RAIL-TRAIL MAINTENANCE & OPERATION

Ensuring the Future of Your Trail — A Survey of 100 Rail-Trails

RAILS-TO-TRAILS CONSERVANCY NORTHEAST REGIONAL OFFICE

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Rails-to-Trails Conservancy
Northeast Regional Office

Tim Poole

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Front cover photos

Top, left to right: York County Heritage Rail-Trail, Pa. (Courtesy of Rails-to-Trails Conservancy); Baltimore & Annapolis Rail-Trail, Md. (Dave Dionne); Three Rivers Heritage Trail System, Pa. (Courtesy of Rails-to-Trails Conservancy); Capital Area Greenbelt, Pa. (Courtesy of Rails-to-Trails Conservancy)
Bottom: Schuylkill River Trail, Pa. (Boyd Loving)

Preface

This publication is based on earlier work conducted by the Pennsylvania Office of the Rails-to-Trails Conservancy (RTC). *"Rail-Trail Maintenance: Preparing for the Future of Your Trail"* was written by AmeriCorps team member Susan Thagard and released in 1996. Bob McKinley of the Regional Trail Corporation in southwest Pennsylvania provided valuable guidance throughout its development. Soon after its release it became clear that many maintenance complexities were not fully explored. However, those missing elements were at least identified, and many are included in this second study, while others may require even more coverage in a future publication.

This greatly expanded study was made possible in large part by the nearly 100 trail managers who took their time to respond to our survey. Special mention goes to several Pennsylvania trail mangers for helping shape the overall work:

Bob McKinley, Regional Trail Corporation
Jim Holden, Allegheny Valley Trails Association
Ron Steffy, Armstrong Trail
Ed Patterson, Indiana County Parks and Recreation
Robert C. Folwell, Chester County Parks and Recreation
Norm Lacasse, Capital Area Greenbelt Association
Gwen Loose, Heritage Rail Trail County Park

Rails-to-Trails Conservancy staff who contributed to this report include: Annemarie Holmes, Betsy Goodrich, Craig Della Penna and Pat Tomes who provided invaluable assistance in tracking down trail contacts and getting them to respond to the survey. Hugh Morris, Jennifer Kaleba and Barbara Richey reviewed, edited and produced the final publication.

Valuable information contained in this publication was obtained from Pennsylvania State University—Center for Dirt and Gravel Road Studies, and our good friends at the National Park Service—Rivers, Trails, and Conservation Assistance Program. Others sources included the National Arbor Day Foundation, Land Trust Alliance, GAI Consultants, Inc., and American Trails.

Lastly, funding for the project was made possible through the Growing Greener grant from the Commonwealth of Pennsylvania, Department of Conservation and Natural Resources, Bureau of Recreation and Conservation.

Tom Sexton, Director
RTC Northeast Regional Office

Introduction

In about two decades, rail-trails have risen from obscurity to become highly valued amenities for many American communities. Rail-trails preserve natural and cultural resources, and provide both residents and tourists with attractive places to recreate and safe routes to their destinations. Their well-earned popularity has led to an explosion in the development of rail-trails, with more than 13,000 miles now in operation in the United States. See Table 1. Some rail-trails have already overcome legal battles or tedious funding processes. But the biggest challenge could lie ahead. For 13,000 miles of rail-trails—and more than twice that when all the current development projects come to fruition—will now have to be maintained in perpetuity.

Many of the same questions that faced early trail developers now face trail managers. What needs to be done? How do I do it? Who will do it? Who will *pay* for it? Rails-to-Trails Conservancy (RTC) recognized the vacuum for this information nearly a decade ago and in 1996 published the first-ever study regarding the maintenance of rail-trails, "*Rail-Trail Maintenance: Preparing for the Future of Your Trail*." This study has provided valuable information to trail managers, planners, volunteers and others as they consider budgetary issues, staffing, equipment and various other needs related to the long-term maintenance of their rail-trails. Today the trails community has many more miles under its collective belt, literally and figuratively, and there is now more information about more trails. Through additional and enhanced data collected for this study in 2004, a more comprehensive assessment of old, young and new trails is now available. And so, we have updated and re-titled our publication,"*Rail-Trail Maintenance and Operations: Ensuring the Future of Your Trail—A Survey of 100 Rail-Trails*."

Table 1: Number and Miles of Open Rail-Trail

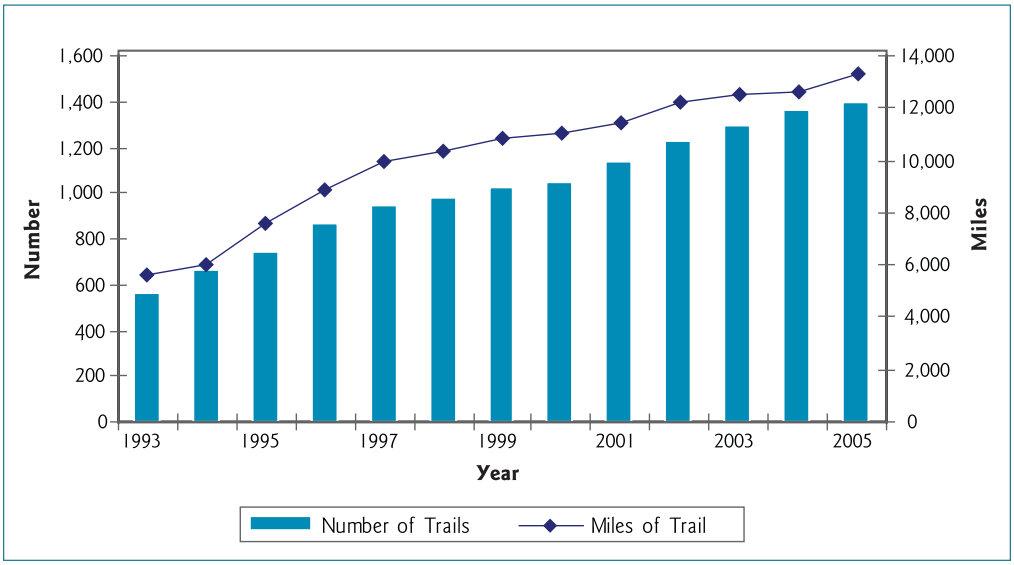


Table 2: Surveyed Trail Counts by State

State	Trails
Pennsylvania	43
Ohio	15
New York	11
Maine	8
New Jersey	6
New Hampshire	4
Massachusetts	3
Connecticut	2
Illinois	2
Indiana	2
Delaware	1
Vermont	1
Maryland	1
Wisconsin	1
Total	100

This publication is *not* an attempt to provide an exhaustive answer to every question. In many ways, those answers will be as different and unique as each trail and each community. This report can't tell you what to do. But it can tell you what others are *already* doing. To that end, managers of more than 100 open rail-trails in the northeast region of the United States were surveyed on a wide variety of trail maintenance and operations issues. See Table 2. (Some trail managers manage multiple trails. In some cases, they completed a survey for each trail, and in some cases they provided a single response representing more than one trail. Unless otherwise noted, percentages given throughout this report are a percent of the actual survey responses received, with no weighting for those responses that represented multiple trails.)

Hopefully, new (and old) trail managers can learn from the shared experiences and expertise of their predecessors and peers. What follows are the results of this survey with examples, tips, techniques and other appropriate analysis and embellishments. Please use this information in any way possible to better plan and execute the maintenance of your trail. And let us know if you have suggestions for improvements by contacting RTC's Northeast Regional Office at 717-238-1717 or northeast@railtrails.org. Other avenues for discussion include posting your experiences on RTC's Trails and Greenways listserv (**www.trailsandgreenways.org**) where your suggestions and ideas can be shared with hundreds of trail managers.

Huckleberry Trail, Va. (Jennifer Kaleba)

Administrative and Financial

This section primarily addresses who owns rail-trails and who performs and pays for their maintenance and operation. It will also look at some of the major cost components and how they might change as trails mature.

Table 3: Trail Ownership Counts

Entity	Owns Trail
Federal government	1
State government	29
County government	23
Municipal government	30
Railroad	3
Utility	9
Single private owner	3
Multiple private owners	5
Nonprofit entity	14

Table 4: Who Performs and Pays for Maintenance

Entity	Performs Maintenance	Pays for Maintenance
Federal government	0	2
State government	28	27
County government	20	23
Municipal government	32	26
Nonprofit entity	See below	34
Nonprofit paid staff	5	N/A
Trail group (volunteer)	46	N/A
Scouts	8	N/A
Other community groups	16	N/A
Persons with mandatory community service	13	N/A
Contractor	13	N/A
Other	5	6

OWNERSHIP

In some respects, who performs trail maintenance is closely tied to who owns the trail, as that entity has the greatest interest in keeping the trail safe and attractive. Trail ownership was reported as shown in Table 3. Please note that some trails may have split ownership, so these figures are counts rather than percentages.

MAINTENANCE

While trail ownership and maintenance are closely correlated, it is also common for a trail to be owned by a government entity but maintained by volunteers. This is a win-win relationship. Most nonprofit trail groups avoid owning land due to liability concerns. The government, which has much more wherewithal to address legal issues, takes ownership in exchange for low-cost maintenance. This set-up is also beneficial in disaster situations such as hurricanes, since trails held by private nonprofits may not qualify for federal disaster aid.

As you can see from Tables 3 and 4, for most entities the frequency of ownership and maintenance responsibility are fairly consistent. For example, roughly the same number of municipal governments own and participate in the maintenance of trails. However, nonprofit trail groups participate in the maintenance of more than three times as many trails as they own. This core group of volunteers are further augmented by scouts, community groups, persons sentenced to community service and others. A similar pattern can by seen in the payment for maintenance, where trail groups fund a significant share of maintenance through membership dues, donations, fund-raising events, and local business and foundation grants, even though government entities actually own the trail.

COST

So what does trail maintenance cost? That's still going to be a tough question to answer. Only 39 respondents provided a lump-sum amount either budgeted or actually spent, and a mere handful provided any kind of breakdown. This suggests the cost to maintain many trails is still hard to determine. Why? There seem to be two general answers to this question. First, the trail may be part of a larger budget for a single park or even an entire parks and recreation department. Specific costs for the trail aren't broken out. Second, small trail groups, though run by competent and extremely dedicated volunteers, tend to be seat-of-the-pants operations. Maintenance is done "as needed," funds are raised "as needed," and the people are volunteering because they love the trail, not because they love doing administrative tasks like budgeting. Reported maintenance and operation (M&O) costs will also vary based on a number of factors including the use of paid staff as well as the respondent's definition of what constitutes M&O costs. See Table 5.

