated an average of 1.79 days of employment. Economic rationale was instrumental in precluding potential additional dam construction on the Gauley; it was recently designated a National Recreation Area (Logar, et al, 1984).

- On North Carolina's Nantahala River, raft trip participants increased approximately 700 percent between 1972 and 1981. Rafters generated \$1.8 million in expenditures in 1982. (Swain County Board of Commissioners, 1982).

Tour operators, outfitters, and guides are also important to local economies due to the expenditures their businesses generate, the fees they pay to operate, and their advertising and promotion of local resources. Some companies such as "A Day In Nature," based in San Francisco, which offers a day in nature complete with a gourmet picnic and door-to-door transportation, have capitalized on the demand for nature-oriented experiences.

- Backroads, a U.S. travel outfitter, offering a range of trips from bicycling to hiking, competes with 200 other U.S. travel outfitters. One of these other companies, All Adventure Travel, added 200 vacations to its catalog of 500 in 1993. Purchases of accessories for adventure travel can have impacts on companies like Coleman Co., which increased 1992 camping-goods sales by 21 percent to approximately \$66 million in 1993 (San Francisco Examiner, July, 1994).

- The total economic impact of commercial river rafting in Colorado was estimated to be approximately \$70 million in 1991. This estimate is based on 410,000 user days with an average expense of \$65.80 per day per user, using an economic multiplier of 2.56 (Colorado River Outfitters Association, 1992).

- An Oregon study of guides and packers indicates that in 1986, the outfitter/guide industry in Oregon (for, river, land, and marine activities) had a direct economic impact of \$42.5 million. This resulted in a total economic impact of \$300 million (Bureau of Land Management, 1987).

- For every \$1 paid to canoeing outfitters, customers spent \$5 for gas, groceries, restaurants, campgrounds, and other lodging. 70 canoe liveries in Florida generate \$38.5 million per year (Stout, 1986).

“Volkssporting,” “Volksmarching,” and other similar types of activities may also be ideal for attracting tourists to local communities. Volkssporting, meaning “sport of the people,” organizes non-competitive public events open to all ages. The events include walking, bicycling, swimming, and skiing. Many participants travel to events regionally.

- An issue of the *American Wanderer* advertised volkssport events on trails in the state of Washington. Sponsored by the Washington Bed and Breakfast Guild, trail maps and event information are available from the Guild and local inn owners. (American Volkssporting Association, 1989)

Marketing Potential

Rivers, trails, and greenways provide unique resources which nearby travel and tourist-serving establishments, chambers of commerce, and local visitors bureaus can capitalize on and feature in their advertising. Because a greenway is a desired and profitable amenity for these businesses, they may also be willing to contribute to the funding and development of the greenway.

- As a condition for development, the Campbell Inn (Campbell, California) was required to provide an easement for the Los Gatos Trail. Upon realizing the marketing potential of the trail, developers constructed part of the trail, an additional spur, and now provide rental bicycles for hotel guests. They also promote the trail in their brochure: “For fitness and fun, The Campbell Inn offers a jogging/ biking trail connecting to a full series par course which . . . runs along a scenic trail, passing through forests and alongside a stream and two beautiful lakes.” Room rates at the Campbell Inn range from \$80 to \$275 per night.

- Implementation of the Yakima Greenway spurred many business changes in the city of Yakima, Washington. The Rio Mirado motel credits their almost year-round occupancy to their proximity to the Greenway. Marti’s restaurant built a patio adjacent to the Greenway and enjoys increased business from trail users and hotel guests. Svend’s Mountain Sports, a mountain climbing and cross-country ski shop, now stocks mountain bikes and roller blades due

to the opportunities created by the Greenway. Svend's would like to set up a rental concession on the Greenway during the summer season. Even nearby auto dealerships invite people to buy their next car at the "Greenway Auto Plaza" (Feasey, 1989).

How to Use These Rationales in Your Community

Quote examples. Choose relevant information from the examples provided to include in newsletters and presentations. Gather your own testimonies from lodging, restaurant owners, and travel agents in your community. Cite quotes from their promotional materials and advertisements.

Find out whether any studies have been done in your area. Contact local university departments of tourism, recreation, business, or economics, to see if anyone has done research or special projects related to the economic impacts of tourism in your area. Discuss your greenway with them. Also contact federal, state, regional, and local agencies to see if there are any relevant studies. At the state level, try the agencies that govern commerce and tourism. At the regional and local levels, try local convention and visitors bureaus, chambers of commerce, marketing specialists, and major banks. There may be current reports on average tourism expenditures in your community.

Depending upon what studies you can acquire, and their focus, you may be able to adapt them to your needs. Consult the authors of those studies, or other specialists, before doing so.

Determine the influence of natural/cultural resources on travel trends. Determine how natural/cultural greenway-related resources play a part in determining travel preferences and trends in your area. Cite examples with which your audience will be familiar. Look at promotional materials in your area, including newspapers, brochures, magazines, and phone books to see how resource-based attractions are being promoted and featured in advertisements. Check with your local visitor information center.

Get to know your visitors. Find out who your visitors are; where they come from; why they visited the greenway; how long they are staying in the area; what brought them there; and their expenditures while in the area. This can be accomplished in a variety of ways, ranging from casual conversations with

visitors at the greenway, to intensive phone, mail, and/or visitor interviews at greenway entrances. It may be possible to do surveys of local overnight accommodations and businesses along the greenway. The appropriate method will depend upon the desired level of detail and reliability of results.

■ A survey of visitors to the Northwoods area in Wisconsin found that almost 1.5 million non-residents visited this area in July and August of 1987. These non-resident guests spent almost \$153 million in July and August of 1987, with an average daily expenditure of \$14.66 per person. Table 5-2 was generated from this information. Many tourism expenditure studies focus upon guests staying in commercial lodging facilities. This study illustrates that those staying in camp grounds, or with friends and relatives, are also an important part of total visitor expenditures.

Figure 5-2

Northwoods Non-Resident Visitors; Type of Lodging, and Percent of Total Expenditures by Type of Lodging		
Lodging Type	Percent of Total Non-Resident Visitors	Percent of Total Non-resident Expenditures
Resorts	25.8%	39.7%
With Friends and Relatives	17.3	10.8
Second Homes	15.2	29.6
Motel/Hotel	8.6	7.1
Campgrounds	16.7	10.4
Day Trip	12.3	1.6
En Route Somewhere Else	3.9	0.8
	99.8%	100.0%

Source: Gray, Hamilton, and Mistele, 1987.

Determine the level of visitor draw of your resource. Is it a destination in itself? If not, would visiting the greenway require people to spend more time, or the night, in your area? Would it encourage business and pleasure travellers to patronize businesses near your resource, or pay more to stay, dine, or shop near it?

Estimate where expenditures are going. Your promotion will have more impact if you can state who benefits from tourism expenditures. This may include tax revenues, jobs, and payroll expenditures.

Estimate corresponding expenditures attributable to your resource. The level of visitation to your project will determine the type and amount of expenditures that can be attributed to it. If your greenway project is a separate destination in itself, the resource can be credited with all or most of the expenditures associated with the visit. If a greenway encourages staying another day in your area, figure the expenditures associated with spending one night and the following day, and credit the resource with that amount. If people will pay more to be near the greenway, find out how much, and credit the resource with that amount. Expenditures in your area can include transportation, food, lodging, entrance fees, outfitter/guide fees, and taxes.

- A survey of expenditures associated with recreational use of the St. Croix River (Maine and New Brunswick), found that anglers spent over six times as much per person, per day, in the local Maine economy as canoeists and over four times as much as general vacationers. In fact, anglers spent more in the local economy than all other recreationists combined (Miles, 1987).

Design your visitor surveys to determine what types of activities visitors participated in; how much each visitor spent per day for food, lodging, retail products; and other visitor-related services. The survey results would then provide an estimate of total annual expenditures. Sample survey questions are listed in Appendix C.

If you cannot perform a site-specific survey, the expenditure information in Table 5-13 on page 13, may be applicable. You should note the year the expenditures were calculated for Table 5-3 or any other study findings you may use. Remember the actual value of money changes each year. You should always be certain you work with expenditures calculated for the same year, or corrected for inflation (see Appendix B).

Project impacts from changes in visitation. If travel trends and/or potential greenway management changes are expected to alter visitation to your greenway, you may be able to quantify the economic impacts of this change. To do this, you need to estimate the increase in expenditures and use relevant multipliers if available.

Estimate total impacts. If you have economic expertise on your staff or within your citizen group, you may be able to estimate total impacts. Visitor expenditures for your project can be estimated by conducting a survey. Once you have determined the expenditures, you can use appropriate multipliers to determine the total impacts. Multipliers for your city, county, or state may already be available.

Promote your resource to the tourism community. Develop a plan for marketing your greenway. Be careful the designated name of the project and any related brochures or information, accurately reflect the nature of the project and create the image you desire. Combine efforts with tourism promoters such as the local Chamber of Commerce, hotels, event planners, travel agents, convention and visitor bureaus, tour guides, and transportation operators to include promotion of the greenway in their literature/brochures. Assist in distributing this information to visitor centers, conference centers, and other traveller information locations.

Sources of Information

The U.S. Travel Data Center. The U.S. Travel Data Center (USTDC) is a national non-profit center for travel and tourism research. The Center publishes the following reports:

Outlook for Travel and Tourism
Economic Review of Travel in America
National Travel Survey
Survey of Business Travellers
Annual Travel Outlook Forum

According to Center publications, USTDC maintains the only national economic model for estimating annual travel expenditure and their economic impact on cities, counties, and states (USTDC, 1989). The USTDC will perform research on the economic impact of tourism at various levels. To determine costs for these services, contact the USTDC in Washington, D.C., at (202) 408-1832.

Table 5-3

Tourist Expenditures, by Activity				
Activity	Location	Expenditures	Year	Source
Sailboarding	Columbia Gorge (Oregon)	\$47 - \$85	1987	Povey, et al'88
Long distance	Elroy-Sparta Trail (Wisconsin)	\$25	1988	Schwecke, et al 1989
Cross-country	Northwoods (Wisconsin)	\$17	1978-79	Cooper, et al, '79
Bicycle touring	United States	\$17 - \$50	1986	Moran, '86
River recreation	Upper Delaware	\$20	1989	Cordell & Bergstrom, '89
Canoeing	St. Croix River (Maine)	\$15		
Angling	St. Croix River (Maine)	\$42		
River Rafting	Gauley River (West Virginia)	\$60 - \$133	1989	Logar, et al, '84
	Colorado	\$65	1991	Colorado River Outfitters Assoc., '92
Nature Conservation	Sierra Vista (Arizona)	\$51	1991-92	Crandal, et. al., '92

Note: The above table includes a column for the year these expenditures were calculated. Because the actual value of money changes each year, always be certain to work with expenditures calculated for the same year, or corrected for inflation.

Discover America: Tourism and the Environment. This publication, prepared by the U.S. Travel Data Center and published by the Travel Industry Association of America, provides a survey of current environmental efforts, consumer attitudes toward those efforts, and business and government responses to emerging consumer attitudes. Contact the Travel Industry Association of America at (202) 408-8422 for this publication.

Impact of Travel on State Economies. This publication from the U.S. Travel Data Center includes information concerning travel spending in each state, and the employment, payroll, income, and tax revenue generated. Reports are available for 1984, 1985, 1986, and 1987. The 1987 report, released in April 1989, is available from USTDC for \$70.

Tourism USA. Published by the U.S. Department of Commerce, *Tourism USA - Guidelines for Tourism Development* is a valuable resource for those interested in any of the following: appraising tourism potential, planning for tourism, assessing the product and market, marketing tourism, determining necessary visitor services, and obtaining assistance. It is targeted at local communities interested in initiating or developing tourism.

Rural Tourism Development Training Guide. This training guide, published by the University of Minnesota Tourism Center, is part of an education training package which includes a video highlighting case study communities of San Luis, Colorado; Dahlonaga, Georgia; Sandpoint, Idaho; and the Villages of Van Buren, Iowa. Contact the Minnesota Extension Service Distribution Center at (612) 625-8173 for more information.

Considerations in Using These Rationales

Use existing information. Make every effort to use available, existing information. Generating original economic impact information can be time consuming and expensive. When adapting existing information, list the assumptions and limitations of your analysis.

Use good survey methods. Consult with someone experienced in designing and conducting surveys, and interpreting survey results. Someone on your staff may have these skills. If not, contact your local college or university. Be wary about using license plate tallies to determine visitor origin, since a high

percentage of domestic and international tourists use rental cars to explore the countryside. If possible gather survey information that is comparable to locally published per person tourism expenditure data.

Be careful in the policy implications of your results. Be careful in considering the implications of your analyses and the tradeoffs between tourism/economic development and resource protection. For example, development of vacation homes or tourist attractions in the local area may bring dollars to the economy, but could also completely alter the community and its ecological character.