For example, looking at the figures supplied for the Capital Area Greenbelt in Appendix 3, $139,000 in costs were reported, but only $23,000 would have been spent by the trail organization. An estimated $30,000 was spent by an outside agency for patrols, and more than $86,000 was allocated to donated labor and materials. By contrast, Struble Trail numbers in Appendix 3 total less than $20,000, but do not include patrols or donations. It seems pretty clear that there is a wide variation in how these costs are reported. This is especially relevant for donated labor and materials, which could represent a significant hidden cost if trail ownership and maintenance shifts more onto public entities. For example, for the Heritage Rail-Trail, also documented in Appendix 3, the York County Parks Department pays more than 90 percent of M&O costs, while for the Greenbelt over 60 percent are donated.

The annual M&O costs reported for this survey range from $500 to $800,000. The latter is for the Baltimore and Annapolis Trail (B&A) in Maryland, which has superb amenities, programming and patrols. On a raw basis, the average annual reported cost to operate a rail-trail is just under $50,000. However, this is somewhat skewed by the one very high number: 31

Ojai Valley Trail, Calif. (Lorili Toth)

of the 39 trails reported annual costs of $25,000 or less, with the average excluding the B&A being just under $25,000. The average trail surveyed is 23 miles in length, and has annual M&O costs of just under $1,500 per mile, regardless of surface type.

As mentioned above, maintenance responsibility does appear to significantly affect cost. Approximately 60 percent of trails reporting costs were maintained primarily by a government agency, implying paid staff and/or contractors. The other 40 percent of trails were primarily maintained by a non-profit or volunteer organization. Annual costs for government-run trails were just over $2,000 per mile. This is not much more than the overall average of $1500, but it nearly triples the average for volunteer-run trails of just under $700 per mile.

PLANNING AND FUNDING

So the question becomes, with $25,000 a year and a bunch of loyal friends and neighbors, can one run a rail-trail? While somewhat simplistic, this also isn't too far from reality for a lot of trails. There are some risks, however. Bridges and other structures, and even the trail itself, will eventually wear out. To date, federal and state governments have funded the lion's share of trail development. But, aside from trails they directly own, they don't normally fund maintenance.

Trail resurfacing is a major component of long-term costs. The average age of trails surveyed is 12 years. The average age at which non-asphalt trails

Table 5: Asphalt/Non-asphalt Trail Comparison

Item	Overall	Asphalt	Non-asphalt
Number of Trails Reporting Financials	39	18	19
Average Annual M&O Cost	$24,239	$19,584	$25,237
Average Length (miles)	23	20	24
M&O Cost per Mile		$1,458	$1,478
Average Years Open	12	15	11
Average Annual Users	136,986	139,304	129,492
Re-grade/Re-surface Frequency		17	9

report re-grading or resurfacing is nine years. This is consistent with the fact that virtually all non-asphalt trails report having done re-grading or resurfacing. So, it may reasonably be concluded that this hurdle has been cleared within existing budgetary constraints, at least for one cycle. The bar may be a little higher for asphalt trails. The average age reported for repaving is 17 years, which is consistent with the fact that most asphalt trails have not yet been repaved. Assuming an average surface life of 17 years, and an average current age of 12 years, a serious deficit in funding for asphalt trail repaving is probably about five years away.

Long-term maintenance will be a major issue for most trails, particularly those that are owned or operated by non-governmental entities. It is possible that as the larger focus shifts from development to maintenance, state and federal dollars will follow. There is some evidence that this has begun. The Federal Highway Administration (FHWA) recently changed the rules to allow transportation enhancement (TE) funds to be used for major reconstruction and resurfacing projects. This is good in the sense that the 20-year-old trail in desperate need of resurfacing now has a potential funding source, but bad in the sense that there will now be even more projects competing for limited TE dollars. States will also need to be persuaded to make maintenance as much of a priority over the next decade that construction has been over the past decade. This will be even more critical as single trails meld into networks too extensive for individual nonprofits to adequately manage. Some additional ideas for funding long-term maintenance:

- → Establish a long-term maintenance endowment.
- → Raise funds regionally for a trail network rather than for individual trails.
- → Place trails in public, rather than nonprofit, ownership.
- → Get support from tourism and recreation taxes and fees.

On this latter point, there is starting to be some long-overdue recognition of the economic benefits of trails and greenways, especially for recreation-, heritage-, and nature-based tourism. This should be brought to the attention of legislators and government officials, but also to tourism agencies, chambers of commerce and other business interests. The average number of users reported in our survey was 136,986 per trail per year. Numerous studies have shown the majority of trail users to be 45 and older, and above average education and income. They are able and willing to spend money on lodging, meals, sporting goods and various other items. In addition to supporting businesses, this activity generates tax revenue, which should in turn flow back into trail maintenance, thereby enhancing the resource that attracted the tourists in the first place. Numerous examples of user and economic studies can be found on the American Trails Web site at **www.americantrails.org/resources/economics/index.html**.

In Their Own Words
RAIL-TRAIL MAINTENANCE MODELS
FROM RAIL-TRAIL MANAGERS

Trail Maintenance by a County Government

[The following was submitted by the Indiana County (Pennsylvania) Parks and Recreation Department and exemplifies a situation where county government has undertaken rail-trail development and operation.]

Our agency currently operates the following two rail-trails:

GHOST TOWN TRAIL

16 MILES, PACKED LIMESTONE SURFACE

Current maintenance costs for this trail are approximately $18,000 per year or about $1,125 per mile per year. This cost includes labor, materials and supplies to maintain the trail and access areas. Maintenance of the trail is performed by our county park maintenance staff who are based at other parks in southern Indiana County. Typical maintenance duties include mowing trail edges, cleaning ditches, removing fallen trees, cleaning trail restrooms and trail access areas. About twice a year the trail is dragged with a chain drag to smooth out ruts.

Equipment used on the trail is provided from our other county parks. In 2002 our maintenance crew spent 1,470 hours maintaining the Ghost Town Trail (figures for 2003 have not been compiled at this time). This includes 288 hours in Cambria County where we maintain this portion of the Ghost Town Trail under an agreement with the Cambria County Conservation and Recreation Authority (CCC&RA). The CCC&RA reimburses our agency $18 per hour for any work we perform. This hourly fee includes reimbursement for labor and equipment.

Unfortunately, we discontinued our agreement with the CCC&RA in October 2004. Due to the increased workload for our staff as a result of the coming expansion of the Indiana County trail system we can no longer perform maintenance services for Cambria County.

One disadvantage of the limestone dust surface is the fact that during periods of very heavy rain or flooding there may be washouts which need to be repaired, unlike an asphalt surface which would probably remain intact. A second disadvantage of the limestone dust is the fact that during winter thaws or the early spring the surface is soft and may not be usable. An asphalt surface is generally usable at any time.

HOODLEBUG TRAIL

6 MILES, RECYCLED ASPHALT MILLINGS SURFACE

Current maintenance costs for this trail are approximately $9,000 per year or about $1,500 per mile per year. This cost includes labor, materials and supplies to maintain the trail and access areas. The annual maintenance cost for this trail is higher per mile than Ghost Town Trail because much of the trail passes through neighborhoods and communities, unlike the Ghost Town Trail which is located in a more rural setting. For this reason we do more frequent mowings and general upkeep to keep the Hoodlebug Trail looking good. The maintenance costs are not related to the type of surface, in fact, in the long term the asphalt millings will probably last longer and require less overall maintenance than the limestone dust. The asphalt millings were donated to us by PennDOT. Equipment and labor used on the trail is also provided from our other county parks. In 2002 our maintenance crew spent 737 hours maintaining the Hoodlebug Trail.

A four-mile addition to the Hoodlebug Trail will be constructed in 2005. This portion of the trail will have a 2A modified gravel base shot with MC-70 dust oil and then an E3 emulsion. This will essentially be a tar and chip type surface which we have found on portions of the Hoodlebug Trail to be an acceptable trail surface that is less costly than asphalt.

GENERAL COMMENTS

We advise any group who will be operating a rail-trail to remember that trails are really linear parks, and as such, they require much of the same maintenance duties and commitment that maintaining any park entails. The number of access areas, restrooms or other facilities provided should also be considered when estimating future maintenance costs.

Please bear in mind our labor costs are probably lower than what may exist in other areas of the state. For example, our seasonal park maintenance positions pay $7 per hour and our full-time maintenance staff make in the range of $8–$9 per hour. We also utilize summer employment programs and volunteers whenever they are available.

Extensive information about our trails is available on our Web site: **www.indianacountyparks.org.**

Liability, Insurance and Public Safety

Liability is perhaps the most common and complex issue facing trail managers today. Trail groups, governments, railroads and private landowners are all concerned about potential legal ramifications of trail ownership, and are unsurprisingly hesitant about accepting liability. In point of fact, no one can absolutely assure you that you won't be sued, or that you will win if you are. While the law and precedent are firmly on your side, the risk of being the exception to the rule is still more than some decision-makers are willing to bear.

Setting aside our natural fears of what *might be* for a moment, there is much comfort to be taken from what *actually is*:

- → Trails and trail users are inherently safe. Most of the reported suits were the result of one individual being reckless, then trying to shift blame onto the trail.
- → State law typically removes much of the liability from landowners who open their property for public recreation except in cases of gross negligence.
- → Eleven trails reported being sued. Considering that we surveyed 100 trails, with an average age of 12 years, and average of 136,986 users per year, that's more than 150 million trail visitations with only 11 suits.

Still, no one wants to be on the receiving end of even a minor nuisance suit. There remains the aggravation and expense of having to defend yourself, not to mention the funds that are diverted away from trail development and maintenance. So, what can you do to protect yourself? Here are a couple of highlights. For a more in-depth analysis of this topic, please refer to RTC's publication *Rail-Trails and Liability* (**www.trailsandgreenways.org/resources/development/opposcom/tgc_liability.pdf**).

Northampton Trail, Mass. (Craig Della Penna)

- → If possible, place the trail in public ownership.
- → Understand your state recreational use statutes and other pertinent laws. A reference to these statutes for all 50 states can be found at: **www.nps.gov/ncrc/programs/rtca/helpfultools/recusebrochures/index.htm.**
- → Design for safety.
- → Regularly inspect the trail and correct any unsafe conditions. Keep records of these activities.
- → Prominently post hours of operation and other rules and regulations, along with emergency contact information.
- → Incorporate, which may eliminate some personal liability for principals.
- → Buy insurance.

More than three quarters of respondents have insurance of some kind, with many benefiting from umbrella coverage through a larger governmental entity. The average coverage amount is just under $3,000,000 with an average annual cost of $2,061, and a quarter of trails have additional coverage. While it is a good chunk of a $25,000 budget, this could prove to be invaluable, and may even be mandatory if you hold public events. Organizations should consider blanket liability coverage with optional riders for officers and directors, vehicles, structures, etc. Two good sources for coverage are The Alliance of Non-Profits for Insurance (**www.ani-rrg.org**) and the Land Trust Alliance (**www.lta.org**).