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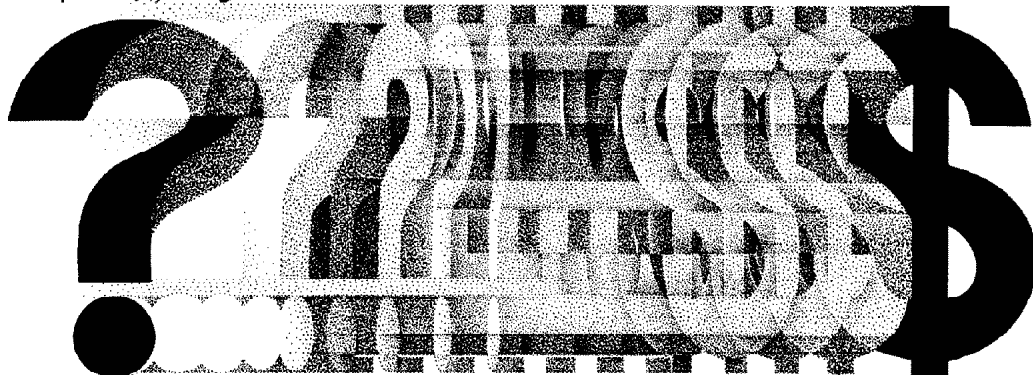
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Estimating the Effects of Spending



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Direct, Indirect, and Induced Effects

The actual amount spent by greenway visitors, from out of the local area, at businesses within your local economy represents only a portion of the total economic activity resulting from this spending. For instance, greenway visitors purchase goods and services from local businesses. In turn, these businesses and their employees purchase goods and services from other businesses, thereby creating a chain reaction. These purchases of goods and services between firms occur between different economic sectors, such as manufacturing, agriculture and transportation. Therefore, an increase in visitor expenditures is likely to impact related sectors in the economy.

The total impact resulting from an increase in visitor expenditures can be described in terms of *direct*, *indirect*, and *induced* effects. Understanding these three levels of effects is important because they show how the initial greenway-related expenditure generates additional economic activity within your local or regional economy.

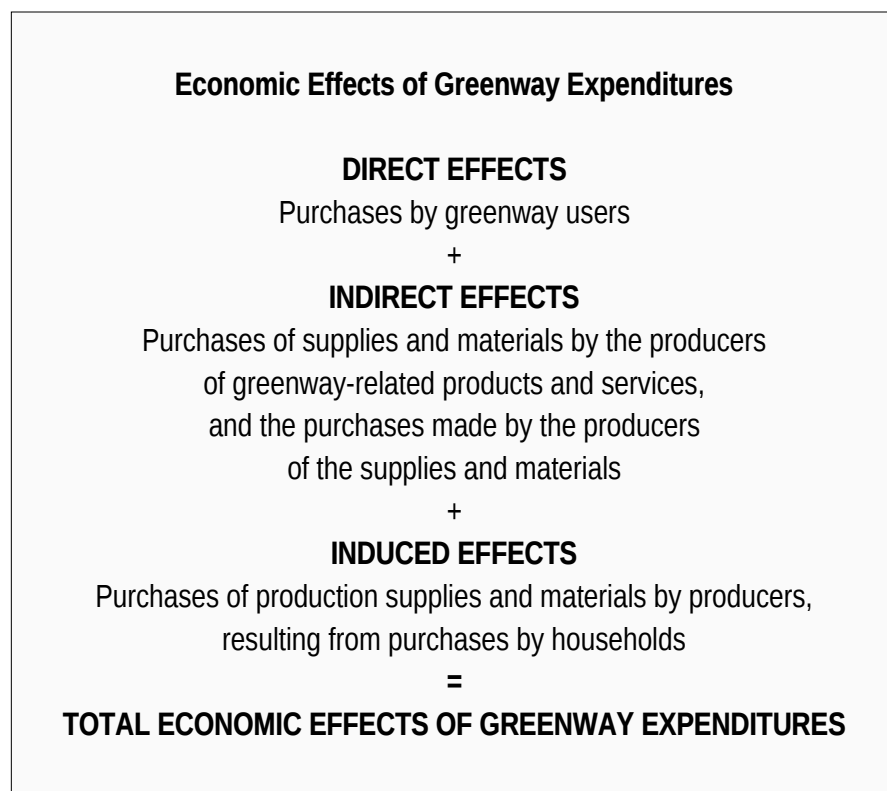


Figure 6-1

Visitor expenditures that may be attributed to a protected river corridor, for example, may include food and beverage, fishing equipment, and gasoline for vehicles and boats. *Direct effects* result directly from the actual purchases by visitors. Local businesses meeting the river visitors' demand for goods and services, must purchase supplies to meet this demand. These purchases (of food and beverage supplies, fishing equipment and gasoline, for example,) by the local businesses, are direct effects. Direct effects are also referred to as first round purchases in some studies.

Indirect effects occur when the suppliers to these local businesses must increase their purchases of production materials and services from other businesses, and those businesses in turn increase their purchases. A chain reaction is created as each supplier must increase their purchase of inputs. Each exchange increases the total indirect effects. For food and beverage, indirect effects are when the local food manufacturers purchase additional produce from local farmers, and the farmers then purchase additional supplies in order to grow products necessary to meet the demand. Another example might be fishing equipment. For instance, the indirect effects attributed to a fishing rod would include purchases by the rod manufacturer for graphite and other materials, and the graphite manufacturers (if local) purchases of local supplies. Thus, indirect effects extend to sectors of the economy beyond recreation-oriented businesses, such as agriculture, manufacturing, and transportation.

The direct and indirect effects of increased spending by greenway visitors can result in an overall increase in the production of goods and services in the local economy. This increase in economic activity can also increase jobs and household incomes within the economy. A portion of the incomes is then spent on other goods and services.

Consumer purchases resulting from the increased income of business owners and households set in motion another sequence of expenditures and purchases. The sum of these impacts over and above the direct and indirect effects are the induced effects. For example, the induced effects would include all the purchases made by households which receive wages from their employment at the rod manufacturer or local market. Induced effects result from wages paid to households by both directly and indirectly affected businesses. These induced effects can be estimated from economic impact models.

If you estimate the direct, indirect, and induced effects of visitor expenditures, you can show the total economic activity which can result from your greenway project. For recreation expenditures, the total economic effects, whether sales, jobs or income, are often approximately one and a half to three times more than the amount of the actual recreation-related expenditures. The magnitude of direct, indirect, and induced impacts depends on the number of visitors attracted to the greenway; the amount they spend; the structure and diversity of the local economy; and the quantity of input supplies purchased within your local community. If the local businesses purchase all their input supplies from outside the area, the direct and indirect impacts on the local economy would be zero. Similarly, if employees reside outside the community they are much less likely to spend their income at local businesses and induced impacts are likely to be minimal.

Multipliers

How are the direct, indirect, and induced effects estimated? Economists often use multipliers to estimate what these effects will be. A multiplier is a ratio, which can be defined as the total effects divided by the direct effect. Multipliers may also be used for indirect or induced effects only. Multipliers are usually written in decimal format such as 1.7. The greater the multiplier, the greater the potential increase in economic activity in the local economy. Multipliers are derived from rather complex economic models.

To estimate what the total effects (direct, indirect, and induced) will be, you multiply the direct effect (first round purchases) by the multiplier to obtain the total effects. Thus, by using multipliers you can show the total amount of economic activity in your community per dollar of direct effect of greenway visitor spending. Multipliers can be used to estimate the total or indirect economic effects in terms of the number of jobs, sales, household income, or other measures of economic activity. For a greenway project, an economist could use an employment multiplier to estimate how many jobs would result from a specific level of greenway-related expenditures. An economist could also use an income multiplier to predict the additional income which would result from an increase in greenway-related expenditures.

Table 6-1 presents economic multipliers for recreation spending at five state parks in Georgia. For this study, the local economic impact region was the

county in which the state park was located. This study found recreational spending appears to be associated with relatively large multipliers. This means new or expanded recreation facilities within these regions would bring new dollars into the area, which through multiplier effects, would stimulate considerable economic activity. Multipliers vary by county, in part, because the structures of the local economies are different.

Table 6-1 lists four multipliers which are commonly used: gross output, total income, value added, and employment. The gross output multiplier is generally the highest, however, the other multipliers are generally more useful indicators of economic activity in your local economy. Definitions of these multiplier terms are as follows:

Table 6-1

Local Economic Multipliers for Recreational Spending at Representative Georgia State Parks					
Economic Indicator	Unicoi	Red Top	F. D. Roosevelt	Dahlonega Gold Museum	Little Ocmulgee
Gross Output	1.56	1.79	1.51	1.48	1.97
Total Income	1.68	2.08	1.68	1.55	2.14
Value Added	1.67	2.06	1.66	1.55	2.12
Employment	1.21	1.23	1.23	1.21	1.32

Gross output Value of all outputs produced in the local region; an indicator of economic activity similar to the gross national product (GNP) of the U.S.

Total income Wages and salaries paid to employees and property income

Value added Sum of employee wages and salaries, indirect business taxes, and property income

Employment The number of people employed by firms and businesses in the local region

Remembering that the multiplier for total effects is the ratio of direct effects to total effects, this table can be used to estimate the total effects (direct, indirect, and induced) per unit of a direct effect. Using Table 6-1, the employment multiplier for Red Top State Park is 1.52. This means that there will be 1.52 jobs

created in the local economy for every one job resulting from the direct impacts of recreation spending at Red Top. Therefore, if 10 new jobs resulted from the direct impacts of recreational spending, 15 total new jobs would eventually be created. Ten of these 15 would be the result of the direct impacts, and five additional jobs from the indirect and induced impacts. Remember the direct impact on employment results from the jobs provided by the recreation-related businesses themselves. The indirect impact on employment results if the recreation business buys production materials and services locally from other businesses, thereby increasing the number of jobs in those businesses.

In another study, total effects were computed for three National Park Service river sites in the eastern United States. In this study, employment multipliers ranged from 1.57 to 1.84. The total gross output multiplier was approximately 2 for recreational expenditures at each of the river areas. Similar to the Georgia State Park study, the authors concluded that recreation expenditures do stimulate economic activity. The study also noted that as the local economies around the river sites diversify and become more self-sufficient, visitor spending on river recreation will have an even larger effect on the local economy (Cordell, et al., 1989).

Once again, multipliers are derived from rather complex economic models. However, in many cities, counties, and states, multipliers have already been calculated and may be appropriate for your project. Caution should be exercised when using or interpreting multipliers. Make certain you know what the multipliers are describing. To use multipliers correctly, it is best to work with an economist or someone very familiar with their use.

Economic Impact Models

Economists often use computerized *input-output models* to derive multipliers. These models are very helpful for understanding the inter-relationships in a local economy. An input-output model which can be used to estimate the impacts of outdoor recreation is the USDA Forest Service's IMPLAN. There are other types of economic impacts analysis models used, such as economic base and econometric models, but they are not discussed here.

An input-output analysis usually shows the relationships between industries in a particular local economy using a matrix or table. This dollar flow table lists all

the sales and purchases made by the different sectors of the economy over a period of time. For example, in the Georgia state parks study, to construct the dollar flow table researchers had to determine how recreation expenditures would be allocated through increased purchases of materials and supplies across various economic sectors. Recreational spending was determined to include purchases of gasoline for automobiles, recreational vehicles, and boats. Thus an increase in purchases of gasoline by park visitors would result in increased purchases by producers of gasoline, i.e., lubricating oils and greases, petroleum and coal, etc.

Once the dollar flow table is constructed, another table is then constructed to derive the multipliers. This final table shows the total dollar amount change in each economic sector caused by a \$1 change in output in any particular sector.

Once again, using multipliers in calculating the direct, indirect, and induced economic effects of your project will probably require the expertise of an economist. However, if this level of analysis is not feasible or warranted, it is still important to recognize that multiplier effects will be generated in the economy, even if they cannot be calculated. When multipliers are used, they can clearly show how attracting new visitor dollars into a region can stimulate considerable economic growth. Multipliers can also be used to show how a decline in visitor expenditures results in decreased local economic activity.

■ In 1985, purchases associated with water-related (rivers and lakes) outdoor recreation in Minnesota totalled nearly \$1.2 billion. Adding the multiplier effects of these purchases brought the total impact to \$1.9 billion. This level of expenditures was linked to 37,600 jobs in the state, or 2.1 percent of total state employment (Kelly and Sushak, 1987).

How to Use These Rationales in Your Community

Calculate the economic impacts of your project. The following are the four steps you might work through to determine what to calculate, as well as how to do it. Be sure to use constant dollars. (See Appendix B)

Step 1: Define your economy and your project. An economy can be a commercial area, a town or city, a region, state, nation, or any other unit. It is where the majority of users and employees live and spend their money. Usually, the larger the economic land unit, the greater the economic impact, because more dollars circulate within the defined economy. Often the economy is defined for political reasons. If the County Supervisors are the relevant decision-makers, they will be interested in how the existing or proposed greenway affects the County.

A project can be an existing greenway, or one that is proposed. You should be as specific as possible regarding the geographic extent of the project, the type of recreation activities that occur there, who the users are and where they come from, and the resources necessary to construct/maintain it.

Step 2: Determine user expenditures per site visit. An effective method to determine resident expenditures associated with the greenway is to hand out a mail-back questionnaire to a random sample of users. Make certain to provide a map with the survey which includes the greenway and the boundaries of the economy you have defined. You may also wish to consider on-site interviews and/or telephone surveys using staff, volunteers, and/or user groups. Contact a local university for examples of questionnaires and assistance in constructing and analyzing the survey. Test the survey before conducting the actual survey. When you hand out mail-back surveys, ask for the name and phone number of the respondents so you can contact them if the completed survey is not returned promptly. Examples of survey questions are included in Appendix C.

The survey results should allow you to determine the number of users, number of visits, expenditures per user in the local area, activities they are participating in, how much of their activity occurs within the greenway, frequency of use, percentage of residents compared to non-resident users. From this, calculate local expenditures per day for each type of user surveyed. Multiply those expenditures by the number of annual users in each category, then add

these together for an estimate of total annual expenditures associated with your greenway. If use varies by season, day of the week, or time of day, be sure your calculations incorporate an annual average. If you are proposing a greenway, make some assumptions about likely expenditure patterns. Base your assumptions on sound logic.