Orange Heritage Trail, N.Y. (Boyd Loving)

Some additional statistics related to trail safety:

- Two-thirds of trails are open from dawn to dusk with most of the remainder being open 24 hours a day. Very few trails have specific hours of operation.
- As most trails officially close at dusk, it is not surprising that only seven report having lights at trailheads, only three report lights along the trail, and only a short segment of one trail has emergency call boxes. All trails with lights report having them wired (as opposed to battery or solar power), and all report controlling the lights with light sensors.
- Three quarters of trails are patrolled by police, sheriffs, rangers or some similar authority, while one-third have some sort of citizen patrols.
- Despite this vigilance, two-thirds of trails report vandalism of signs, including equal parts damage, graffiti and theft. One-third of trails report problems with other vandalism, dumping and trespass, mostly illegal ATV access.
- Fortunately, only five trails report minor crimes against property, and *no* crimes against persons were reported.

LAND TRUST ALLIANCE

Join the approximately 500 Land Trust Alliance Sponsor members that have decided to come under the Conserve-A-Nation® Insurance Program. The Program offers a wide range of coverage including a basic program that consists of general liability insurance, non-owned and hired auto liability, and property coverage. Additionally, the program offers optional insurance including umbrella coverage that provides an added layer of protection against liability. Other coverage includes Worker's Compensation/Employer's Liability and Volunteer Workers Accident coverage. Your land trust can also access one of the most important coverages for a nonprofit organization, Directors and Officers insurance. This coverage affords protection against claims arising from "wrongful acts" and poor business decisions made by a director, officer, employee, volunteer or the organization itself. Coverage is offered by Franey, Parr & Muha, Inc., and underwritten by The Chubb Group of Insurance Companies, a multi-billion dollar insurance organization that has earned the industry's highest ratings for financial stability and operating performance. Policies are available to land-conserving organizations, including trail groups, who meet LTA membership and other requirements. For information about the Conserve-A-Nation® Program, visit **www.lta.org** or contact James A. Meshanko with Franey, Parr & Muha, Inc. at 800-298-7373 or via e-mail at jmeshanko@franeyparrmuha.com. Address any unsafe conditions identified during trail design and development.

Trail Surfaces

The trail surface is perhaps the single most important point of interface between trail users and the trail. It controls what activities can or cannot be undertaken, and has a great impact on the quality of the user experience. Trails are surfaced with many materials, including dirt, gravel, cinders, and asphalt. For purposes of this report, we will consider trails to be either asphalt or non-asphalt, pointing out significant differences between various non-asphalt materials as appropriate.

Approximately 45 percent of trails report asphalt surfaces, and 55 percent non-asphalt. Three quarters of the non-asphalt trails have crushed stone surfaces, with the remainder being dirt or cinder. Twenty-one trails report using some recycled waste product in either the trail base or surface, including quarry dust, pavement milling, ash and slag. None report the use of recycled glass or rubber in trail surfaces.

The predominant trail width is 10 feet, with half of the trails reporting this width. A general statement can be made that newer trails tend to be 10 feet wide or wider, while older trails tend to be 10 feet wide or less. Aside from this generalization, we found no stronger correlation between trail age and width.

Table 5: Trail Surface Percentages

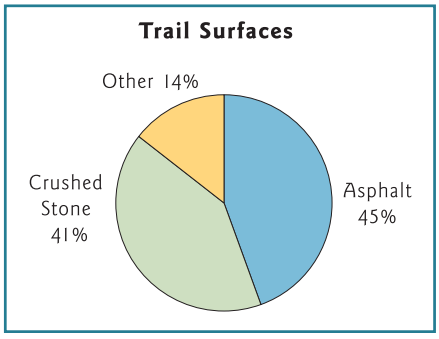
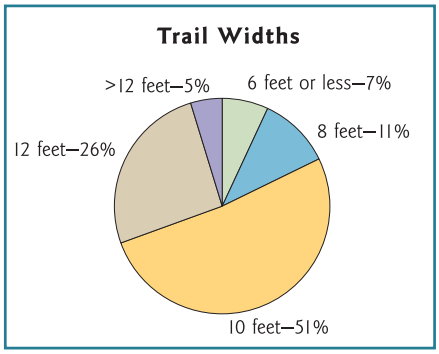


Table 6: Trail Width Percentages



ASPHALT TRAILS

- One-third of trails report having been repaved, at an average age of 17 years.
- One-fifth of trails report having been sealed, at an average age of nine years, or about halfway between opening and being repaved. The data in this study is not sufficient to draw any conclusions about sealing extending the life of pavement.
- One-third of trails develop potholes, while two-thirds do not.
- Two-thirds of trails do not remove snow. Of those that do, most do partial removal, with only four trails reporting complete snow removal. When snow is removed, it is done with a plow.
- Two-thirds of trails use a blower to remove litter and debris, and two-thirds use manual means such as a rake or hands. One-third use street sweepers or other types of powered sweeper.
- Approximately half of asphalt trails use pavement markings: 35 percent for a center line, 38 percent for various safety warnings, and 27 percent for other reasons such as mile markers. (Note that these percentages don't total 100 because these uses are not mutually exclusive.)

NON-ASPHALT TRAILS

- Fifty percent of non-asphalt trails were constructed with paving machines, with the remainder being split between box spreaders, tailgate spreaders and other means. When these trails were resurfaced or re-graded, one-

In Their Own Words
RAIL-TRAIL MAINTENANCE MODELS
FROM RAIL-TRAIL MANAGERS

Trail Maintenance by an All-Volunteer Rail-Trail Association

[The following was submitted by the Allegheny Valley Trails Association and exemplifies a situation where a non-profit organization has undertaken rail-trail development and operation.]

ALLEGHENY VALLEY TRAIL

The Allegheny Valley Trails Association (AVTA) is located in western Pennsylvania's Venango and Clarion Counties. Founded in 1990, AVTA has acquired approximately 50 miles of abandoned railroad property and has completed the development of nearly 30 miles of asphalt surface trail. Two intersecting rail lines are now the Allegheny River Trail and the Sandy Creek Trail, named for the adjoining waterway.

Maintenance of asphalt surface trail includes the following elements:

- Mowing and sweeping
- Brush clearing
- Repair: drainage maintenance, storm damage, vandalism
- Asphalt surface treatment
- Some snow removal

AVTA has purchased (new) a rather extensive set of trail maintenance equipment using private trust funds, state and federal (Transportation Enhancements) grants. A storage facility along the trail was added to a township building and contains:

- 50hp tractor
- Bush Hog side-mount mower
- Sickle bar mower
- 6' brush hog (pull behind)
- PTO blower
- Back blade (for snow removal)
- Zero radius riding lawn mower
- Various hand tools: chain saw, weed eater, etc.

We contract with a local retiree to operate and maintain the mowing equipment at $10/hr. His bill at year end is usually for about 100 hours, although we expect this to increase with trail length. One knowledgeable operator is important. Some of the trail board operates the equipment for special tasks.

We have had assistance from municipalities on special occasions, like mud slides, plugged drains and bridge washouts. This assistance is usually provided free of charge at their convenience. However, we have been required to hire assistance on occasion.

We have a Maintenance Committee and a Safety Patrol consisting of a chairperson from the Board of Directors and volunteers from the membership (about 250). Work days are scheduled when needed for such things as cutting back brush, removal of blow downs and vandalism repair. This system works fairly well but we definitely need to mobilize volunteers in greater numbers and more efficiently as our system of trails grows.

In 2004 we began what we hope will be an ongoing process of asphalt surface maintenance. Using private trust grant money we applied a seal coat (GSB-88 Emulsified Sealer/ Binder from Asphalt Systems, Inc.) to 10 miles of the Allegheny River Trail—our oldest asphalt. It is recommended that this process be completed every 4-5 years (our oldest surface was 16 years old). The cost was about $3,000/mile, but if done on a regular basis the life of an asphalt trail-only surface can be extended. Compared to the cost of new construction at $50,000/mile and more, it seems quite a bargain.

The AVTA Safety Patrol exists to provide an official "presence" on the trail. Patrol members can be identified by "AVTA Patrol" plates on their bikes, a photo I.D. tag or a red T-shirt with "Trail Safety Patrol" on the back. Patrollers provide assistance and information to users of the trail. They act as agents of good will and interact with trail users in a positive way. Patrol members are often the first to find problems with the trail and get them reported so they can quickly be corrected. Patrollers talk with many out-of-town visitors, answering their questions about the trail system, the area's history, local recreational and cultural resources, restaurants and motels.

Patrol members carry a pack with the necessary equipment to patch a flat tire, a spare tube, a first-aid kit to help with minor cuts and scrapes, extra fluids and an energy bar, and a cell phone capable of making a 911 call along some sections of the trail. They also carry trail maps, cards with local information and membership cards.

Patrol members set their own schedule. They record the date, trail and mileage markers covered on their patrol. Total mileage covered has averaged 8,000 to 10,000 miles each year.


Allegheny River Trail, Pa. (Jim Holden)

third were done with paving machines, one-third with tailgate spreaders, and one-third with a variety of other means, mostly redistributing the existing surface material with a dozer or grader. There were no specific reports of trail surface materials or application methods being changed due to problems with the original material or method.

- About two-thirds of trails have been resurfaced and/or re-graded, at an average age of nine years.
- Two-thirds of trails were compacted with vibratory rollers, with the remainder being compacted by static rollers. Some trails even reported using hand tampers or letting the trail be compacted by usage. The most common roller weight reported was 10 tons.
- Seven trails report using binders, including calcium, Road Oyl and PennSuprezD.
- Two-thirds of trails develop potholes. The most common repair method, used by virtually all trails, is manual (rake, shovel, etc.). One-third of trails also use light power equipment such as a garden tractor, and one-third use heavy equipment such as a back hoe or grader.
- Less than 10 percent of trails do partial snow removal with a plow, while the vast majority do none.
- Virtually all trails remove litter and debris manually, since power equipment could adversely impact the trail surface. About 10 percent also use blowers.

TO PAVE OR NOT TO PAVE

This is one of the most common questions in rail-trail development. Those seeking to answer that question on the basis of maintenance and operation (M&O) costs are likely to be disappointed. As indicated in the "Administration" section, annual per-mile M&O costs are very similar for asphalt and non-asphalt trails. While this may not seem intuitively correct, there are a number of factors that tend to support this conclusion.

- Surface maintenance, and re-surfacing in particular, is a less-frequent maintenance item that may not appear in annual budgets. Therefore, the surface choice will have less of an impact on recurring costs than patrols, trash collection, vegetative maintenance, and various other tasks.
- Trail organizations and government agencies likely spend whatever they can get their hands on. Expenditures may be more reflective of fundraising and budgetary constraints than actual need.
- While anecdotal evidence repeatedly suggests higher maintenance (activity, if not cost) for non-asphalt trails, this effort may be largely absorbed by volunteers, and would not be reflected in hard-dollar costs.


Bizz Johnson Trail, Calif. (Laura Cohen)

So, how should the trail surface selection be made? The short answer is that this is not a design or construction report. However, some general guidance can be offered. While maintenance costs probably should not be a factor in the decision, construction and reconstruction costs almost certainly should be. Construction costs are beyond the scope of this study. However, non-asphalt trails require significant re-grading or resurfacing twice as often as asphalt trails (9 years vs. 17 years). A simplistic cost approach would then say, if asphalt is less than twice the cost, it is a more cost-effective, long-term choice. At least one other area of consideration should be suitability to purpose. In this regard, there are many factors that come into play:

- Volume of use—high volumes of use will arguably have a greater impact on non-asphalt trails, although there are numerous examples of well-constructed non-asphalt trails that hold up well under relatively high use.
- Types of use—different trail surfaces will be better or worse for different activities, for example in-line skating or equestrian activities. How do you expect the trail to be used? Are there any uses you specifically want to include or exclude?
- Setting—asphalt may be more fitting for an urban setting than a rural setting. Also consider environmental and aesthetic factors such as the need to be consistent with a natural or historic setting.

Is it the End of the Trail

OR JUST THE BEGINNING FOR COAL COMBUSTION BYPRODUCTS (CCB)?

In 2001 the U.S. Department of Energy's National Energy Technology Laboratory (NETL) conducted a demonstration project to highlight the use of recycling coal combustion byproducts (CCB) by utilizing them as trail surfacing in an extension to the Youghiogheny River Trail near McKeesport, Pa. A portion of the trail, the Allegheny Land Trust's "Dead Man's Hollow Nature Area," in Lincoln Borough was completed using six experimental trail surface sections each containing different CCB-based mixtures. NETL contracted with GAI Consultants, Inc., in Pittsburgh to design the trail surface, oversee the process for making the CCB mixtures containing coal waste from local utilities, and monitor and report on the durability of each mixture.

Periodic inspections by GAI have shown that the trail surfaces are durable and have demonstrated minimal wear since the completion of construction in 2001. During a recent inspection of the trail surfaces by Thomas Gray, PE of GAI (see photo above), he stated that, "The trail surfaces have held up remarkably well over the past three years, and show no signs of excessive wear or cracking."

It is important to note that CCBs have also been used in other local Pennsylvania rails-to-trails projects including 1,500 feet of the Steel Valley Trail in Glassport, PA. NETL's research into CCB surfacing materials promises to provide environmentally sound, cost-effective trail-surfacing options to more than 2,000 miles of walking trails and light-duty pavement in Ohio, Pennsylvania and West Virginia.

Demonstrating the use of CCBs from local coal plants helps to reduce the need for landfill disposal, and provides an efficient and cost effective alternative to crushed limestone, concrete or asphalt. In fact the surface, harder, smoother and stronger than crushed limestone, is about half the cost of concrete or asphalt. The overall results of this study could lead to the start of a whole new path for rails-to-trails projects everywhere.

Youghiogheny River Trail, Pa. (Thomas Gray, P.E.)

Vegetation and Drainage

Vegetation is the frame for many trail experiences. It provides beauty, habitat, shade and even modest shelter. Vegetation can also be one of a trail manager's biggest challenges, as it is rarely content to stay *beside* the trail, but rather wants to be *on* the trail. Weeds and grass want to grow onto the trail. Tree limbs and even whole trees fall onto and block the trail. Vegetation could simply be eliminated, but trails would be greatly diminished in form and function. It is therefore necessary to strike a balance between nature and a well-maintained trail.

Almost all trails report having a grass strip along both sides of the trail, varying in width from one to 20 feet. Trees also grow along virtually every trail, and nearly 90 percent have a tree canopy over the trail.

The following percentages indicate the trails that perform these maintenance tasks related to vegetation and trailside land:

Litter clean-up	78%
Mowing	90%
Leaf removal	23%
Pruning	75%
Invasive species removal	36%
Tree removal:	
Fallen	86%
Health/safety	60%
Aesthetics	19%
Other	6%
Tree and shrub planting	39%
Flower planting	22%

Approximately one-third of trails use a chemical herbicide, with Roundup being by far the most commonly mentioned product.

Top: Capital Area Greenbelt, Pa. (Tim Poole); Middle: Cochituate Rail-Trail, Conn. (Courtesy of Rails-to-Trails Conservancy) Bottom left: Illinois Pairie Path, Ill. (Darren Smith); Bottom right: York County Heritage Rail-Trail, Pa. (Courtesy of Rails-to-Trails Conservancy)

Drainage is accomplished in the following ways:

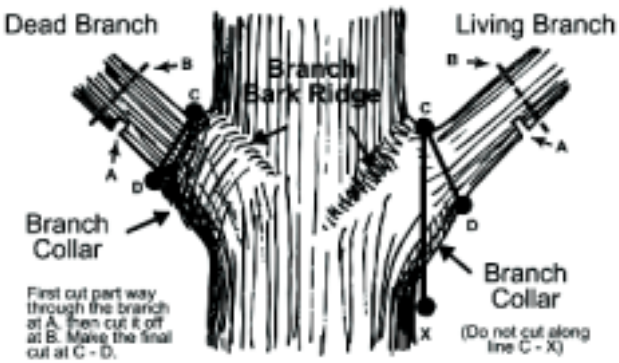
Crowned or sloped trail	71%
Ditches or gullies	80%
Culverts	80%
Other	7%

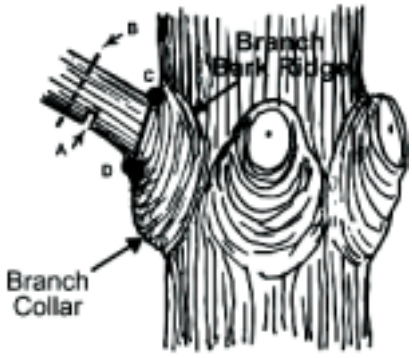
Drainage structures are cleaned using the following methods:

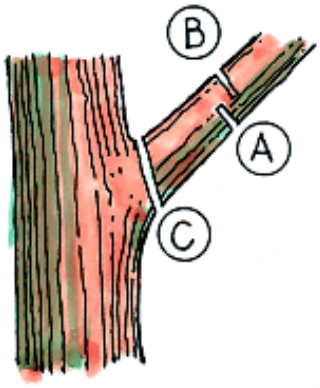
Power equipment	42%
Manual (rake, shovel)	70%
Flush with water	4%
Self-cleaning design	28%
Other	0%

American Discovery Trail, Iowa (Courtesy of Rails-to-Trails Conservancy)

Proper Pruning Principles







How to Make a Pruning Cut

LARGE LIMBS:

A: Make a partial cut from beneath.

B: Make a second cut from above several inches out and allow the limb to fall.

C: Complete the job with a final cut just outside the branch collar.

SMALL BRANCHES:

Make a sharp clean cut, just beyond a lateral bud or other branch.

Source: National Arbor Day Foundation

Trailheads and Amenities

Top: Prairie Spirit Trail, Kan. (Darren Smith); Bottom: Capital Crescent Trail, Washington, D.C. and Md. (Hugh Morris)

Trailheads are normally the first point of contact between users and the trail. Users enter and exit the trail here. They often park cars here, and may take advantage of other services if available. We call these services amenities and they range from rest rooms, tables and benches to bike shops and restaurants. Trails report an average of six trailheads. In addition, many provide amenities along the trail itself. See Table 8.

Notable in the "other" category were bike racks (which may have received more responses had it been included in the formal list), camping, interpretive signs and displays.

Informational kiosks can contain a lot of different kinds of information. The structures can range from simple to elaborate, but should be straightforward to build and install. Physical maintenance should also be minimal, with the maintenance of content being a larger issue. Things like a trail map and rules and regulations should be fairly static. On the other hand, advertising and event postings will need to be kept current. Perhaps that is reflected in the types of information that trails do and don't have in their kiosks as shown in Table 9.

Much like the trails themselves, 40 percent of trailheads are asphalt and 60 percent are non-asphalt. Snow is removed from about half of trailheads.

Table 8: Frequency of Trailhead and Trailside Amenities

Amenity	At Trailhead	Along Trail
Parking lot just for trail users	75%	NA
Shared public parking lot	31%	NA
Shared private/commercial parking lot	18%	NA
On-street parking	13%	NA
Permanent toilet facility	25%	8%
Portable toilet facility	33%	14%
Informational kiosk	58%	22%
Trash receptacles	42%	18%
Potable water	23%	7%
Vending machines	12%	6%
Any other commercial concession	5%	13%
Picnic tables/benches	51%	43%
Telephone	13%	NA
Other	7%	18%

Table 9: Kiosk Contents

Kiosk Item	Percent
Trail map	57%
Trail rules and regulations	55%
Historical/interpretive information	34%
Take-away brochures	31%
Emergency information	27%
Trail organization information	22%
Community announcements	13%
Sponsor acknowledgement	10%
Free listings of trailside services	5%
Paid advertising	4%
Donation can or slot	2%
Other	2%

Signs, Traffic and Access Control

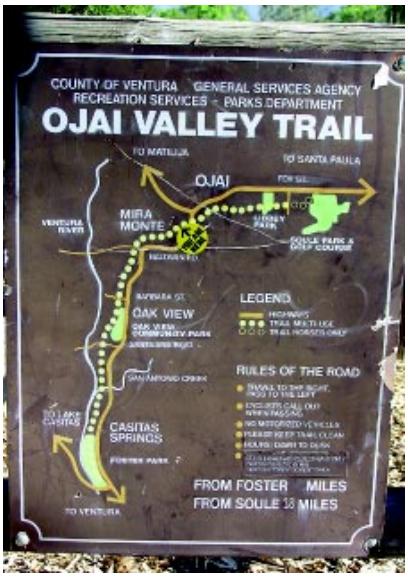
This section covers those items that direct people both inside and outside of the trail corridor, and help control their interactions. These items include such things as signs, fences, gates, bollards and pavement markings. Remember that a consistent design for signs creates a much better impression of your trail and helps to avoid user confusion.

SIGNS

Signs are used for a variety of purposes, as indicated in Table 10.