Step 3: Apportion expenditures on recreation equipment, supplies, and clothing. This survey could include questions regarding annual expenditures made on equipment, supplies, and apparel. If so, to assess effects on the local economy, only those expenditures that were made within the region outlined on the survey map can be counted. Also, you can only attribute the portion of the equipment expenditures that relate to the proportion of the total use that occurs at the greenway. For example, if a person spends \$50 per year on running clothes and half of their running is done at the greenway, the greenway-related expenditure is \$25. If purchases are made that will last a number of years, divide the expenditures by the typical life of the equipment, then apportion for annual information.

To make these calculations, calculate the annual amount your users spent on equipment, supplies, and clothing for their activity. Determine if the equipment and supplies were purchased from businesses in your local economy. Find out what percentage of time they pursue their activity within the greenway. Then multiply this percentage by the amount spent on the equipment within the local economy. Table 6-1 can be used to estimate the expenditures for new entrants into a particular recreational activity.

Make an assumption on how many new entrants could be expected as a result of greenway, river, or trail protection. Multiply the number of entrants by the appropriate entry in Table 6-1. Estimates will vary by community. You may wish to contact local retailers for more appropriate estimates for your project.

Step 4: Show how your project supports the local economy.

Total the resident expenditures in the region from the preceding steps and summarize your findings.

Determine the potential impacts of a proposed project. Your project can stimulate the local economy by increasing the demand for recreation-related goods and services. To estimate expenditures which may result from establishing your greenway, river or trail project, work through the calculations in steps 1 through 4 listed above. Rather than conduct a survey to determine actual expenditures, you can forecast the types and number of users your project is likely to attract. Document your assumptions carefully and thoroughly.

Commission your own study. The U.S. Travel Data Center is available to prepare estimates of the impact of travel on communities. A local university may have graduate students available to conduct such a study. There are also consultants specializing in travel impact studies. In most large cities, travel-related businesses pool their funds to commission expenditure pattern studies. You may wish to coordinate with them to get your greenway on their list of visitor attractions.

Input-Output Models. Nationally, the two Input-Output models most often used in recreation and tourism analysis are IMPLAN (U.S. Forest Service) and RIMS-II (Bureau of Economic Analysis). Both of these models allow for determining multipliers down to a county level. Information on IMPLAN is available through the Minnesota IMPLAN Group, Inc. at (602) 439-4421. Use of IMPLAN is available to representatives of public agencies. Information on the use of RIMS-II is available from BEA's Regional Economic Analysis Division, at phone number (202) 606-5343. Fees are associated with accessing either of these models. Be sure to check that these models are appropriate for the size of your study area and the level of analysis you need. It is suggested that the above systems only be used for an analysis of three or more counties.

Some manipulation is necessary to generate multipliers specific to the recreation/open space sectors of your economy. Someone familiar with economic modelling should be contacted to provide technical assistance. Before attempting to adapt a national model, we recommend you first contact your state Department of Commerce to determine if an Input-Output model has been developed that could be applied to your economy.

Sources of Information

Municipal Recreation Economic Impact Model. The Canadian Ministry of Tourism and Recreation has made this impact model available in both print and electronic disk versions. The model is intended to help municipal governments assess the economic implications of municipally-supported recreation activities. Contact:

Mr. Chandra Giocool
Ministry of Culture, Tourism and Recreation
8th Floor, 77 Bloor Street West
Toronto, Ontario
M7A 2R9
Phone: (416) 314-7670

Sport Fishing Institute (SFI). This group has recently completed a user-friendly handbook on *How to Conduct an Economic Impact Analysis*. This guide is intended to give state fish and wildlife agencies the ability to conduct their economic analyses of fishing, hunting, and wildlife-related recreation. It provides a comprehensive explanation on collecting expenditure data and using RIMS-II multipliers. Although the focus is on the state-level impacts of recreation expenditures, the document could prove very helpful in understanding economic impact analysis. An appendix in the report lists sources of fishing activity data available from various state agencies. (Contact Robert Southwick of SFI regarding availability of this report at (202) 898-0770).

Considerations in Using These Rationales

Be cautious. Your greenway may have opposition. If economics become a point of contention, your analyses may be closely scrutinized. Document all your assumptions and be able to retrace your calculations upon request. The best defense is a good offense. Be knowledgeable concerning your method, results, and potential limitations. This will also put you in a good position to scrutinize other economic analyses presented by opposing interests.

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Corporate Relocation & Retention



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Many communities want to attract new, expanding, or relocating businesses to their area in order to increase their employment and tax bases. Retaining existing businesses within a community is even more important for economic stability. This section discusses the importance of quality of life factors in attracting new and relocating businesses. Greenways, rivers and trails contribute to quality of life, and their use is a benefit to corporate employees for exercise and relaxation.

Quality of Life Attracts Businesses

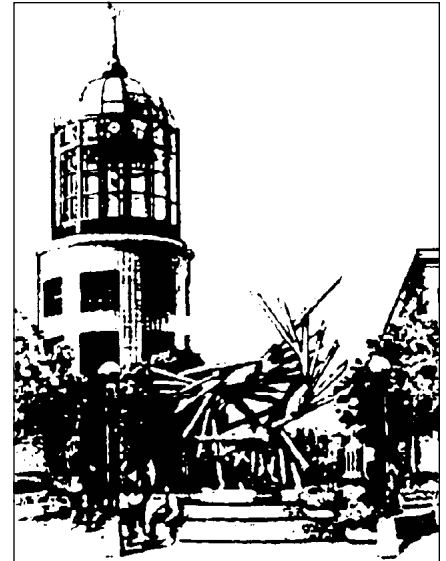
The importance of quality of life in an area is increasingly cited as a major factor in corporate and business location decisions.

■ Quality of life for employees was the third most important factor in locating a business, according to an annual survey of chief executive officers conducted by Cushman and Wakefield in 1989. The two most important factors were access to domestic markets and availability of skilled labor. The top city for business was Atlanta, which also ranked first for highest quality of life. Seattle, which ranked as the second best city for business, also received very high marks for quality of life (San Francisco Chronicle, July 28, 1989).

■ The Joint Economic Committee of the U.S. Congress reports that a city's quality of life is more important than purely business-related factors when it comes to attracting new businesses, particularly in the rapidly growing high-tech and service industries (Scenic America, 1987).

One aspect of quality of life is a location with convenient access to natural settings, recreational and cultural opportunities, and open space.

■ The San Joaquin River Parkway is considered a signature amenity which could help Fresno, California's ability to attract and diversify the economic base. It could enhance the development of Fresno as a true regional capital of the Central Valley of California, enhance efforts to broaden the operational scope of many existing



facilities, and promote efforts to upgrade the educational infrastructure (Robert Klein, Chair, Fresno Chamber of Commerce).

■ In a recent report, the governors of five New England states officially recognized open space as a key element in the quality of life in their region. It is a characteristic responsible for bringing rapid economic growth to the region, as well as providing the foundation of a multi-billion dollar tourism industry (Governor's Committee on the Environment, 1988).

■ A survey of 71 economists rated factors for Arizona's attractiveness as a place to live, work, vacation, retire, and locate future plants and corporate headquarters. The strongest factors contributing to Arizona's positive image were climate, job opportunities, and open space including abundant outdoor recreation opportunities. Seventy firms relocated or expanded their businesses in Arizona, creating 27,800 jobs and \$970 million in indirect salaries and wages. Chief executive officers of these firms said they chose Arizona for its "outdoor lifestyle and recreation opportunities" (Valley National Bank, 1980).

Greenways Contribute to Quality of Life

Greenways, rivers, and trails can play an important role in increasing a community's quality of life, and are attractive to businesses and corporations. Office site locations adjacent to rivers, trails and greenways are also likely to be more attractive to prospective tenants than sites lacking such amenities. Developers and property managers recognize these amenities.

■ Forum Properties (developer and property manager) in Beaverton, Oregon, successfully preserved much of the wetlands in two development projects in Tigard and Beaverton. The projects were designed around the existing creeks, making them a focal point. In developing this new corporate office park, the centerpiece was a constructed wetlands. The wetlands are appreciated by tenants for wildlife viewing and other aesthetic values. Many employees keep binoculars at their desks. (Jeffrey Sackett, Forum Properties, 1990).

■ The San Antonio Riverwalk is always used as an example of the high quality of life and livability of San Antonio, Texas. Site location teams for prospective relocating businesses generally visit the Riverwalk itself. The Riverwalk provides a retreat for employees during lunch and offers a valuable greenspace in the central business district. A location on the riverwalk is considered very desirable. An example is the HEB Company, a regional grocer, which relocated its corporate headquarters to a historic arsenal building, oriented toward the Riverwalk (Peche, 1990). Another example is River Roost, which owns three Riverwalk restaurants and expected a total of \$3.5 million in sales (Benningfield, 1991).

■ Pueblo, Colorado, once known mainly as an industrial city, made an early decision in its highly successful economic revitalization effort. The decision was made to improve its appearance and amenities in order to attract new businesses. The resulting investment in trails and parks along the Arkansas River and Fountain Creek is now credited by city fathers as one of the most important components in turning around economic decline (*Denver Post*, January 27, 1990).

■ The American River Bike Trail in Sacramento, California, is included as an important outdoor recreation amenity in the Chamber of Commerce's publication *All About Business in Sacramento*. It is described as a 30 mile oasis in the heart of the city. The President of the Metropolitan Chamber of Commerce, Roy Brewer, considers the trail to be evidence of the high quality of life in Sacramento, as well as one of Sacramento's treasures. "At many locations along the bicycle trail you can wade into the river, cast a line, and not see a single sign of civilization. The river trails provide abundant salmon fishing and natural areas for hiking, horseback riding, or biking - a chance to get away from it all without having to leave the city " (Sacramento Chamber of Commerce, 1990).

Greenways Promote Employee Fitness

Businesses are realizing the benefits of healthy employees, both in increased efficiency and decreased health insurance claims. Greenways help promote fitness by providing convenient opportunities for exercise, such as walking, jogging, or exercise courses.

■ The American Heart Association conducted a study of 8,301 men and women employed at 35 corporations across the country and found that those who were the most physically fit, measured by a rigorous “step test” and body fat measurement, had a 37 percent lower absenteeism rate than those who were unfit. Another study by the American Heart Association reported that Control Data Corporation in Minneapolis, Minnesota saw a 30 percent reduction in medical claim costs and a 35 percent reduction in the length of hospital stays for people participating in a health promotion program (Krieger, 1991).

■ A study of a group of employees in San Jose, California, showed that those who exercised regularly had 14 percent lower medical claims, 30 percent fewer hospital days, and 41 percent fewer claims greater than \$5,000 (City of San Jose, 1988).

■ A 1984 study of the office staff of Houston’s Prudential Insurance Company found that higher levels of employee fitness lower major medical and disability costs. The study estimated a savings of \$1.93 for every dollar invested in the program (Wellness Councils of America, 1989).

Greenways and trails also help reduce firms’ employees’ commuting costs because they provide opportunities to commute by foot or bicycle.

■ More than 4 million adult Americans used a bicycle (at least occasionally) to commute to work or school during 1993 (Bicycle Federation of America, 1994).

■ An analysis of 1980 census data by the Northeastern Illinois Planning Commission (NIPC) showed 7,000 commuters in the

Chicago region use a bicycle to get back and forth to work every day, weather permitting. During the peak summer months, this figure climbed to 14,000 commuters. NIPC found most of the commuters using bicycles to travel to work live near one of the five linear trails found in the Chicago region. In census zones where these trails exist, an average of 15.6 percent of the commuter trips are by bicycle. When the region is taken as a whole, however, only one percent of the working population commutes by bicycle. These trails, therefore, seem to offer an alternative to using congested roadways to get to work (Eubanks, 1986).

How to Use These Rationales in Your Community

Talk to your local Chamber of Commerce. Talk with staff to see how your greenway is being promoted to prospective corporations and businesses. If it is not included in the Chamber's informational materials, provide photos and descriptive information for inclusion in these packets. For a proposed greenway, present to the Chamber examples of how greenways and quality of life have contributed to attracting corporations and businesses to other communities. Encourage the Chamber to be an active partner in promoting your greenway.

Talk to commercial corporate location specialists. These people are in business to help businesses find the best location. Find out how these specialists analyze a community's quality of life so you can tailor your promotional information accordingly.

Talk to new businesses in the area. Find out from the Chamber of Commerce or the Planning Department what new businesses have located in your area in the last five years. Get employment information and payroll dollars if possible. Ask if the greenway in particular (or the area's natural resources and recreation opportunities in general) had any influence in the company's location decision. Get follow-up contacts at the companies. Document statements and try to get quantitative information wherever possible. For a proposed greenway, collect information on a similar project that could apply to your greenway.

Figure out how many businesses are located adjacent to or near a greenway. Choose an arbitrary radius from an existing greenway and map the

locations of corporations and businesses within that radius. Determine the proportion of corporations and businesses which selected the location after the greenway was implemented. Talk to executives and employees about their perception of the greenway. Ask businesses which have been located in your community for a long period which factors have kept them in the community.

Determine how many employees use a greenway. Plan to visit a greenway during commuting hours and count the number of people using the trail to get to work. If you have the opportunity to do quick interviews, do so. Find out how often they use the trail, for what distance, and whether the greenway was an important factor in deciding where they live or work. If you cannot conduct interviews, count the number of people in work-type clothing. You may miss a few this way, but it will give you an estimate. Visit the greenway during lunch time to get a feel for the potential level of use by nearby employees for picnicking, walking, and jogging. Again, for a proposed greenway, draw some reasonable conclusions as to how your greenway could provide similar commuting opportunities.