Table 10: Sign Utilization

Sign Purpose	Percent
Trail identification sign	75%
Traffic control for trail users	70%
Trail rules and regulations	70%
Mile marker	55%
Half Mile	64%
One Mile	24%
Quarter Mile	12%
Directional sign	47%
Traffic control for cars at crossings	46%
Property boundary sign	35%
Interpretive signs	31%
Other	13%



VANDALISM

Two-thirds of trails report vandalism of their signs, including graffiti, damage and theft. You should expect this to happen and be prepared. Here are some tips for combating vandalism:

- → Repair or replace vandalized signs quickly to send a message that vandals will not deter the trail effort.
- → Anchor signs and sign posts securely.
- → Use materials less subject to vandalism, such as metal versus wood posts.
- → Limit signs in remote areas or other areas where vandalism is a concern.
- → Cover unique or intricate signs with Lexan to protect them from direct contact.

Top: Traction Line Recreational Trail, N.J. (Boyd Loving); Middle left: Ojai Valley Trail, Calif. (Lorili Toth); Middle right: Canaan-Blackwater Crosscountry Hike & Ski, W.Va. (Karen Stewart); Bottom: Lower Trail, Pa. (Tom Sexton)

ACCESS CONTROL

Most trails are open to a multitude of uses, and primarily rely on users to practice proper trail etiquette to control their speed, direction and position on the trail. In some instances, mainly in high-volume areas, it may be necessary to take stricter measures to control users by direction or mode of travel. For example, a center stripe may be painted to help separate users by direction, or an adjacent path may be created for equestrians. Twenty-nine percent of trails use signs for this purpose, 10 percent use pavement markings, and 10 percent use a different surface material.

Another common issue for trails is controlling access by motor vehicles. One-third of the trails report problems with trespassing, mostly in the form of illegal ATV access. While ATVs, by their very nature, can access the trail from just about anywhere, it is still advantageous to control major access points. In this case, control means making access as safe and easy as possible for legitimate users while barring unauthorized vehicles. This is typically accomplished by placement of some type of impediment that bicyclists and pedestrians can navigate, but motor vehicles cannot. The impediment generally locks in some fashion so it can be unlocked by patrol and maintenance staff. There are a number of designs to meet this need, and a vast amount of discussion on the relative merits of each.

Left and right: Hudson River Greenway, N.Y. (Boyd Loving)

Little Miami Scenic Trail, Ohio (Ed Dressler)

The following access control mechanisms were reported:

Side-opening gate	45%
Removable bollards	31%
Fixed bollards	30%
Other	18%
Center-opening gate	10%

Noteworthy in the "other" category were flexible bollards, gate-bollard combinations and rocks, although it is unclear how the latter would permit sufficient emergency or maintenance access.

For mechanisms that lock, someone has to be able to unlock them. The following persons or agencies are typically provided with trail access:

Fire/police/EMS	88%
Park/trail staff	80%
Volunteers	48%
Utility employees	25%
Adjacent property owners	19%
Railroad employees	2%
Other	1%

Fences are another type of structure that controls the movements of people inside and outside of the trail corridor. Fences are used for the following reasons:

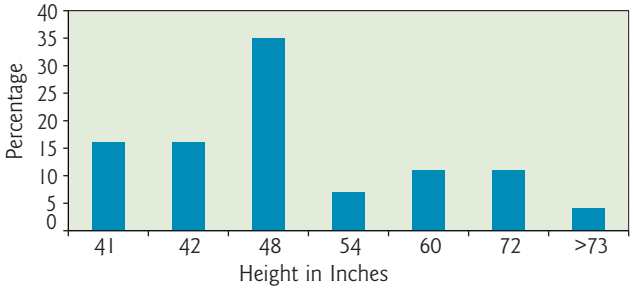
Separate users from hazards	43%
Prevent unauthorized access to adjacent property	33%
Prevent unauthorized access to trail	31%
Mark boundary	14%
Other	10%
Separate from active rail line	8%
Secure trailside amenities	4%

The following types of fences are used:

Split rail	39%
Chain link	27%
Wire	14%
Other wood	10%
Stockade	7%
Other	2%

Table 11 compares the most commonly used fence heights.

Table 11: Fence Height



ROAD AND RAIL CROSSINGS

Most trails have at least one road-trail intersection. Eighty percent report that cars (road users) have the right-of-way at such intersections. Six percent report that trail users have the right-of-way, and 10 percent report a combination at different intersections. Various devices and techniques are used to control and provide safety at these intersections. See Table 12.

Ten trails report crossing active rail lines. All use signs at the crossings, while two also use automatic gates and one also uses flashing lights.

Table 12: Traffic Controls at Road Crossings

Traffic Control Device	Percent
Stop sign for trail users	72%
Pedestrian/bike/trail crossing sign	51%
Road striping	33%
Pedestrian crossing signal	10%
Yield sign for trail users	8%
Traffic signal	8%
Other	8%
Yield sign for road users	7%
Stop sign for road users	4%

Left: Ojai Valley Trail, Calif. (Lorili Toth); Right: Jacksonville to Baldwin Trail, Fl. (Boyd Loving)

Bridges and Tunnels

According to the survey most rail-trails have at least one bridge. A few also have a tunnel or two. These are often the most interesting and scenic points along the trail. They can also be the areas of greatest concern for construction, maintenance and liability. Trails often utilize existing rail bridges with varying degrees of rehabilitation, and sometimes have to resort to completely new bridges. In terms of a bridge's construction and materials the following circumstances were reported:

Existing rail bridge (reconstructed)	36%
Existing rail bridge (minor repairs)	35%
New bike/ped only bridge	28%
Existing rail bridge (used as-is)	22%
New vehicular type bridge	14%

Bridge structures and decks were constructed of the materials shown in Table 13.

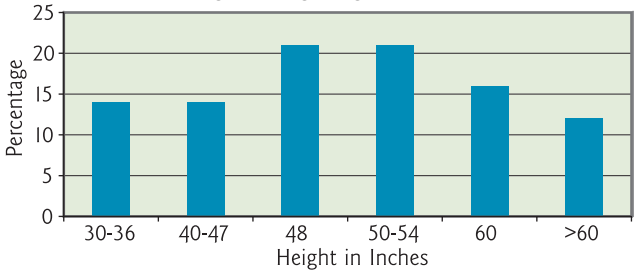
The orientation of wood decking relative to the direction of travel can be a concern to bicyclists because tires may get pinched in the spaces between boards. The orientations reported were:

Perpendicular	53%
Diagonal	20%
Parallel	2%

Table 13: Materials for Bridge Structures and Surfaces

Material	Structure	Surface
Metal	66%	4%
Wood	48%	63%
Concrete	39%	20%
Other	6%	1%
Fiberglass	1%	N/A
Asphalt	N/A	18%
Stone/dirt/cinders	N/A	12%

Table 14: Bridge Railing Height



Henry Hudson Trail, N.J. (Boyd Loving)

Paulinskill Valley Trail, N.J. (Boyd Loving)

Eighty-six percent of bridges have railings and Table 14 compares railing heights.

One-third of bridges are inspected on a recurring basis, with the average interval being four years. The most common inspection interval is "as needed," although it is difficult to discern how this need is identified without an inspection.

Fourteen of the surveyed trails include tunnels. Three tunnels are lighted and none have gates. Except when the trail is closed based on its normal hours of operation, no tunnels are closed on a regular basis for maintenance or seasonal reasons. Tunnels may be closed as necessary for extraordinary events such as flooding.

Approximately a quarter of trails report illegal activities unique to bridges and tunnels, including climbing and jumping from bridges, along with more standard graffiti and vandalism. Two-thirds of these structures are painted or sealed. About one-third of these are done only at installation, and two-thirds are done on a recurring or as-needed basis.

York County Heritage Rail-Trail, Pa. (Courtesy of Rails-to-Trails Conservancy)

Design and Construction Tips for Easy Maintenance

The results of this study make it clear that trails have minimal human, material and financial resources for maintenance. Therefore, the less maintenance needed, the better. A low-maintenance trail begins with carefully planned design and construction. Here are a few tips you may want to consider. For additional suggestions, see the "Resources for Trail Managers" section (page 28).

Vegetation provides scenery and shade for trails, but it also falls and grows onto and up through the trail. Consider these options:

- During trail construction, remove organic matter including grass, leafbed, and topsoil to a sufficient depth. This will hopefully remove seeds and roots and deprive them of an environment in which to re-establish themselves.
- Use a geo-fabric and/or sub-surface herbicide to further deter plant growth on the trail surface.
- Use a quality aggregate free of organic matter (clay, soil, seeds, etc.) and apply it to a sufficient depth.
- Mow the trailside at sufficient intervals to deter the spread of vegetation onto the trail.
- If your trail is in a fairly natural setting, organic debris such as cleared brush and fallen limbs and trees can be left in the trailside area where it will provide habitat and eventually decompose. This will reduce the time and expense of removing this material. If you normally chip this material, handle the chippings in the same manner. Or, reuse them for the surface of a side nature trail or to mulch flower beds at the trailhead, rather than haul them away.

Top: Ojai Valley Trail, Calif. (Lorili Toth); Bottom: Baltimore & Annapolis Rail-Trail, Md. (Dave Dionne)

Erosion due to wear and poor drainage is another big maintenance item. A couple inches of gravel spread over the ground may seem perfectly sufficient for bicycle and pedestrian use; more than that may seem like a waste of time and money. It isn't, unless you like to spend your time rebuilding the trail every couple of months. While this report is not an engineering document, a "good" trail will generally consist of a sub-base of several inches of coarse aggregate (or ballast). This is covered by the wearing surface—another few inches of asphalt or fine aggregate. The Penn State University Center for Dirt and Gravel Road Studies has done considerable research into aggregates for road and trail use. The center strongly promotes a mixed-particle aggregate for the

wearing surface rather than the more conventional method of using uniform particles in layers of decreasing particle size. For more information on this research and recommendations, visit **www.mri.psu.edu/centers/cdgrs/Index.html**. Also consider:

- If feasible, have the trail professionally designed and constructed. If not, utilize the many free technical assistance services available.
- Build the trail using recognized design standards—don't try to reinvent the wheel.
- Compact the trail surface using a 10-ton vibratory roller or the closest thing available. Do not skimp on this step. A loose trail surface will wear poorly and can be hazardous to users.
- Slope or crown the trail surface in accordance with the natural topography. This doesn't have to be exaggerated to the point where users are uncomfortable, but water should run off the trail surface.
- Make a point to be on the trail when it is raining or wet so you can see what the water is actually doing rather than just seeing the aftermath.
- Where there are seeps, springs and other obvious areas of water flow or accumulation, take steps to keep the water off the trail surface. Water should flow under the trail from side-to-side or, preferably, downhill away from the trail. This can be accomplished with pipes, box culverts or French mattresses.