Survey local employees. Get permission to survey employees from businesses in close proximity to a greenway, river, or trail. You may wish to focus upon businesses new to the area. Have an attractive mail-back postcard distributed to each employee, asking whether they use the greenway to get to commute to work, or for exercise during the work day. Ask whether the greenway and the area's overall quality of life influenced their decision to move there. You may also be able to get information from the companies' employee relations or human resource staff about employee commuting, exercise patterns, turnover, and recruitment.

Scan the media. Review Chamber of Commerce advertisements and real estate newsletters to see whether the quality of life in your area is being advertised to potential new corporations and businesses. Look in advertisements, recruitment pamphlets, and annual reports to see how they refer to the community in which they are located and how it is visually depicted. Scan health newsletters and magazines to gather information on employee attitudes toward, and use of, river, trail, and greenway resources near their workplace.

Considerations in Using These Rationales

Economic growth and conservation must be balanced. If growth is not carefully planned, it may undermine the quality of life which helped to attract businesses.

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Public Cost
Reduction



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Conservation of greenways, rivers, and trails may result in reduced costs to local governments and other public agencies. By conserving a greenway corridor rather than permitting intensive development, local agencies may reduce costs for public services such as sewers, roads, and school facilities. Establishing a greenway in an area prone to hazards, such as flooding, may decrease costs for potential damages. Greenways and associated vegetation can also help control water, air and noise pollution by natural means, resulting in potential decreased pollution control costs. Greenways and trails may promote physical fitness, leading to decreased public health care costs.

Public Service Requirements

The choices between retaining undeveloped lands as open space or allowing residential development must be considered. How this choice effects public expenditures and the tax base is often the subject of debate. Expansion of the tax base is not always beneficial in the long term. Expansion almost always results in increased public service requirements. In many situations, the cost of providing these services to residential development is much higher than the revenues to local governments resulting from the expanded tax base. A list of development costs could include:

Transportation and Utility costs

- ☐ Roads
- ☐ Public and private utilities
- ☐ Sanitary sewage
- ☐ Water
- ☐ Natural Gas
- ☐ Electricity
- ☐ Storm sewage

Facility and Service Costs

- ☐ Open space, recreation, and libraries
- ☐ Schools
- ☐ Health care
- ☐ Police and fire protection
- ☐ Mail delivery
- ☐ Solid waste collection and disposal

■ Urban sprawl is costing a bundle according to a team of economists at Rutgers University in New Jersey. Potential capital costs attributable to sprawl development patterns in the state of New Jersey were cited at \$1.3 billion over 20 years for roads, water,

sewer and school facilities. Additional operating and maintenance costs of development reached \$400 million annually. Capitalized at current borrowing rates, these numbers translate to a \$7-8 billion cost for sprawl over the twenty years from 1992 to 2012 (Kasowski, 1992).

■ After researching the economic benefits of open space, the planning department in Dutchess County, New York found that farms and other types of open land can actually subsidize local government by generating more in property taxes than the demand for services. Residential lands required \$1.12 to \$1.36 for every tax dollar contributed, while agricultural lands required only \$0.21 to \$0.48 for every dollar contributed as reported by the Cornell Cooperative Extension of Dutchess County (Sayer, 1994).

■ According to an American Farmland Trust (1986) study of Loudoun County, VA, “over a wide range of development densities . . . the ongoing public costs of new residential development will exceed the (public) revenues from such development.” Of those units analyzed, annual revenues per thousand dwellings were between \$2.7 million and \$2.9 million, while costs averaged between \$3.5 and \$5.0 million. The annual net deficit per thousand units ranged from \$0.6 million to \$2.3 million (1986 dollars). The greatest predicted shortfall was for the lowest-density units, termed by the Trust as “rural sprawl.” The least shortfall was for medium density development. For all densities, school expenses were the largest proportion of total costs (American Farmland Trust, 1986).

■ In the City of Boulder, Colorado, the 1988 public cost for maintaining non-open space, such as developed acres, was estimated to be over \$2,500 per acre, and could be as high as \$3,200 per acre when utilities, flood control, transportation, and subsidiary governmental entities’ costs are included. The cost for maintaining open space in the City was only \$75 per acre, or less than three percent the cost of non- open space (Crain, 1988).

■ In Culpeper County, Virginia, the average new residential unit can be expected to produce a deficit in the County budget of \$1,242

(1988 dollars) (Larson and Vance, 1988). According to these authors, this study addresses the widespread but erroneous perception that residential growth, in expanding the tax base, somehow contributes to local fiscal health. Although residential development results in increased revenues from the real estate tax and other sources, it simultaneously increases demand for public service expenditures and generates the need for expanded public facilities.

A companion study concluded that for every dollar of tax revenue collected from residential land uses in Culpeper County in 1987, \$1.25 was spent on county services. For every dollar collected from industrial/commercial or farm/forest/open space lands, only \$0.19 was spent on services (Vance and Larson, 1988).

Hazard Mitigation

Use of geologically or environmentally sensitive areas for open space or recreation purposes can reduce potential property damage costs and loss of life. Hazards which can be mitigated through conservation of open space include flooding, slope instability, structural fire damage, and earthquake losses. Many of the available examples focus on flood control.

■ Potential multi-million dollar claims for landslide damages were avoided in Richmond, California, because property originally proposed for residential development was purchased for natural parkland instead. In 1980, a major development was proposed on hillside land which was prone to instability. The local community objected to the development, arguing in part that the area was prone to instability and not suitable for development. The project was denied and the land, purchased by the Trust for Public Land, was eventually transferred to the East Bay Regional Parks District for inclusion in the Wildcat Canyon Regional Park. After major storms in 1982 and 1983, landslides occurred on this property, which would have destroyed development had it been allowed. The state of California subsequently passed legislation granting landslide immunity to public agencies who maintain land in a natural

condition. This legislation may help encourage park districts to acquire property which may be prone to landslides (Kent, 1990).

■ The Minnesota Department of Natural Resources computed the average cost to replace an acre-foot of flood water storage to be \$300. In other words, if development eliminates one acre of wetland that naturally stores a twelve inch depth of water during a storm, it would cost the public \$300 to replace the water storage. The cost to replace 5,000 acres of wetlands lost annually in Minnesota would be \$1.5 million (Floodplain Management Association, 1994).

■ Leaders in Johnson County, Kansas, expected to spend \$120 million on stormwater control projects. Instead, voters passed a \$600,000 levy to develop a county-wide streamway park system. Development of a greenways network along streambeds will address some of the County's flooding problems, as well as provide a valuable recreation resource.

The Federal Flood Insurance Program subsidizes the cost of procuring flood insurance. Under the program, a structure repeatedly damaged by floods can receive damage payments each time. It is often argued that in the long run, it would be cheaper for the public to acquire repeatedly damaged structures than to continue to provide funds to repair or rebuild structures in flood-prone locations.

■ In 1958, Gilbert White estimated that for every six dollars in potential damages reduced each year by new flood protection measures, at least five dollars in additional damages resulted from development in floodplains. Steve Hanke calculated the same ratio of dollars spent in flood control to dollars of damage in 1972. Flooding accounted for larger annual property losses than any other single geophysical hazard (Riley).

■ Baltimore County, Maryland, acquired 100 homes in several 100-year floodplains and resold them to people willing to relocate the structures to higher ground. At a cost of \$27 million, the County will have cleared the 100-year flood plain in eight of its most critical

watersheds, with local money saving \$85 million in storm damage assistance costs over the next five years (Caputo, 1979).

Pollution Control

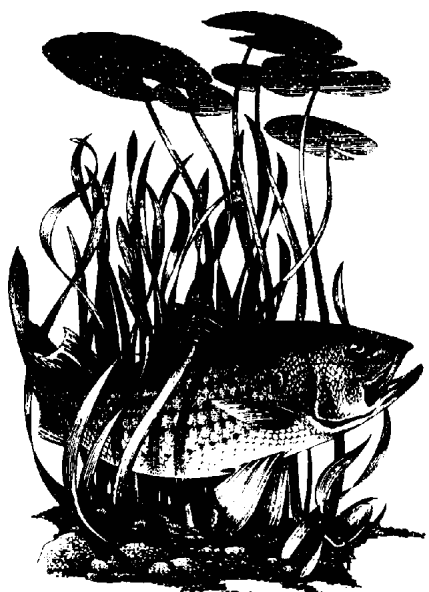
Researchers have found that natural properties of plants and trees help mitigate water, air, and noise pollution. Greenways which help conserve such plants and trees provide a valuable contribution toward pollution control. These natural abilities are described below. Pollution can also be decreased by establishing trails and greenways which encourage people to walk or bicycle rather than drive automobiles.

Establishment of a greenway along a river or stream helps maintain water quality because riparian vegetation helps filter out pollutants. Riparian vegetation serves as an effective buffer between a stream and adjacent agricultural area. The retention capabilities of this vegetation prevents many agricultural chemicals from polluting the stream. A study of an agricultural watershed and riparian forest in Maryland (Peterjohn and Correll, 1984, as cited in Risser, 1987) found that if the riparian forest were removed, there would have been twice as much nitrate nitrogen lost to the stream.

Man-made wetlands are making their way into the spotlight because of their ability to improve the quality of polluted water from sources such as municipal wastewater, stormwater and agricultural runoff and acid mine drainage. Wetlands are formed in chambers which the water passes through as the pollutants are filtered by various biological processes. The water leaving the wetland will be cleaner and higher quality than it was before treatment (Oertel, 1990).

■ The wetlands of Congaree Bottomland Hardwood Swamp in South Carolina provide valuable water quality functions such as sediment, toxicant and excess nutrient removal. The least cost substitute for the water quality services provided would be a water treatment plant costing \$5 million (Floodplain Management Association, 1994).

Riparian habitat within a greenway may also serve to keep water temperatures cool by shading the stream and thereby improve conditions for fisheries. Restoration of Boulder Creek in Colorado illustrates how a stream restoration



project can not only reduce costs for pollution control, but also provide opportunities for fisheries.

■ Boulder, Colorado, reduced potential wastewater treatment costs significantly by deciding to restore Boulder Creek rather than construct a nitrification tower. Discharge effluent at the wastewater treatment plant met water quality standards, however, further downstream, ammonia concentrations exceeded the allowable level. Downstream the creek had been previously channelized and degraded. Through revegetation, terracing, construction of aeration structures, and other improvements, the stream was restored. The natural functions of the stream would then cool and reaerate the water to convert the ammonia. Restoration of Boulder Creek would also improve wildlife habitat, particularly fisheries. (John Barnett, Greenways Coordinator, City of Boulder, 1990).

Greenways can also help reduce other adverse impacts of urbanization. Drastic alterations of a ground surface, such as compaction or paving can reduce the infiltration capacity of a surface, which can cause a serious reduction in groundwater recharge and an increase in runoff.

Greenways help reduce the impacts of noise in two ways. First, greenways serve to maintain distance between the noise source and receiver. Secondly, greenways can include planting barriers, such as tree belts and grassy areas that have the natural ability to absorb, deflect, and refract sound. The effectiveness of plants in controlling noise varies, depending upon the characteristics of the sound, the type, height, density and location of the planting, and climatic factors (Robinette, 1972). Although solid sound attenuation walls may still be necessary to mitigate noise impacts, the distance buffer of greenways and the natural ability of plants should not be overlooked. Greenways as buffers may also have a visual and psychological advantage over masonry walls.

■ A forestry study found that sound reductions attributed to wide belts of tall, dense trees often reached 10 decibels, and soft surfaces such as grass or plowed ground adjacent to a tree belt, reduced noise levels by 8 to 12 decibels (National Park Service, 1983).

Greenways also help control air pollution because plants are natural air cleaners. Plants cleanse the air through the process of photosynthesis, which removes carbon dioxide from the air and returns oxygen. Specifically, plants control air pollution through oxygenation and dilution. Oxygenation refers to the introduction of excess oxygen into the atmosphere. The ability of plants to introduce excess oxygen into oxygen-deficient air serves to readjust the balance. A wide greenbelt along a highway could readjust the air balance in the area. Plants also act as cleansers by absorbing pollutants directly into their leaves and assimilating them (Robinette, 1972). Vegetation can absorb ozone, sulfur dioxide, carbon monoxide, and airborne particles of heavy metals.

■ In 1991, trees in the City of Chicago, Illinois (11 percent tree cover) removed an estimated 17 tons of carbon monoxide, 93 tons of sulfur dioxide, 98 tons of nitrogen dioxide and 210 tons of ozone. The value of this pollution removal was estimated at \$1 million annually (Nowak, 1994).

■ Recent studies indicate that a single rural tree can intercept up to 50 pounds of particulates per year. In one study, it was determined that planting half a million trees in Tucson, Arizona would reduce airborne particulates by 6,500 tons per year. The annual value of this pollution control measure was estimated to exceed \$1.5 million annually (McPherson, 1991).

■ Reductions in pollutant concentrations downwind from parks has been recorded. In one study, reductions in particulate concentration of 19 percent were recorded in Ohio conifer stands. (Schmid, 1975, and Dochinger, 1975, as cited in National Park Service, 1983).

■ Trees in greenways also provide ambient temperature mediation and help reduce heating and cooling costs. Trees reduce winter heating costs by 40 percent in some cases; and summer shading might provide even greater benefits. A single, isolated tree, generously supplied with water can transpire energy equivalent to five average room air conditioners running 20 hours per day. The species of tree, available moisture, and available soil volume affect the quantity of water evapotranspired per tree (Newsweek, 1979 and Federed, 1971).

Health Care Costs

Active use of a river, trail, or greenway by community residents can help improve their physical fitness and health. Studies have shown that exercise can reduce health care costs. These costs savings may be shared by public health services, employers, and individuals.

- For every mile a person walks or runs, they will save society 24 cents per mile in medical and other costs. These figures are the results of a theoretical model developed by the Rand Corporation (Men's Fitness Magazine, 1992).

- Recreation activities involving exercise reduce health care costs. People who exercise regularly have 14 percent lower claims against their medical insurance, spend 30 percent fewer days in the hospital, and have 41 percent fewer claims greater than \$5,000. These figures were taken from a Corporate Wellness Study for the city of San Jose, Department of Recreation, in 1988. In 1991 the average American family paid nearly 12 per cent of average family income for health care, according to a Families USA Foundation study. By the year 2000, the study predicts families will be paying over 16 per cent of their income for health care. (U.S. News and World Report, December 23, 1991).

- Exercise derived from recreational activities lessens health related problems and subsequent health care costs. Every year, premature deaths cost American companies an estimated 132 million lost work days at a price tag of \$25 billion. Finding and training replacements costs industry more than \$700 million each year. In addition, American businesses lose an estimated \$3 billion every year because of employee health problems (National Park Service, 1983).

How to Use These Rationales in Your Community

Calculate itemized costs for development. Table 8-1 has been adapted from the 1986 American Farmland Trust study of Loudoun County, Virginia. In this study, major annual public costs and revenues were projected for communities of varied densities. Table 8-1 shows the net public finance shortfall for

medium density development (2.7 units per acre) is almost \$670 per unit.

Loudoun County, Virginia, is a rapidly growing area, with a present population of 66,500 and an annual budget of \$85 million. Although it is one of Virginia's best farming communities, Loudoun County is within the Washington D.C. metropolitan area, and development pressure is high. If your community is similar to Loudoun County, you may be able to apply these conclusions to your community. Otherwise, the table illustrates the categories of public costs and revenues that can be used in determining the public cost/revenue relationship for your community.

Calculate average costs for development If time or staff is not available to carry out itemized calculations, you may choose the method used in the city of Boulder case. In that case, city staff estimated the 1988 average cost per acre for both open space and non-open space acreage within the city limits. The open space operational budget was divided by the number of acres in open space and the general fund operating budget was divided by the number of acres in non-open space use. The result was a comparison of public costs between these two land uses.

Apply the Fitch Formula to understand the costs of development. According to Lyle Fitch, former chief administrator to the City of New York, there are some cases where it is financially advantageous to acquire land to preclude its residential development. This point occurs when the municipal cost of servicing

Fitch Formula

$$I_a = \frac{C_s - (L_a + L_f i)}{t}$$

Where,

I_a is the point at which the municipal costs of servicing development equaled generated tax revenues

C_s represents the costs of providing public services to the development

L_a is any decrease in the assessment resulting from the acquisition

t represents the tax rate

L_f is the cost of acquisition

i is the interest rate on borrowed money

a proposed development is equal or greater than the tax revenues projected to be generated by development (Caputo, 1979). His formula to calculate this point is as follows:

Calculate local expenditures for flood mitigation. If property owners have filed claims for flood damages, total those claims, and the processing and legal fees associated with them. For each flood event, find out the magnitude of the event (e.g. 50-year flood, 75-year flood, etc.) and how many properties were damaged. Forecast the potential losses and claims of a 100-year flood. Compare these costs with the expenditures made for flood control measures to determine whether building in the flood plain is cost-effective.

Talk to the staff of your local Flood Control District to acquire background information on flood control history, policies, and compensation in your area. They may refer you to the Federal Emergency Management Agency for information on the flood insurance program in your area and for maps of the 100-year flood plain. Your local district office of the Army Corps of Engineers is probably involved in flood control studies and hazard analysis in your area, and can be a valuable source of information.

Table 8-1

Housing Unit Public Cost and Revenue Projections for Loudoun County, Virginia (Medium Density Housing)			
Public Costs	Amount	Public Revenues	Amount
Public school capital costs	\$ 243	Real property taxes	\$ 846
Public school operating/instructional	2,256	Personal property taxes	240
Public school transportation costs	67	Other local taxes	276
Public road maintenance costs	38	Other local revenue	162
Water and sewer operation costs	260	Revenue from state	984
Law enforcement costs	165	Federal payments and grants	54
Fire/rescue service costs	58	Water and sewer revenues	260
Health and welfare costs	295	Road maintenance/repair	37
Government administrative costs	147		
Total Average Annual Costs\$ (per housing unit)	3,528	Total Average Annual Revenues \$ (per housing unit)	2,859
Net Loss per Medium-Density Dwelling = \$ 669			
<i>Source: American Farmland Trust, 1986</i>			

Compare future storm damage costs to relocation costs. As was done by Baltimore County, Maryland, calculate the cost involved in purchasing flood prone structures, and reselling them to persons willing to relocate to non-flood prone lands. Compare this amount to forecasted flood damage costs and present this information to decision-makers.

Sources of Information

Practitioner's Guide to Fiscal Impact Analysis. This 1980 text by Burchell and Listokin contains overviews of several methods for projecting direct public costs and revenues associated with new development. Though a somewhat technical volume, it provides a good introduction to fiscal impact analysis. It also includes summary tables which provide figures for your calculations. This text should be available through your city, county, or university library.

The Use of Economic Analysis in Valuing Natural Resource Damages. This 1984 text from the Environmental Law Institute is aimed at illustrating economic methods to assess damages from toxic substances. It describes many economic assessment methods in generic terms.

Considerations in Using These Rationales

Keep all aspects of a situation in perspective. Public fiscal impacts are only one consideration in land use planning. Other considerations include adequate and affordable housing stock, ability to attract commercial investment, and local economic conditions.

Determine developer contributions to public service requirements. Many developers, as part of their proposals, or as conditions for development, construct public service facilities (sewer, stormwater systems, etc.), or contribute to service funds. Often, however, these contributions will not cover the entire public costs of development. Make certain to incorporate developer contributions into your figures. Be sure to calculate long-term service costs, not just facility costs.

Update dollar values. If you use dollar values from studies completed in different years, make sure you convert those values to a common year (preferably the current year) before using them in calculations. See Appendices A and B.

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Benefit Estimation



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Greenways, rivers, and trails provide many benefits which do not have established market values and are difficult to price and express in monetary terms. This section introduces techniques of economic analysis which attempt to quantify these non-market values to ensure a more complete measure of total benefits associated with rivers, trails, and greenways.

The first subsections present methods used to estimate the benefits of recreation. Also included, is a discussion of how people may value river, trail, and greenway resources, even when they may not visit these areas. Benefit-cost analysis is also introduced as an economic technique which may be helpful for some river and greenway projects.

Introduction to Benefit Estimation

Total recreation benefits are defined as the sum of the maximum amount individuals are willing to pay to engage in a recreation activity, rather than forego it (Walsh, 1986). This concept is referred to as willingness-to-pay and is the method recommended by the Water Resources Council, a U.S. government interagency advisory committee, as an appropriate economic measure of the benefits of outdoor recreation.

The standard method of illustrating this concept is shown in Figure 9-1. The downward-sloping line represents the market demand curve (for total visits to a park, outings on a trail, canoe trips, etc.). The curve illustrates that, theoretically, the lower the cost of an activity, the more likely it is that people will engage in that activity. At a \$2 fee, the greenway will receive 1000 visits. In this simplified example, the market value of the greenway is the annual number of visitors times the fee, or \$2000, shown by the shaded rectangle APCB.

For some people, the \$2 fee is the maximum they would be willing to pay to visit the greenway. They would choose other activities if the fee were raised. Many people, however, would be willing to pay more than the \$2 fee. Therefore, these consumers would be receiving extra benefits for which they don't pay. This concept is referred to as consumer surplus, as shown by the triangle DPC in Figure 9-1. The total benefits associated with the greenway is illustrated by the entire shaded area. If no fee were charged, visitation would be expected to increase to E and total benefit would be the entire area under the curve.

Figure 9-1

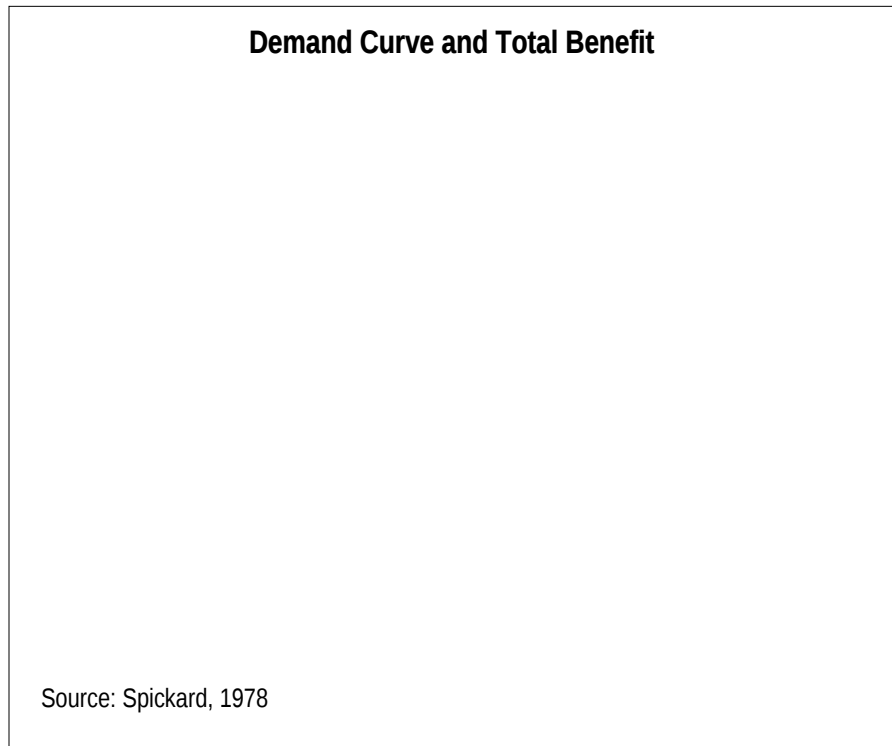


Table 9-1

Average Willingness To Pay by Activity (in 1987 dollars)		
Activity	Average Value, per activity day	Number of studies evaluated
Camping	\$ 19.05	14
Picnicking	18.26	6
Swimming	24.02	9
Hiking	28.49	6
Non-motorized boating	48.68	11
Cross-country skiing	16.76	2
Coldwater fishing	30.72	33
Anadromous fishing	51.52	8
Warm water fishing	29.25	13
Non-consumptive wildlife	20.06	3
Source: Walsh, et al, 1988		

Many studies have been conducted which attempt to measure the willingness-to-pay for recreation activities. A composite table of various study results is provided below. These values are listed in 1987 dollars and are given to illustrate the range of willingness-to-pay, depending upon the activity. Willingness-to-pay may also vary depending upon the quality of the resource, or where the activity takes place.

Assessment Methods

Several methods can be used to estimate willingness-to-pay, or the benefits to users. Three methods are generally considered acceptable for measuring the benefits of recreation activities: the unit day value, the travel cost method, and contingent valuation. These methods are somewhat complex and will likely require the assistance of a specialist in recreation economics. This Resource Book provides an introduction to these methods. For further explanations, we suggest you review the texts listed under "Sources of Information" in this section.

The *unit day value* approach is considered appropriate for estimating the benefits from recreation activities at small sites. This approach relies on expert judgement to determine benefits to users, or the average user willingness-to-pay for the opportunity to recreate at a given site. Planners, managers, and economists have developed a wide variety of unit day value estimation methods. Methods have been established for unit day values by federal agencies. Three examples are described in this section: Bureau of Land Management (BLM), US Forest Service (USFS), and Water Resources Council.

The BLM example is the simplest method to understand (Table 9-2); the USFS method shows how unit day values vary by location (Table 9-3); and the Water Resources Council method shows how the unit day values vary depending upon the quality of the recreation experience (Table 9-4).

Using the BLM unit day values, and assuming an area received 25,000 user days of cross-country skiers and 25,000 user days of picnickers during the year, the economic benefits of recreation would be $(25,000 \times \$14.20) + (25,000 \times \$13.98) = \$704,500$ annually.

Table 9-2

Bureau of Land Management Unit Day Values, 1986	
Activity	
Camping and Picnicking	\$14.20
Motorized Travel	6.70
Hiking and Horseback Riding	20.76
Water-Related Activities	20.27
Winter Sports	13.98
Source: Bureau of Land Management, 1987	

Table 9-3 shown below, lists unit day values according to USFS administrative regions. USFS day values vary by activity and fluctuate region to region. To determine which Forest Service region your project is in, contact your local U. S. Forest Service office.

Using the USFS recreation values, or unit day values for camping, 10,000 visitor days of camping recreation in Region 2 would be $10,000 \times \$8.61 = \$86,100$ per year, whereas in Region 10, 10,000 visitor days of camping would be $10,000 \times \$4.23 = \$42,300$.