Five Star Trail, Pa. (Courtesy of Rails-to-Trails Conservancy)

Allegheny River Trail, Pa. (Jim Holden)

- Much like the gutters on your house, drainage structures become clogged. Plan to regularly clear pipes and culverts, or use a structure like the French mattress (see page 24) that should continue to flow water even if there is surface debris.

Some other miscellaneous ideas:

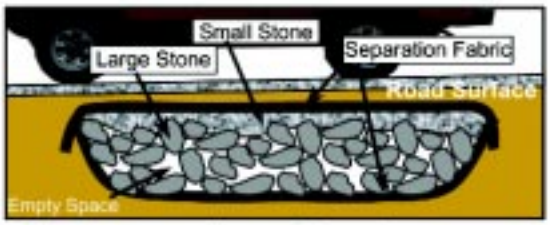
- Limit the placement of trees, signs and other items in areas to be mowed. This will reduce the mowing effort as well as the likelihood that these items will become overgrown or damaged.
- Concentrate services like trash cans and restrooms at trailheads. This reduces maintenance time as well as vehicles being driven on your trail.
- While trash cans and portable toilets are convenient for users, there is nothing worse for a trail's image than when these facilities are overflowing. If you aren't certain of your ability to maintain them, don't provide them.
- Information in kiosks should be as generic and timeless as possible, unless you plan to keep it up-to-date. Out-of-date information is a detriment to the trail.
- Keep a regular presence on the trail so that little issues can be addressed before they become big issues—or liabilities.

Technical Bulletin

French Mattress

Version 2.0 2/21/04

FRENCH MATTRESS –A structure under a road consisting of coarse rock wrapped in fabric through which water can freely pass. A *French mattress* is basically a French drain that is used similar to a culvert to allow water passage through the roadbed.



Side view cut-away diagram of a French mattress.

Side view of an actual French mattress.

PURPOSES: The primary function of a *French mattress* is to provide load support and to establish, maintain, or equalize the subsurface water on both sides of the road. The use of *French mattresses* in road maintenance is a relatively new concept. Please contact the Center for Dirt & Gravel Road Studies with any questions or concerns.

HOW THEY WORK:

Support strength is provided by large rocks in the lower portions and by spreading the weight load with layers of progressively smaller rock near the top. Water moves into the *French mattress* from any direction through the protective geo-textile fabric, which functions to prevent migration of fine material. The water collects in the voids provided by the larger rock and moves by gravity either into the soil or subsurface drainpipes, if provided, or exits as a gentle seep on the downhill end of the structure.

BENEFITS OF A *FRENCH MATTRESS*:

- Corrects road support problems in areas where the road base has been weakened by water saturation caused when the road acts as a dam to natural water flow.
- Allows for natural equalization of subsurface water on both sides of a road.
- Requires little, if any, maintenance compared to cross-drainage culverts.
- Eliminates the need for additional cross pipes in some instances.
- Allows a gentle, non-erosive water discharge rather than concentrated flow.
- Provides an indefinite service life if not compromised by heavy flows of sediment.

WHERE TO USE A *FRENCH MATTRESS*:

- Areas where concentrated outlet flow through a pipe may be undesirable, impractical, or regulated.
- Low-lying areas near streams or wetlands where installing cross drains would be difficult.
- Areas where a road is acting as an impoundment or dam to the natural water flow by isolating subsurface water on one side of the road from the other.
- Areas where placement of a pipe at the depth necessary to provide structural cover would lower the natural water table of the area and require long term maintenance.

The publishers of this publication gratefully acknowledge the financial support of the Pennsylvania State Conservation Commission. For additional information or assistance, contact: Center for Dirt & Gravel Roads Studies, Penn State University, 207 Research Unit D, University Park, PA 16802 (Toll-Free Phone: 1-866-668-6683, Fax: 814-863-6787, Email: dirtandgravel@psu.edu). Additional copies available on our website at: www.dirtandgravelroads.org

Center for Dirt and Gravel Road Studies

Getting It Done

Armstrong Trail, Pa. (Allegheny Valley Land Trust)

VOLUNTEERS

Volunteers are at the heart of almost every trail maintenance effort. Even trails fortunate enough to have some paid maintenance staff will use volunteers whenever possible. This is the best way to stretch scarce trail maintenance dollars as far as possible. Here are some tips for using and finding volunteers:

- Volunteers should always work under the direction and supervision of a responsible adult. This person should preferably represent the entity that will be liable if any mishaps occur.
- Volunteers should not do anything that runs contrary to your insurance coverage, private property rights, laws, ordinances, regulations, etc.
- Power tools and equipment should not be operated by minors or in the presence of unattended children.
- Volunteers should not engage in any police or medical functions unless they are properly certified to do so.

If a trail is owned or managed by a nonprofit group, the most likely source of volunteers is the group's members. These individuals can get stretched thin, however, so it's a good idea to tap other sources of labor. Some of these include:

- Boy or Girl Scout troops and individual Eagle Scout candidates.
- School and church groups (youth and adult).
- Adult service clubs (Rotary, Kiwanis, Lions, etc.).
- The county court system or corrections department can often provide individuals who are incarcerated or have mandatory community service sentences.
- Alternative education programs for at-risk youth.
- United Way Day of Caring.

The more voluntary a person's participation is, the more he will want his time put to good use with a tangible result, such as planting a garden or building a picnic area, rather than picking up trash.

Another way to spread the maintenance load is through an adopt-a-trail program. This follows the adopt-a-highway model that many departments of transportation have. A business, community group, or even a single individual or family, agrees to take on certain routine maintenance functions for a section of the trail. Much like the highway program, "adopters" aren't going to fix the trail surface. But they can cut the grass, keep the trail clean and attractive, and inform the

Baltimore & Annapolis Rail-Trail, Md. (Dave Dionne)



All: Capital Area Greenbelt, Pa. (Courtesy of Rails-to-Trails Conservancy)

regular trail maintenance organization of problems and hazards before they get out of hand. With existing skills or a modicum of instruction, volunteers can do almost everything associated with the maintenance and operation of a trail. Table 15 below lists some common maintenance tasks that volunteers may or may not be able to perform, and suggests some sources of assistance for more difficult tasks.

Table 15: Common Maintenance Tasks for Volunteers

VOLUNTEERS CAN MOST LIKELY...	VOLUNTEERS MAY NOT BE ABLE TO...	TO GET HELP WITH THIS TASK...
Keep the trail clear of trash and debris.	Haul material to a disposal facility.	Contact your local government or waste hauler.
Clear brush and trees.	Dispose of the material.	Borrow or rent a chipper.
Plant and maintain trees, shrubs and flowers and do most gardening and landscaping tasks.	Provide the items to be planted.	Get donated or discounted plant materials from a local nursery or home center. Establish an inventory of donated hand tools.
Operate mowers, trimmers and chain saws.	Supply their own tools.	Establish an inventory of donated power tools.
Operate a tractor, loader or bobcat.	Operate specialized heavy equipment like a dozer, grader or roller.	Ask your local road crew or hire a paid contractor.
Make minor repairs to non-asphalt trails.	Lay asphalt or operate a paving machine.	
Keep drainage structures clear.	Dig a trench and install pipes or culverts.	
Perform surface cleaning of restrooms.	Remove waste from portable toilets and restrooms.	Hire a paid contractor.
Install signs, gates, bollards and fences.	Manufacture same.	Purchase using donated funds, or get donated or discounted materials from a lumber yard or home center.
Build and install picnic tables, benches, kiosks and other wood structures.	Provide materials.	
Bridge decking and minor bridge and tunnel maintenance.	Structural inspection and maintenance of bridges and tunnels.	Hire a professional engineer and paid contractor.

GETTING THE MOST FROM YOUTH VOLUNTEERS

- → Have a goal for each outing.
- → Youth want to feel that their tasks have a purpose.
- → Emphasis the goal—accomplishing the goal is very important.
- → Explain the tasks required to achieve the goal.
- → Keep tasks short and simple, 2–3 hours at most, before losing attention.
- → Change the goals and tasks from month to month to hold interest.
- → Include hands on training for all tasks, no matter how simple.
- → Stress safety. Be over-cautious and lead by example in using protective gear and proper techniques.
- → Keep everyone involved.
- → Include a short (one minute) educational talk.
- → Include a new tool or skill as part of each project.
- → Do not be afraid to discipline, which means "teach," not "punish."
- → Thank them for improving the community and society.
- → Many just want to be attached to something or someone positive.
- → Emphasis that the trail is for public use and they are the public.
- → Give them the sense that they benefit from their accomplished goals.
- → Be ready for surprises.
- → Look for and praise the positive.

EQUIPMENT

Aside from major surfacing and resurfacing projects, most of the equipment needed for trail maintenance is within easy reach of trail maintenance organizations. If a county or municipality maintains the trail, there is a good chance that the park or road department will already own everything needed. Even volunteer groups have a good head start, as many of the tools are the same as what the average home owner uses for yard maintenance. Tools can be owned outright as a result of donation or purchase, or they can be borrowed or rented as needed. Tools and equipment that the average trail maintenance organization should have access to include the list at the right.

HAND TOOLS

- → Shovel—flat and round
- → Rake—garden and leaf
- → Hoe
- → Cultivator
- → Broom
- → Digging bar
- → Tamper
- → Axe
- → Hand saw
- → Pruners and lopers
- → Buckets and trash bags
- → Rope or chain
- → Carpentry tools (hammer, saw, screw drivers, etc.) can usually be brought by volunteers when required for a project.

POWER TOOLS

- → Walk-behind mower
- → String trimmer
- → Chain saw
- → DR Trimmer or sickle-bar mower

POWER EQUIPMENT

- → Lawn tractor (mower)
- → Garden tractor with attachments (mower, blade, loader, sickle-bar)

LARGER POWER EQUIPMENT (most likely rent or have contractor provide)

- → Bobcat
- → Chipper
- → Loader/backhoe
- → Dump truck
- → Grader
- → Bulldozer
- → Paving machine
- → Roller

Appendix 1 – Resources for Trail Managers

There's a vast amount of information available for trail managers. This isn't intended to replace, supersede or duplicate any of those efforts, but merely to suggest a good direction in which to start.

Rails-to-Trails Conservancy (RTC) maintains four Web sites and a listserv:

www.railtrails.org — General information about RTC.
www.trailsandgreenways.org — Information for trail planners, builders and maintainers.
www.ntec.org — National Transportation Enhancements Clearinghouse.
www.traillink.com — Trail-finder service.

In addition, RTC maintains the Trails and Greenways listserv. This is an e-mail forum for the discussion of trails and greenways issues. You can ask a question and have it instantly distributed to hundreds of your colleagues across the country. It's a quick and easy way to get assistance, advice and a variety of perspectives.