Table 9-3

U. S. Forest Service Recreation Values									
Activity	U. S. Forest Service Regions								
	1	2	3	4	5	6	8	9	10
Camping, picnicking and swimming	4.97	8.61	8.81	5.60	7.68	7.16	8.06	12.36	4.23
Hiking, horseback riding, and water travel	5.28	5.59	5.52	5.20	6.00	5.56	6.99	8.23	5.01
Winter Sports	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09	31.09
All other recreation activities	13.05	14.47	12.83	11.43	12.03	9.59	13.12	13.12	13.05
Fishing	31.96	34.78	40.42	31.96	38.54	46.06	40.42	42.30	31.00
Non-consumptive wildlife use	23.00	25.14	19.99	29.61	32.79	24.05	20.95	18.13	9.83
Source: U. S. Department of Agriculture, Forest Service, June 1989									

Table 9-4

Guidelines for Rating Quality of Recreation Experience					
Criteria	Quality of Experience, 100-point Scale				
Recreation Experience	Heavy use or crowding or other interference with use	Moderate use, other users evident and likely to interfere with use	Moderate use, some evidence of other users and occasional interference with use due to crowding	Usually little evidence of other users, rarely if ever crowded	Very low evidence of other users, never crowded
Total Points: Point Value:	30 0-4	5-10	11-16	17-23	24-30
Availability of Substitutes	Several within 1 hour travel time; a few within 30 minute travel time	Several within 1 hour travel time; none within 30 minute travel time	One or two within 1 hour travel time; none within 45 minute travel time	None within 1 hour travel time	None within 2 hour travel time
Total Points: Point Value:	18 0-3	4-6	7-10	11-14	15-18
Carrying Capacity	Minimum facility development for public health and safety	Basic facilities to conduct activity	Adequate facilities to conduct without deterioration of the resource or activity experience	Optimum facilities to conduct activities at site potential	Ultimate facilities to achieve intent of selected alternative
Total Points: Point Value:	14 0-2	3-5	6-8	9-11	12-14
Accessability	Limited access by any means to site or within site	Fair access, poor quality roads to site; Limited access within site	Fair access, fair road to site, fair access, good roads within site	Good access, good roads to site; fair access within site	Good access, high standard road to site; good access within site
Total Points: Point Value:	18 0-3	4-6	7-10	11-14	15-18
Environmental Quality	Low aesthetic factors exist that significantly lower quality	Average aesthetic quality; factors exist that lower quality to a minor degree	Above average aesthetic quality; any limiting factors can be reasonably rectified	High aesthetic quality; factors exist that lower quality	Outstanding aesthetic quality; no factors exist that lower quality
Total Points: Point Value:	20 0-2	3-6	7-10	11-15	16-20

Table 9-5

Water Resources Unit Day Values by Quality of Experience											
Quality of Experience, 100-Point Scale											
Recreation Activities	0	10	20	30	40	50	60	70	80	90	100
General recreation	\$ 1.80	\$ 2.16	\$ 2.40	\$ 2.76	\$ 3.36	\$ 3.84	\$ 4.20	\$ 4.44	\$ 4.80	\$ 5.16	\$ 5.40
General fishing and hunting	2.64	2.88	3.12	3.48	3.84	4.20	4.86	4.80	5.16	5.28	5.40
Specialized recreation	7.32	7.80	8.40	9.00	9.60	10.80	12.00	14.40	16.80	19.20	21.50
Specialized fishing and hunting	12.60	12.95	13.20	12.55	13.90	15.25	16.55	17.65	18.95	20.30	21.50

Source: Walsh, 1986, (Updated to October 1987)

The other method of computing unit day values has been developed by the Water Resources Council, a U. S. government agency. In this method, the quality of the recreation opportunity is rated according to a specific set of criteria. Table 9-4, Guidelines for Rating Quality of Experience on a 100-Point scale, shows the ratings for various criteria. The individual scores for each criteria are totalled. The maximum score is 100. Table 9-5, allows you to estimate the unit day value based upon the quality of experience score.

For example, a greenway with these characteristics: moderate use and occasional crowding, no similar areas within 50 miles, good access and roads, and high aesthetic quality, would get a score of 70. Ratings from Table 9-4 which total 70 are: recreation experience (20); availability of substitutes (13); carrying capacity (11); accessibility (13); and environmental quality (13). If the most applicable category for this greenway is general recreation, the daily value of greenway use, from Table 9-5, would be \$4.44 per visitor day. If you receive 25,000 visitors per year, the total annual recreation benefits using this approach would be \$111,000, based on 1987 dollar values used in the table.

We now turn our discussion from the unit day value method to the *travel cost method*. The travel cost method is based upon assessing travel expenditures to and from a recreational resource as a measure of recreational benefit. The underlying assumption of this approach is the number of trips to a recreation site will decrease as the monetary and time costs of travel increase. This is an appropriate approach when trying to estimate the demand by the current population of users. This method involves creation of demand curves to estimate how many trips would be taken as one-way travel distance to the recreation destination increases. Walsh's text listed in the "Sources of Informa-

tion” subsection of this section, includes a detailed discussion of how to establish the demand curves and use this method.

As opposed to the travel cost method, the *contingent valuation method* uses a bidding approach to determine values of recreation resources via hypothetical market transactions. It can be used to evaluate the benefits of resources to the general population (users and non-users) and can also be used to evaluate the impacts from potential changes in resource availability, or quality.

■ Daubert and Young (1981) performed one of the first evaluations of recreational values of instream flow in 1978 to 1979 on the Cache la Poudre River in Colorado. Respondents were asked to provide willingness-to-pay information corresponding to flow levels presented in a series of photographs. Photographs were supplemented by hydrologic and fish catch information for each of the flow levels pictured. Bid curves were then estimated corresponding to flow levels and socioeconomic characteristics. Results showed that average willingness-to-pay for fishing peaked at \$30.35 per angler day at a flow level of 500 cfs. Lower or higher flows were significantly less valuable.

■ Loomis, et al. (1986) used a combination of the travel cost method and contingent valuation method to evaluate the economic losses to recreational fisheries resulting from hydro development on Henry's Fork of the Snake River in Idaho. The estimate of net willingness-to-pay for current conditions on Henry's Fork was \$2.86 million annually, which would be lost if a dam were to eliminate this river segment. A 50 percent reduction in fish catch would result in a loss of \$920,000 in annual benefits and a 50 percent reduction in fish size would result in a loss in benefits of \$1.07 million annually.

The unit day value, travel cost, and contingent valuation methods continue to be tested and refined. They provide alternatives to assess values of recreation resources via hypothetical market transactions. One study undertaken by the University of Wisconsin sought to validate these measures by including actual cash payment, in addition to the travel cost and contingent valuation methods. The focus of the case study was the value of goose hunting permits. In Wisconsin, goose hunting permits are issued by a lottery system. For this study,

travel cost and contingent valuation surveys were conducted to estimate permit winners' willingness-to-pay for hunting permits. In addition to asking people what they might pay, checks in varied amounts were sent to lottery winners which could be cashed if the winner's permit were returned. These checks were sent as a pragmatic test of what actual value the winners placed on the permit. The results were as follows:

Method	Permit Value
Actual cash value	\$63
Contingent valuation method	\$21
Travel cost method	\$11-15

This study shows that people actually ranked the value of the permit higher than the estimation method revealed. This underscores the limitations and possible underestimation of hypothetical valuation methods.

Preservation Values

Analysis of economic benefits can also be used to determine the values which people place on resources, even if they do not use them. These non-users may value the resource for several reasons. The different types of preservation values and their definitions are as follows:



<i>option value</i>	Knowing there is guaranteed opportunity for future access to the resource
<i>existence value</i>	Knowing that a resource has been preserved in perpetuity, even if no recreational use is contemplated
<i>bequest value</i>	Knowing that future generations will have the opportunity to enjoy the resource

Some studies have attempted to quantify these values.

■ Walsh, Sanders, and Loomis (1984) used contingent valuation to evaluate the optimal number of rivers in Colorado that should be protected under Federal Wild and Scenic designation. This study

was unique in that it incorporated both use and non-use values of rivers. The authors concluded that optimum benefits of river protection occurred at a level of protection for fourteen Colorado rivers. Use values were found to only account for approximately 20 percent of the total willingness-to-pay for river preservation, with the remaining 80 percent attributed to non-use (preservation) values.

■ Six percent of the American public uses wilderness areas, yet 60 to 95 percent are willing to be taxed to support preservation of wilderness areas (Driver, Nash, and Haas, 1986).

Benefit-Cost Analysis

Benefit-cost analysis is a systematic method of identifying and measuring the economic benefits and costs of a project (Hufschmidt, et al., 1983). The total benefits are then divided by total costs. If this ratio exceeds one, it may be assumed that the project will provide a good return, meaning the benefits are greater than the costs.

■ A study of four parks in Worcester, Massachusetts, found that if park visitors were willing to pay one dollar per visit, the value of this use would be almost \$425,000 annually. This amount is substantially above the annual \$125,000 it costs the city to maintain the parks' 219 acres and results in a benefit to cost ratio of 3.4 to 1 (More, Stevens, and Allen, 1982).

In the past few decades, there has been increasing interest by researchers to expand the application of benefit-cost analysis to include valuation of natural systems and environmental quality. Valuing the benefits of environmental quality and natural resources in economic terms may be helpful to your justification for conservation of a river, or establishment of a greenway. Performing a benefit-cost analysis for your project is likely to require assistance from either an economist, or staff and volunteers with an economics background. There are also aspects of environmental quality and natural resources which are important but still cannot be readily quantified. This may result in low benefit-cost ratios and underestimate the full benefits of your greenway.

Public Expression of Value

In these times of fiscal restraint, various non-profit funding initiatives, public interest organizations, and special interest legislation have emerged. This has resulted in fundraising drives and ballot initiatives which offer people the opportunity to contribute to special government funds for causes they value. Many of these involve resource conservation. The vehicles for these expenditures include donations, special licenses, fees, and tax rebate earmarked to support these causes.

- Proof of support for conservation programs has been evidenced in taxpayer donations. In Colorado, state income tax voluntary contributions to non-game wildlife programs generated revenues of \$350,000, \$500,000, and \$650,000 during 1978, 1979, and 1980, respectively. However, in later years these amounts decreased considerably, particularly as taxpayers were given more competing choices for donations from tax refunds. Nonetheless, several states, including Oregon, Utah, Minnesota, and Kentucky, have adopted similar programs. (National Park Service, 1983).

- Surveys of California households reflected a willingness-to-pay between \$42 and \$94 annually (per household) to preserve water in Mono Lake. The cost to preserve the lake by providing replacement water and hydropower is only \$2.64 per year, thus its value as a natural resource far outweighs the use value of the water (Loomis, 1987).

How to Use These Rationales in Your Community

Express the value of the resource. Total the willingness-to-pay for your resource and express this total as benefits gained through establishment of the greenway. You may wish to contact your local university to see if any students familiar with recreation economics can assist you in estimating willingness-to-pay. If assistance is unavailable, you may wish to use estimates for other recreation resources which are similar to your project. If your program is threatened by cutbacks, express existing benefits as net losses to the community.

Document public support for conservation. Cite examples of bond issues and tax measures passed by voters, funds, and contributions raised by local conservation groups, etc.

Sources of Information

Recreation Economic Decisions. This book by Dr. Richard G. Walsh is an excellent source text on recreation economics. It is available from Venture Publishing, 1640 Oxford Circle, State College, PA, 16801. Chapter 8 is especially applicable to benefit estimation.

The Review of Outdoor Recreation Economic Demand Studies with Non-Market Benefits, 1968-1988. This will allow you to determine whether specific demand studies are applicable to your region and resource. It is available from the Department of Agricultural and Resource Economics, CSU, Ft. Collins, CO, 80523.

The Water Resources Council's ***Economic and Environmental Principles and Guidelines for Water and Related Land Resources Implementation Studies*** is the third version (1983) of the WRC's "Principles and Standards." It is the most current version of this agency's recommendations for methods to assess the economic benefits of recreation. This publication is currently out of print, but may be available at your local university library.

A Review of Fisheries Economic Evaluation Methods. This report from the Sport Fishing Institute is a good review of economic valuation concepts and methods. It also contains an annotated bibliography of available fishery values calculated via travel cost, contingent valuation, and other methods. Contact the Sport Fishing Institute at 1010 Massachusetts Ave, N.W., Washington, D.C., 20001.

If you are specifically interested in literature related to how economics is used in promoting retention of instream flow, ***An Annotated Bibliography of Economic Literature on Instream Flow*** (Douglas, 1988) is available from the U.S. Fish and Wildlife Service, National Ecology Research Center, 2627 Redwing Road, Ft. Collins, CO, 80526-2899. Ask for Biological Report 88(39).

Amenity Resource Valuation. This 260-page collection of essays is a good source of indepth discussions of the philosophical and methodological issues associated with integrating economics and natural resources. The text is available from Venture Publishing, 1640 Oxford Circle, State College, PA, 16801.

Considerations in Using These Rationales

Numbers are not everything. Remember that estimates of economic impacts and benefits are only one tool available to conservation advocates. As mentioned earlier, many of the benefits of greenways may still not be quantified and numbers would underestimate the total value. Rivers, trails, and greenways should be promoted using the tools which are most effective. Focusing on the intrinsic values is most likely to be the most effective tool to begin building your constituency.

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APPENDIX A

Appendix A

Correcting for Inflation in Housing Prices Using the Consumer Price Index

Brief Explanation of the Consumer Price Index

The Consumer Price Index (CPI) is a measure of the average change in prices over time in a fixed market basket of goods and services. The Bureau of Labor Statistics publishes CPIs for two population groups: (1) a CPI for All Urban Consumers (CPI-U) which covers approximately 80 percent of the total population and (2), a CPI for Urban Wage Earners and Clerical Workers (CPI-W) which covers 32 percent of the total population. The CPI-U includes, in addition to wage earners and clerical workers, groups such as professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, and retirees and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuels, transportation fares, charges for doctors' and dentists' services, drugs, and other goods that people buy for day-to-day living. Prices are collected in 85 urban areas across the country from about 57,000 housing units and approximately 19,000 retail establishments-department stores, supermarkets, hospitals, filling stations, and other types of stores and establishments. All taxes directly associated with the purchase and use of items are included in the index. Prices of food, fuel, and a few other items are obtained every month in all 85 locations. Prices of most other commodities and services are collected every month in the five largest geographic areas and every other month in other areas. Prices of most goods and services are obtained by personal visits of the Bureau's trained representatives. Some data, such as used car prices, are obtained from secondary sources.