You can subscribe to the listserv by sending an e-mail to trailsandgreenways-subscribe@yahoogroups.com. You will receive a welcome message with instructions on how to access listserv archives and other advanced features by registering with Yahoo, if you choose to do so.

American Trails — **www.americantrails.org**
National Trails Training Partnership — **www.nttp.net**
American Hiking Society — **www.americanhiking.org**
National Trails Day — **www.nationaltrailsday.org**

RTC, American Trails (which also hosts National Trails Training Partnership), and American Hiking Society (which also facilitates National Trails Day and the National Trails Directory) all provide numerous additional resource links.

For resources more specifically related to the region covered by this study, please visit RTC's Northeast Regional Office at **www.railtrails.org/field/northeast/default.asp**.

Appendix 2 – Maintenance Schedules

Twenty-five trails responded with more detailed information about when various maintenance tasks are done. Topping the list of daily tasks were patrols by police and non-police agencies, followed by cleaning of restrooms. On a weekly basis, trails often do light clean-up work on the trail and trailheads, empty trash cans, do additional restroom cleaning, and cut the grass. Trails that don't have the resources to get to these things on a weekly basis do them monthly. It is quite common, especially for all-volunteer operations, to have monthly work days. Once a year seems to be a good frequency for applying herbicides, cleaning culverts, inspecting bridges, and catching up on non-critical repairs. Hands down, "as needed" is the most common frequency for all maintenance tasks except for trash and toilets. Here is the table of responses:

Table 16: Frequency of Common Maintenance Tasks

Maintenance Activity	How often is it done?						
	Day	Week	Month	Quarter	Year	As Needed	Other
Repaving of asphalt trail						5	
Coating or sealing of asphalt trail						5	5 years
Pothole repair on asphalt trail						5	
Snow removal from asphalt trail						6	
Surface cleaning of asphalt trail		1	2	1		4	
Pavement markings maintenance and replacement					2	3	
Resurface non-asphalt trail						12	
Grade non-asphalt trail					2	8	
Pothole repair and other patches on non-asphalt trail				1		13	
Snow removal from non-asphalt trail						2	
Surface cleaning of non-asphalt trail				1		5	
Keep trail-side land clear of trash and debris	1	4	5		3	9	
Mowing		7	5	1	2	6	
Leaf removal			2		3	8	
Tree pruning		1	1		3	17	
Tree removal			1		1	17	
Invasive species removal			1			12	
Planting new vegetation					1	7	
Application of herbicides or pesticides					5	6	
Clearing of drainage channels and culverts					4	18	
Surface maintenance of parking areas		2		1	3	12	
General maintenance of trailheads (litter clean-up, etc.)	1	6	1		1	9	
Landscaping/gardening at trailheads		4	2	1	2	4	
Empty trash cans at trailheads		2	3	1			2

Maintenance Activity	How often is it done?						
	Day	Week	Month	Quarter	Year	As Needed	Other
Maintenance of stationary toilets at trailheads (clean, empty, etc.)	4	2				1	
Maintenance of portable toilets at trailheads (clean, empty, etc.)		6				2	
Empty trash cans along trail		4				1	
Maintenance of stationary toilets along trail (clean, empty, etc.)	1	2					
Maintenance of portable toilets along trail (clean, empty, etc.)		2					
Maintenance of informational kiosks (repairs, etc.)		1	3		1	8	
Maintenance of picnic tables, benches, etc.				1		10	
Updating information in informational kiosks		2	1	2	1	8	
Installation of signs					1	19	
Repair/maintenance of signs					3	17	
Installation of pavement markings						4	1
Maintenance of pavement markings						3	
Patrols by police agency	7	1				5	random
Patrols by non-police agency (e.g. trail watch)	5	3				1	ongoing
Recovery from illegal acts such as dumping and vandalism	3		1		1	11	
Installation of lighting						1	
Maintenance of lighting						2	
Installation of emergency call boxes							–
Maintenance of emergency call boxes							–
Installation of gates, bollards and fencing						11	
Maintenance of gates, bollards and fencing			1			16	
Bridge, tunnel, underpass and crossing inspection	1	1		1	3	6	2-3 years
Bridge redecking						14	
Paint/stain/treat bridge deck or structure					1	6	
General bridge maintenance					2	14	
Tunnel lighting maintenance							–
Tunnel open/closed status							–
Paint tunnel/underpass walls and ceiling						2	
General tunnel/underpass maintenance						4	
Railroad grade crossing maintenance					1	4	
Road grade crossing maintenance		1			1	11	

The Chester County (Pennsylvania) Parks and Recreation Department submitted this detailed maintenance schedule for the Struble Trail:

Activity	January					February					March					Total
	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	Hours
Mowing														5		5
Trimming														5		5
Trash	2	2	2	2		2	2	2	2		2	2	2	2	2	26
Weeding															2	2
Invasive spraying																0
Bush hog																0
Signage																0
Fence repair												10				10
Pruning																0
Invasive pruning												20				20
Designated projects																0
Culverts																0
Gates																0
Bridge inspection									0.5							0.5
Grade ditches																0
Crosswalks																0
Trail surface																0
Flower bed planting																0
Storm damage																0
Vandalism																0

Activity	April					May					June					Total
	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	Hours
Mowing	5		5	5		5	5	5	5	5	5	5	5	5		60
Trimming	5		5	5		5	5	5	5	5		5	5	5	5	60
Trash	2	2	2	2		2	2	2	2	2	2	2	2	2		26
Weeding				2					2						2	6
Invasive spraying						10					10					20
Bush hog				16												16
Signage									20							20
Fence repair												10				10
Pruning			40													40
Invasive pruning																0
Designated projects											120					120
Culverts																0
Gates	6					6										12
Bridge inspection																0
Grade ditches																0
Crosswalks	6															6
Trail surface										16						16
Flower bed planting		10														10
Storm damage																0
Vandalism																0

Activity	July					August					September					Total
	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	Hours
Mowing	5		5		5	5		5	5			5	5		5	45
Trimming	5		5		5	5		5	5			5	5		5	45
Trash	2	2	2	2	2	2	2	2	2		2	2	2	2	2	28
Weeding				2					2					2		6
Invasive spraying	10					10					10					30
Bush hog											16					16
Signage								20								20
Fence repair							10									10
Pruning												40				40
Invasive pruning																0
Designated projects								120								120
Culverts																0
Gates																0
Bridge inspection																0
Grade ditches																0
Crosswalks																0
Trail surface																0
Flower bed planting																0
Storm damage																0
Vandalism																0

Activity	October					November					December					Total
	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	W1	W2	W3	W4	W5	Hours
Mowing		5		5												10
Trimming		5		5												10
Trash	2	2	2	2		2	2	2	2	2	2	2	2	2		26
Weeding																0
Invasive spraying			10													10
Bush hog																0
Signage																0
Fence repair				10												10
Pruning																0
Invasive pruning							20									20
Designated projects																0
Culverts							8									8
Gates																0
Bridge inspection																0
Grade ditches						16										16
Crosswalks																0
Flower bed planting																0
Trail surface																0
Storm damage																0
Vandalism																0

Appendix 3 — Budgets

As discussed in the narrative and demonstrated in the maintenance schedules in Appendix 2, trail maintenance is very much an ad-hoc business. Maintenance is done "as needed" and as funds present themselves — an approach that does not lend itself to meticulous budgeting. A couple of trails were kind enough to submit detailed budgets, and those follow.

The Chester County (Pennsylvania) Parks and Recreation Department submitted this detailed budget for the Struble Trail:

Activity	Times	Man Hours	Wages	Equipment Hours	Equipment Costs	Materials Costs	Transportation Costs	Total
Mowing	24	120	$1,957	96	$499	$0	$408	$2,864
Trimming	24	120	$1,380	96	$86	$0	$0	$1,466
Trash	52	110	$743	0	$0	$30	$884	$1,657
Weeding	7	14	$133	0	$48	$30	$0	$211
Invasive Spraying	6	60	$682	0	$40	$60	$102	$884
Bush Hog	2	32	$431	30	$252	$0	$36	$719
Signage	2	40	$540	0	$20	$200	$34	$794
Fence Repair	4	40	$454	0	$20	$300	$68	$842
Pruning	2	80	$1,271	40	$80	$0	$34	$1,385
Invasive Pruning	2	40	$540	20	$40	$0	$34	$614
Designated Projects	2	240	$3,814	80	$672	$1,400	$136	$6,022
Gates	2	12	$162	0	$10	$10	$0	$182
Culverts	1	8	$91	0	$10	$20	$17	$138
Bridge Inspection	1	0.5	$10	0	$0	$0	$0	$10
Grade ditches	1	16	$182	0	$10	$10	$17	$219
Crosswalks	1	6	$69	0	$4	$10	$17	$100
Trail Surface	1	16	$182	0	$5	$30	$17	$234
Flower Bed Planting	1	10	$95	0	$5	$120	$17	$237
Storm Damage	4	30	$341	10	$21	$50	$68	$480
Vandalism	3	20	$318	0	$10	$240	$51	$619
							Grand Total	**$19,677**

The following was submitted for the Heritage Rail Trail County Park in York, Pennsylvania. The trail was developed by the York County Rail-Trail Authority, the only entity of its kind devoted exclusively to rail-trail development. The trail is now maintained by the York County Parks and Recreation Department.