In calculating the index, price changes for the various items in each location are averaged together with weights which represent their importance in the spending of the appropriate population group. Local data are then combined to obtain a U.S. city average. Separate indexes are also published by size of city, by region of country, for cross-classifications of regions and population-size classes, and for 29 local areas. Area indexes do not measure differences in the level of prices among cities, they only measure the average change in prices for each area since the base period.

The indexes measure price change from a designated reference date, 1982-1984, which equals 100.0. An increase of 7 percent, for example, is shown as 107.0. This change can also be expressed in dollars as follows: The price of

a base period “market basket” of goods and services in the CPI has risen from \$100 in 1982-84 to \$107.

For further details, see BLS *Handbook of Methods*, BLS Bulletin 2285, April 1988, and *The Consumer Price Index: 1987 Revision*, BLS Report 736, January 1987.

Calculating Index Changes

Movements of the indexes from one month to another are usually expressed as percent changes rather than changes in index points, because index point changes are effected by the level of the index in relation to its base period while percent changes are not. The example below illustrates the computation of index point and percent changes.

Index Point Change	
CPI	112.5
Less Previous Index	108.5
Equals index point change	4.0
Percent Change	
Index point difference	4.0
Divided by the previous index	108.5
Equals	0.037
Results multiplied by one hundred	0.037 x 100
Equals percent change	3.7

Source: Bureau of Labor Statistics, U.S. Department of Labor, 1990s

Consumer Price Index All Urban Consumers (CPI-U) U.S. City Average Housing 1982-84=100													
Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1967	30.5	30.5	30.5	30.6	30.7	30.7	30.8	30.9	30.9	31.0	31.1	31.2	30.8
1968	31.3	31.5	31.5	31.6	31.7	31.9	32.1	32.3	32.4	32.5	32.7	32.9	32.0
1969	32.9	33.1	33.4	33.6	33.8	33.9	34.1	34.3	34.5	34.6	34.8	35.0	34.0
1970	35.1	35.4	35.8	36.0	36.2	36.3	36.5	36.7	36.9	37.1	37.3	37.5	36.4
1971	37.5	37.5	37.4	37.4	37.7	37.9	38.1	38.2	38.3	38.5	38.6	38.7	38.0
1972	38.9	39.0	39.1	39.2	39.3	39.4	39.5	39.7	39.8	39.8	39.9	40.1	39.4
1973	40.1	40.3	40.4	40.5	40.7	40.8	40.9	41.2	41.6	42.1	42.5	42.8	41.2
1975	43.3	43.7	44.1	44.5	44.9	45.4	45.9	46.5	47.1	47.6	48.1	48.6	45.8
1975	49.0	49.5	49.7	50.0	50.2	50.5	50.7	50.9	51.3	51.5	52.0	52.3	50.7
1976	52.6	52.7	53.0	53.1	53.3	53.5	53.9	54.1	54.4	54.6	54.8	55.1	53.8
1977	55.5	55.9	56.2	56.6	56.8	57.3	57.7	58.0	58.4	58.6	58.9	59.2	57.4
1978	59.7	60.0	60.6	61.1	61.6	62.2	62.8	63.2	63.9	64.5	64.9	65.1	62.4
1979	65.6	66.4	67.0	67.7	68.5	69.4	70.3	71.3	72.2	73.2	74.1	75.0	70.1
1980	76.2	77.1	78.4	79.4	80.6	82.1	81.6	81.8	82.4	83.5	84.3	85.3	81.1
1981	85.9	86.5	87.0	87.7	88.8	90.0	91.5	92.3	93.5	93.5	93.7	94.0	90.4
1982	94.3	94.6	94.4	95.3	96.6	97.8	98.3	98.6	98.4	98.8	98.2	97.4	96.9
1983	97.9	98.1	98.1	98.6	99.1	99.5	99.9	100.0	100.5	100.6	100.7	100.8	99.5
1984	101.4	101.9	102.1	102.6	103.0	103.5	104.1	104.5	105.1	105.1	105.0	105.1	103.6
1985	105.3	105.8	106.1	106.5	107.3	107.9	108.3	108.7	108.9	109.1	109.3	109.6	107.7
1986	109.9	109.8	109.9	110.2	110.4	111.2	111.3	111.6	112.0	111.8	111.4	111.5	110.9
1987	112.0	112.4	112.8	113.2	113.6	114.3	114.7	115.4	115.6	115.5	115.5	115.6	114.2
1988	116.2	116.6	117.0	117.3	117.7	118.6	119.1	119.5	119.9	119.9	119.9	120.2	118.5
1989	120.7	121.1	121.5	121.6	122.1	122.9	123.9	124.2	124.3	124.4	124.5	124.9	123.0
1990	125.9	126.1	126.8	126.8	127.1	128.3	129.2	130.2	130.5	130.6	130.4	130.5	128.5
1991	131.8	132.4	132.6	132.5	132.8	133.4	134.2	134.5	134.7	134.7	134.7	135.0	133.6
1992	135.7	136.1	136.6	136.5	136.7	137.7	138.3	138.6	138.6	138.5	138.5	138.5	137.5
1993	139.3	139.7	140.2	140.4	140.5	141.5	141.9	142.3	142.3	142.2	142.0	142.3	141.2
1994	142.9	143.7	144.1	143.9	144.1	144.9	145.4						

APPENDIX B

Appendix B

Updating Consumer Good Values Using Consumer Price Index City Average

Brief Explanation of the Consumer Price Index

The Consumer Price Index (CPI) is a measure of the average change in prices over time in a fixed market basket of goods and services. The Bureau of Labor Statistics publishes CPIs for two population groups: (1) a CPI for All Urban Consumers (CPI-U) which covers approximately 80 percent of the total population and (2), a CPI for Urban Wage Earners and Clerical Workers (CPI-W) which covers 32 percent of the total population. The CPI-U includes, in addition to wage earners and clerical workers, groups such as professional, managerial, and technical workers, the self-employed, short-term workers, the unemployed, and retirees and others not in the labor force.

The CPI is based on prices of food, clothing, shelter, fuels, transportation fares, charges for doctors' and dentists' services, drugs, and other goods that people buy for day-to-day living. Prices are collected in 85 urban areas across the country from about 57,000 housing units and approximately 19,000 retail establishments-department stores, supermarkets, hospitals, filling stations, and other types of stores and establishments. All taxes directly associated with the purchase and use of items are included in the index. Prices of food, fuel, and a few other items are obtained every month in all 85 locations. Prices of most other commodities and services are collected every month in the five largest geographic areas and every other month in other areas. Prices of most goods and services are obtained by personal visits of the Bureau's trained representatives. Some data, such as used car prices, are obtained from secondary sources.

In calculating the index, price changes for the various items in each location are averaged together with weights which represent their importance in the spending of the appropriate population group. Local data are then combined to obtain a U.S. city average. Seperate indexes are also published by size of city, by region of country, for cross-classifications of regions and population-size classes, and for 29 local areas. Area indexes do not measure differences in the level of prices among cities, they only measure the average change in prices for each area since the base period.

The indexes measure price change from a designated reference date, 1982-1984, which equals 100.0. An increase of 7 percent, for example, is shown as 107.0. This change can also be expressed in dollars as follows: The price of

a base period “market basket” of goods and services in the CPI has risen from \$100 in 1982-84 to \$107.

For further details, see BLS *Handbook of Methods*, BLS Bulletin 2285, April 1988, and *The Consumer Price Index: 1987 Revision*, BLS Report 736, January 1987.

Calculating Index Changes

Movements of the indexes from one month to another are usually expressed as percent changes rather than changes in index points, because index point changes are effected by the level of the index in relation to its base period while percent changes are not. The example below illustrates the computation of index point and percent changes.

Index Point Change	
CPI	112.5
Less Previous Index	108.5
Equals index point change	4.0
Percent Change	
Index point difference	4.0
Divided by the previous index	108.5
Equals	0.037
Results multiplied by one hundred	0.037 x 100
Equals percent change	3.7

Source: Bureau of Labor Statistics, U.S. Department of Labor, 1990s

Consumer Price Index, All Items
U.S. City Average
1982-84=100

All Urban Consumers

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1970	37.8	38.0	38.2	38.5	38.6	38.8	39.0	39.0	39.2	39.4	39.6	39.8	38.8
1971	39.8	39.9	40.0	40.1	40.3	40.6	40.7	40.8	40.8	40.9	40.9	41.1	40.5
1972	41.1	41.3	41.4	41.5	41.6	41.7	41.9	42.0	42.1	42.3	42.4	42.5	41.8
1973	42.6	42.9	43.3	43.6	43.9	44.2	44.3	45.1	45.2	45.6	45.9	46.2	44.4
1974	46.6	47.2	47.8	48.0	48.6	49.0	49.4	50.0	50.6	51.1	51.5	51.9	49.3
1975	52.1	52.5	52.7	52.9	53.2	53.6	54.2	54.3	54.6	54.9	55.3	55.5	53.8
1976	55.6	55.8	55.9	56.1	56.5	56.8	57.1	57.4	57.6	57.9	58.0	58.2	56.9
1977	58.5	59.1	59.5	60.0	60.3	60.7	61.0	61.2	61.4	61.6	61.9	62.1	60.6
1978	62.5	62.9	63.4	63.9	64.5	65.2	65.7	66.0	66.5	67.1	67.4	67.7	65.2
1979	68.3	69.1	69.8	70.6	71.5	72.3	73.1	73.8	74.6	75.2	75.9	76.7	72.6
1980	77.8	78.9	80.1	81.0	81.8	82.7	82.7	83.3	84.0	84.8	85.5	86.3	82.4
1981	87.0	87.9	88.5	89.1	89.8	90.6	91.6	92.3	93.2	93.4	93.7	94.0	90.9
1982	94.3	94.6	94.5	94.9	95.8	97.0	97.5	97.7	97.9	98.2	98.0	97.6	96.5
1983	97.8	97.9	97.9	98.6	99.2	99.5	99.9	100.2	100.7	101.0	101.2	101.3	99.6
1984	101.9	102.4	102.6	103.1	103.4	103.7	104.1	104.5	105.0	105.3	105.3	105.3	103.9
1985	105.5	106.0	106.4	106.9	107.3	107.6	107.8	108.0	108.3	108.7	109.0	109.3	107.6
1986	109.6	109.3	108.8	108.6	108.9	109.5	109.5	109.7	110.2	110.3	110.4	110.5	109.6
1987	111.2	111.6	112.1	112.7	113.1	113.5	113.8	114.4	115.0	115.3	115.4	115.4	113.6
1988	115.7	116.0	116.5	117.1	117.5	118.0	118.5	119.0	119.8	120.2	120.3	120.5	118.3
1989	121.1	121.6	122.3	123.1	123.8	124.1	124.4	124.6	125.0	125.6	125.9	126.1	124.0
1990	127.4	128.0	128.7	128.9	129.2	129.9	130.4	131.6	132.7	133.5	133.8	133.8	130.7
1991	134.6	134.8	135.0	135.2	135.6	136.0	136.2	136.6	137.2	137.4	137.8	137.9	136.2
1992	138.1	138.6	139.3	139.5	139.7	140.2	140.5	140.9	141.3	141.8	142.0	141.9	140.3
1993	142.6	143.1	143.6	144.0	144.2	144.4	144.4	144.8	145.1	145.7	145.8	145.8	144.5
1994	146.2	146.7	147.2	147.5	147.5	148.0	148.4						

Source: U.S. Department of Labor, Bureau of Labor Statistics

Table of Over-the-Year % Increases

(An Entry for Feb 1982 indicates the percentage increases from Feb 1981 to Feb 1982)

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Avg
1971	5.3	5.0	4.7	4.2	4.4	4.6	4.4	4.6	4.1	3.8	3.3	3.3	4.4
1972	3.3	3.5	3.5	3.5	3.2	2.7	2.9	2.9	3.2	3.4	3.7	3.4	3.2
1973	3.6	3.9	4.6	5.1	5.5	6.0	5.7	7.4	7.4	7.8	8.3	8.7	6.2
1974	9.4	10.0	10.4	10.1	10.7	10.9	11.5	10.9	11.9	12.1	12.2	12.3	11.0
1975	11.8	11.2	10.3	10.2	9.5	9.4	9.7	8.6	7.9	7.4	7.4	6.9	9.1
1976	6.7	6.3	6.1	6.0	6.2	6.0	5.4	5.7	5.5	5.5	4.9	4.9	5.8
1977	5.2	5.9	6.4	7.0	6.7	6.9	6.8	6.6	6.6	6.4	6.7	6.7	6.5
1978	6.8	6.4	6.6	6.5	7.0	7.4	7.7	7.8	8.3	8.9	8.9	9.0	7.6
1979	9.3	9.9	10.1	10.5	10.9	10.9	11.3	11.8	12.2	12.1	12.6	13.3	11.3
1980	13.9	14.2	14.8	14.7	14.4	14.4	13.1	12.9	12.6	12.8	12.6	12.5	13.5
1981	11.8	11.4	10.5	10.0	9.8	9.6	10.8	10.8	11.0	10.1	9.6	8.9	10.3
1982	8.4	7.6	6.8	6.5	6.7	7.1	6.4	5.9	5.0	5.1	4.6	3.8	6.2
1983	3.7	3.5	3.6	3.9	3.5	2.6	2.5	2.6	2.9	2.9	3.3	3.8	3.2
1984	4.2	4.6	4.8	4.6	4.2	4.2	4.2	4.3	4.3	4.3	4.1	3.9	4.3
1985	3.5	3.5	3.7	3.7	3.8	3.8	3.6	3.3	3.1	3.2	3.5	3.8	3.6
1986	3.9	3.1	2.3	1.6	1.5	1.8	1.6	1.6	1.8	1.5	1.3	1.1	1.9
1987	1.5	2.1	3.0	3.8	3.9	3.7	3.9	4.3	4.4	4.5	4.5	4.4	3.6
1988	4.0	3.9	3.9	3.9	3.9	4.0	4.1	4.0	4.2	4.2	4.2	4.4	4.1
1989	4.7	4.8	5.0	5.1	5.4	5.2	5.0	4.7	4.3	4.5	4.7	4.6	4.8
1990	5.2	5.3	5.2	4.7	4.4	4.7	4.8	5.6	6.2	6.3	6.3	6.1	5.4
1991	5.7	5.3	4.9	4.9	5.0	4.7	4.4	3.8	3.4	2.9	3.0	3.1	4.2
1992	2.6	2.8	3.2	3.2	3.0	3.1	3.2	3.1	3.0	3.2	3.0	2.9	3.0
1993	3.3	3.2	3.1	3.2	3.2	3.0	2.8	2.8	2.7	2.8	2.7	2.7	3.0
1994	2.5	2.5	2.5	2.4	2.3	2.5	2.8						

Source: U.S. Department of Labor, Bureau of Labor Statistics

APPENDIX C

Appendix C

Survey Questions

All of the survey questions included in this Appendix were designed for a study on the economic impact of rail-trails, to be completed by the National Park Service and Pennsylvania State University in August 1991. The questions were designed by Dr. Alan Graefe, Dr. Richard Gitelson, and Roger Moore at Pennsylvania State University.

For further information on these questions or the study, contact Roger Moore at (814) 865-1851 or Beth Dillon, National Park Service Rails-to-Trail Program Manager, at (202) 343-3766. (Representatives of federal agencies planning on conducting a survey of the general public must receive survey approval by the Office of Management and Budget.)

Questions regarding Property Values

The questions listed below are suggested types of questions. The exact wording will depend upon the type of project and whether you are interviewing landowners or real estate specialists. A scale of one to seven is suggested for some of the questions to get a better understanding of the respondents perceptions. Before conducting your own survey, we recommend you get assistance from someone who has experience devising and conducting surveys. These questions addressing property values have not yet been tested.

1. Where is the (trail, greenway) in relation to your property? (Check one)

- ☐ The trail runs *through* my property
- ☐ The trail runs *along the edge* of my property
- ☐ The trail is near my property but not touching it
- ☐ Don't know

2. About how *far* is the *house* from the nearest part of the (trail, greenway)?

Feet or Miles

3. Which part of the house *faces* the (trail or greenway)?

☐ Front
☐ Back
☐ Side

4. Did you buy this property *before* the (trail, greenway) was opened?

☐ Yes
☐ No

If no, how did the presence of the trail affect your decision to buy the property?

Added to property's appeal			Detracted from property's appeal			
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

5. If you were to try to sell this property, do you think being near the trail would make it *harder* or *easier* to sell?

Much easier to sell			Harder to sell			
☐ 1	☐ 2	☐ 3	☐ 4	☐ 5	☐ 6	☐ 7

6. How do you think being located near the (trail, greenway) has affected the *resale value* of this property? (Check one)

☐ The trail has *lowered* the value of my property.
☐ The trail has *increased* the value of my property.
☐ The trail has *no effect* on the resale value of my property.

7. *How much* do you think that being near the trail has raised or lowered the value of this property?

_____ %

8. What experience or evidence makes you feel the property value has been affected in this way?

Questions regarding Tourism and Local Resident Expenditures

Surveys may be conducted to estimate user spending during typical use, or, a survey could be conducted during a special event held at your river, trail or greenway. The questions listed below are designed to estimate the spending by the group of users rather than individuals within the group. Group expenditures can then be divided by the total number of people to estimate average expenditures.

We recommend you get assistance from someone who has experience devising and conducting surveys.

1. *How many* people from each of the following age categories are in your group on the (trail, river, greenway) today? (Please include yourself and write the numbers in the spaces provided)

___ 15 and under

___ 46 to 55

___ 16 to 25

___ 56 to 65

___ 26 to 35

___ 66 and over

___ 36 to 45

2. Is your visit to this trail part of an overnight trip away from home?

___ Yes ___ No (If no, go to question #3)

a. How many days will you be away from home during this trip? ___

b. During your stay, *how many nights* will you be using each of the following accommodations *in this area*? (Please write number in space provided)

___ Hotel/motel

___ State campground

___ Private campground

___ Rented home or cottage

___ With friends or relatives

___ Other (Please specify)

c. Was visiting (river, trail or greenway) one of the reasons for your trip to this area? ____ Yes ____ No
 (If yes, was it the *primary* reason? ____ Yes ____ No)
 (If no, what was the *primary* reason for this visit? _____)

3. In the spaces below, please list the estimated expenditures made as a result of your entire trip to the (river, trail or greenway). If you paid all of your *own expenses* and no one else's, report only the amounts *you* actually spent in each category. If your group *shared* some or all expenses (group members made some purchases *for one another*), please report your estimates of the amounts spent by the *entire group* in each category.

Please include *all* the expenses associated with *that particular trip* from your preparations before leaving home until your return home. Please indicate where the expenditures took place by recording the amounts in the appropriate columns. Refer to the map on the facing page to help determine what is included in the local county.

Amount spent in:

(NOTE: You may wish to estimate spending for your local economy only)

	Local economy	In state economy	Outside economy
Estimated <i>amount</i> spent for:			
a. Restaurants (including fast food, sit down, etc.)	_____	_____	_____
b. Food and beverage (retail)	_____	_____	_____
c. Lodging expenses:			
hotel	_____	_____	_____
motel	_____	_____	_____
camping	_____	_____	_____
other	_____	_____	_____
d. Retail purchases _____ (personal items, souvenirs purchased during trip) <i>excluding</i> durable purchases for equipment.			

e. Auto expenses:

gas and oil _____
repairs and service _____
parking and tolls _____

f. Other transportation costs:

airfare and busfare _____
public transit, taxis, etc _____

g. Film and developing _____

h. Fees for other attractions/entertainment _____

i. All other expenses *for this trip* (program fees, licenses, rental fees for bikes, skis, etc) please specify _____

4. During the last twelve months, what *percentage of the total days* you participated in each of the following activities took place on the (trail, river, or greenway)? (If you did not participate in a particular activity, please mark an "X".) (NOTE: For your greenway or river project you should list appropriate activities. The activities listed below are appropriate for trails.)

_____ %	Walking
_____ %	Running
_____ %	Bicycling
_____ %	Cross Country Skiing
_____ %	Snowmobiling
_____ %	Other activity (please specify _____)

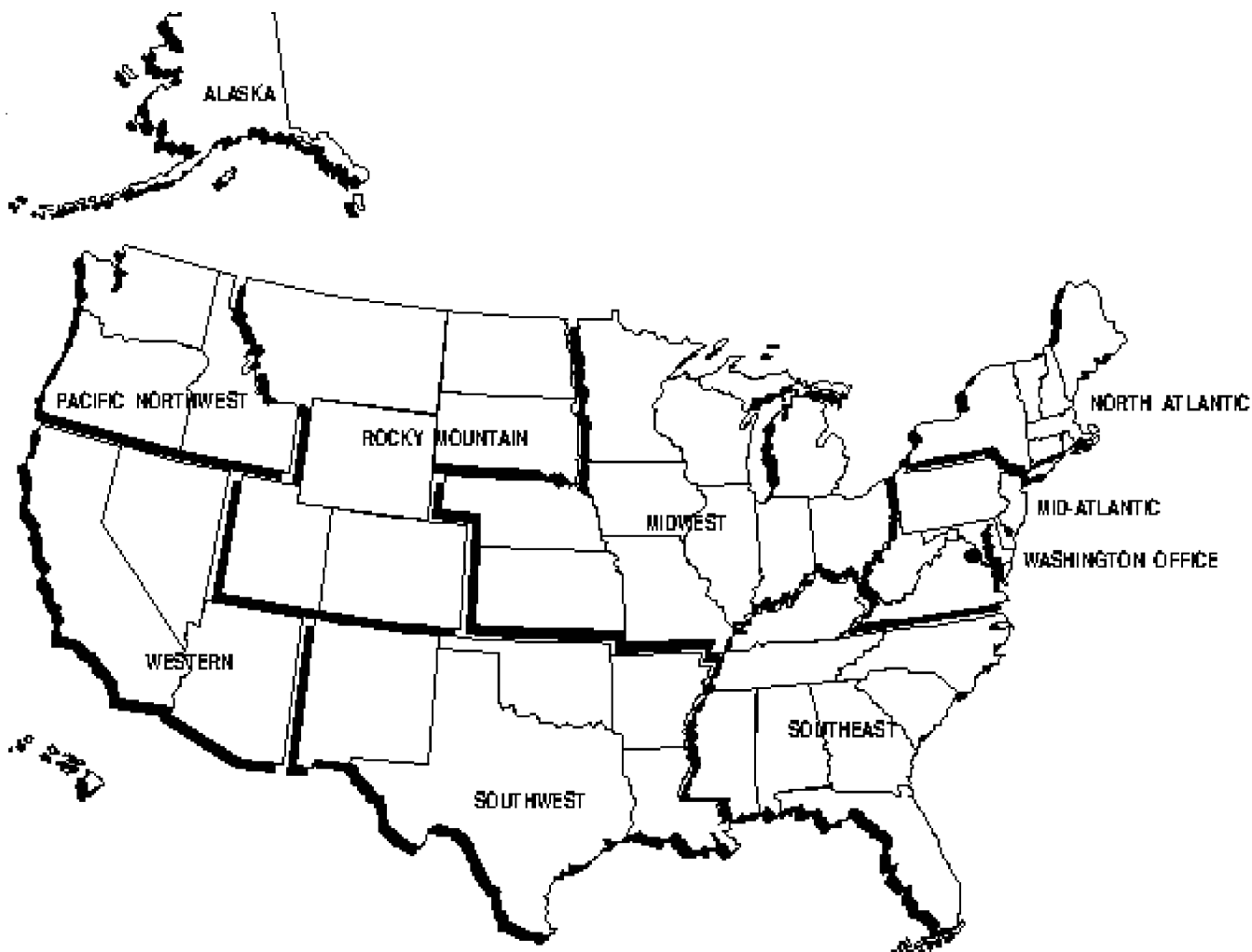
5. Please list any expenditures you made related to this activity during the *last twelve months* if the decision to buy the item was *influenced* by the existence of the (river, trail or greenway). Only include expenditures for *durable items* that are used for more than one trip and *do not include* items you already accounted for related to your specific trip.

(NOTE: You may want to estimate spending for local economy only.)

	Amount you spent in:		
	Local economy	In state economy	Outside economy
Estimated amount spent for:			
a. Clothing (clothing, shoes boots, hats, etc.)	_____	_____	_____
b. Equipment (bicycles, skis, snowmobiles, trailers, etc)	_____	_____	_____
c. Accessories (bike racks, water bottles, helmets, radios, spare parts, cameras, etc)	_____	_____	_____
d. Books, guides, maps, etc.	_____	_____	_____
e. Memberships/subscriptions, program fees, etc.	_____	_____	_____
f. Other expenditures for <i>durables</i> (Please specify):	_____	_____	_____
g. _____	_____	_____	_____

(NOTE: For your greenway or river project you should list appropriate durables.
The durables listed below are appropriate for trails.)

APPENDIX D



National Park Service Regional Offices

Alaska Region

Planning Division
2525 Gambel Street, Room 107
Anchorage, Alaska 99503
(907) 257-2655

Mid-Atlantic Region

Division of Park & Resource Planning
U.S. Customs House, Room 260
Second and Chestnut Streets
(215) 597-1581

Midwest Region

Planning & Environmental
Quality Division
1709 Jackson Street
Omaha, Nebraska 68102
(402) 221-3481

North Atlantic Region

Planning & Design Division
15 State Street
Boston, Massachusetts
(617) 223-5132

Pacific Northwest Region

Recreation Programs Division
83 South King Street, Suite 212
Seattle, Washington 98104
(206) 442-5366

Rocky Mountain Region

Recreation Grants & Assistance
Division (PL)
P.O. Box 25287
Lakewood, Colorado 80225
(303) 969-2850

Southeast Region

Planning & Federal Programs
Division
75 Spring Street, S.W.
Atlanta, Georgia 30303
(404) 331-5838

Southwest Region

Planning & Design Division
P.O. Box 728
Santa Fe, New Mexico 87504
(505) 988-6881

Western Region

Planning, Grants & Environmental
Quality Division
600 Harrison Street, Suite 600
San Francisco, California 94107-1372
(415) 744-3975

Washington, D.C. Office

Recreation Resources Assistance Division
Rivers, Trails and Conservation
Assistance Program
P.O. Box 37127
Washington D.C. 20013
(202) 343-3780