Maintenance Activity	Approximate annual labor cost	Approximate value of donated services	Approximate annual equipment & material cost	Total annual cost
Resurface non-asphalt trail	$70,000			$70,000
Grade non-asphalt trail				$0
Pothole repair and other patches on non-asphalt trail	$1,000			$1,000
Snow removal from non-asphalt trail				$0
Surface cleaning of non-asphalt trail				$0
Keep trail-side land clear of trash and debris	$5,200	$5,200		$10,400
Mowing	$25,000		$9,320	$34,320
Leaf removal	$1,000			$1,000
Tree pruning	$3,200		$1,800	$5,000
Tree removal				$0
Invasive species removal				$0
Planting new vegetation				$0
Application of herbicides or pesticides	$4,000			$4,000
Clearing of drainage channels and culverts	$3,000			$3,000
Surface maintenance of parking areas				$0
General maintenance of trailheads (litter clean-up, etc.)	$1,500	$1,500		$3,000
Landscaping / gardening at trailheads	$4,000		$4,000	
Empty trash cans at trailheads	$1,500			$1,500
Maintenance of stationary toilets at trailheads (clean, empty, etc.)	$9,000		$1,000	$10,000
Maintenance of portable toilets at trailheads (clean, empty, etc.)	$2,400			$2,400
Empty trash cans along trail				$0
Maintenance of stationary toilets along trail (clean, empty, etc.)				$0
Maintenance of portable toilets along trail (clean, empty, etc.)				$0
Maintenance of informational kiosks (repairs, etc.)	$1,000			$1,000

Maintenance Activity	Approximate annual labor cost	Approximate value of donated services	Approximate annual equipment & material cost	Total annual cost
Maintenance of picnic tables, benches, etc.	$250		$250	$500
Updating information in informational kiosks	$500			$500
Installation of signs	$3,000		$1,200	$4,200
Repair/maintenance of signs	$1,000			$1,000
Installation of pavement markings	$3,300		$4,500	$7,800
Maintenance of pavement markings	$700		$700	$1,400
Patrols by police agency	$20,000		$12,000	$32,000
Patrols by non-police agency (e.g. trail watch)		$3,000		$3,000
Recovery from illegal acts such as dumping and vandalism				$0
Installation of lighting				$0
Maintenance of lighting				$0
Installation of emergency call boxes				$0
Maintenance of emergency call boxes				$0
Installation of gates, bollards and fencing				$0
Maintenance of gates, bollards and fencing	$3,500		$1,400	$4,900
Bridge, tunnel, underpass and crossing inspection	$2,500			$2,500
Bridge redecking				$0
Paint/stain/treat bridge deck or structure				$0
General bridge maintenance	$50,000			$50,000
Tunnel lighting maintenance				$0
Tunnel open/closed status				$0
Paint tunnel/underpass walls and ceiling				$0
General tunnel/underpass maintenance				$0
Railroad grade crossing maintenance	$3,000			$3,000
Road grade crossing maintenance	$2,200			$2,200
Totals	**$146,750**	**$13,700**	**$32,170**	**$192,620**

The following budget was submitted for the Capital Area Greenbelt in Harrisburg, Pennsylvania.

Maintenance Activity	Labor cost	Donated services	Equipment & material cost materials	Donated equipment & cost for activity	Approximate total annual
Resurface non-asphalt trail		$2,000	$2,000	$3,500	$7,500
Grade non-asphalt trail					$0
Pothole repair and other patches on non-asphalt trail		$1,000	$500	$1,500	$3,000
Snow removal from non-asphalt trail					$0
Surface cleaning of non-asphalt trail					$0
Keep trailside land clear of trash and debris		$1,000	$1,000		$2,000
Mowing		$2,000	$1,000	$2,000	$5,000
Leaf removal					$0
Tree pruning					$0
Tree removal	$500	$800	$200	$1,000	$2,500
Invasive species removal		$1,000	$500	$800	$2,300
Planting new vegetation		$3,000	$2,000	$3,000	$8,000
Application of herbicides or pesticides		$1,000	$300	$1,000	$2,300
Clearing of drainage channels and culverts		$500	$200	$500	$1,200
Surface maintenance of parking areas	$2,000	$1,000	$300	$1,000	$4,300
General maintenance of trailheads (litter clean-up, etc.)		$200	$100	$500	$800
Landscaping / gardening at trailheads		$3,000	$2,000	$3,000	$8,000
Empty trash cans at trailheads	$1,500		$2,000	$2,000	$5,500
Maintenance of stationary toilets at trailheads (clean, empty, etc.)					$0
Maintenance of portable toilets at trailheads (clean, empty, etc.)					$0
Empty trash cans along trail					$0
Maintenance of stationary toilets along trail (clean, empty, etc.)					$0
Maintenance of portable toilets along trail (clean, empty, etc.)					$0
Maintenance of informational kiosks (repairs, etc.)					$0

Maintenance Activity	Labor cost	Donated services	Equipment & material cost materials	Donated equipment & cost for activity	Approximate total annual
Maintenance of picnic tables, benches, etc.					$0
Updating information in informational kiosks		$300	$100	$200	$600
Installation of signs		$200	$300	$500	$1,000
Repair/maintenance of signs		$200	$300	$500	$1,000
Installation of pavement markings					$0
Maintenance of pavement markings					$0
Patrols by police agency	$30,000				$30,000
Patrols by non-police agency (e.g. trail watch)					$0
Recovery from illegal acts such as dumping and vandalism					$0
Installation of lighting	$100		$100		$200
Maintenance of lighting	$200		$500		$700
Installation of emergency call boxes					$0
Maintenance of emergency call boxes					$0
Installation of gates, bollards and fencing	$1,000	$200	$100	$20,000	$21,300
Maintenance of gates, bollards and fencing	$300	$10,000	$200	$15,000	$25,500
Bridge, tunnel, underpass and crossing inspection	$50	$50	$50	$50	$200
Bridge redecking					$0
Paint/stain/treat bridge deck or structure	$300	$600	$300	$1,000	$2,200
General bridge maintenance	$100	$500	$1,000	$1,000	$2,600
Tunnel lighting maintenance					$0
Tunnel open/closed status					$0
Paint tunnel/underpass walls and ceiling					$0
General tunnel/underpass maintenance					$0
Railroad grade crossing maintenance					$0
Road grade crossing maintenance					$0
Totals	**$36,550**	**$28,550**	**$16,050**	**$58,050**	**$139,200**

Appendix 4 – Survey Participants

Trail name	Years Open	Length	Surface
Air Line State Park Trail	10	50	Non-asphalt
Allegheny River Trail and Sandy Creek Trail	13	32	Asphalt
Armstrong Trail	11	52	Both
Aroostook Valley Trail	16	75	Non-asphalt
Arrowhead Trail	17	4	Asphalt
Ashuelot Branch Recreation Trail	10	23	Not Specified
Baltimore & Annapolis Trail Park	15	13	Asphalt
Bangor and Aroostook Trail	10		Non-asphalt
Blackhand Trail	24	4	Asphalt
Buck Creek Scenic Trail	4	3	Asphalt
Burlington Bikeway	24	8	Asphalt
Butler- Freeport Community Trail	10	12	Non-asphalt
Capital Area Greenbelt	103	20	Asphalt
Catharine Valley Trail	1		Non-asphalt
Chatauqua	10		Both
Cheshire	10	13	Non-asphalt
Clarion -Little Toby Creek rail trail	7	18	Non-asphalt
Clark County Simon Kenton Trail	2	4	Asphalt
Columbia Trail	10	16	Non-asphalt
Conewago / Lancaster Junction	20	5	Non-asphalt
Constitution Trail	15	14	Asphalt
Creekside Trail	6	18	Asphalt
Cumberland Valley	8	11	Non-asphalt
D&H Heritage Corridor	10	35	Non-asphalt
D&H Rail-Trail	10	32	Not Specified
Delaware & Lehigh Trail (D&L Trail)	30	60	Both
Delaware Greenways (Cardinal Greenway & White River Greenway)	6		Asphalt
Ernst Trail	5	5	Asphalt
Falmouth Shining Sea Path	28	4	Asphalt
Five Star Trail	7	8	Asphalt
Forks Twp	20	2	Non-asphalt
Fort Hill Branch	11		Non-asphalt
Ghost Town Trail	13	24	Non-asphalt
Gorge Trail	24		Asphalt
Harlem Valley Rail Trail	8	12	Asphalt

Heritage Rail Trail County Park	5	21	Non-asphalt
Heritage Trail	9		Asphalt
Hoodlebug Trail	6	6	Asphalt
Houlton - to - Presque Isle Rail Trail	16		Non-asphalt
Jamestown Connector	8		Asphalt
Jane Addams Trail	2	17	Non-asphalt
Jay - to - Farmington	2	14	Non-asphalt
Knobstone Trail	20	58	Not Specified
Kokosing Gap Trail	13	14	Asphalt
Lackawanna River Heritage Trail	8	6	Non-asphalt
Lagrange - to - Medford	22	15	Non-asphalt
Lebanon Valley Rail-Trail	4	11	Non-asphalt
Little Miami Scenic Trail	13	68	Asphalt
Montgomery County	1	45	Both
Montour Trail	12	40	Non-asphalt
New York State Canalway Trail	20	86	Both
Newport - to - Dover Rail Trail	1		Non-asphalt
Noho	20		Asphalt
Ohio to Erie Trail-Greene County	8	28	Asphalt
Oil Creek Bicycle Trail	29	10	Asphalt
Ontario Pathways	8	24	Non-asphalt
Panhandle Trail	5	14	Non-asphalt
Paulinskill Valley Trail and Sussex Branch Trail	18	27	Not Specified
Pine Creek Trail	8	55	Non-asphalt
Prairie Grass Trail	3	29	Asphalt
Rochester Syracuse and Eastern Trail	30	6	Non-asphalt
Saint John Valley Heritage Trail	4	17	Non-asphalt
Simon Kenton Trail	3	5	Not Specified
Solon - to - Bingham Rail Trail	6	7	Non-asphalt
Southern New England Trunkline Trail	11	21	Non-asphalt
SRT — Thun Trail and Bartram Trail Sections	13	10	Non-asphalt
Struble Trail	20	3	Asphalt
Sugar River Recreation Trail	18	8	Not Specified
Swatara Trail	5	18	Non-asphalt
The 400 State Trail, Elroy-Sparta Trail and Lacrosse River State Trail	14	24	Non-asphalt
Veterans Memorial Greenway /Airline Trail North	2		Asphalt
Wall Township Bicycle Path	0		Asphalt
Wallkill Valley Rail Trail	11	12	Non-asphalt
Yough River Trail North	10	43	Non-asphalt
Yough River Trail South	17	28	Non-asphalt

Survey Participants

Air Line State Park Trail
Mike Reid
209 Hebron Road
Marlborough, CT 06447
860-295-9523
michael.reid@po.state.ct.us

Allegheny River Trail and Sandy Creek Trail
Jim Holden
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Armstrong Trail
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Kittanning, PA 16201
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armtrail@alltell.net

Aroostook Valley Trail
*David A. Rodrigues
Planning and Research Assoc.
Department of Conservation
Bureau of Parks and Lands
22 State House Station
Augusta, ME 04333-0022
207-287-5574
david.rodrigues@maine.gov

Arrowhead Trail
Eddie Figas
200 Municipal Drive
McMurray, PA 15317
724-942-5000
etfigas@peterstownship.com

Ashuelot Branch Recreation Trail
Bob Spoerl
PO Box 1856
Concord, NH 03302-1856
603-271-3254
bspoerl@dred.state.nh.us

Baltimore & Annapolis Trail Park
David G. Dionne
1003 Cecil Ave
Millersville, MD 21108
410-222-8820
rpdion96@aacounty.org

Bangor and Aroostook Trail*

*Indicates trail managed by David A. Rodrigues. See Aroostook Valley Trail.

Blackhand Trail
Greg Seymour
5213 Rock Haven Road SE
Newark, OH 43055
740-763-4411
blackhand@alltel.net

Buck Creek Scenic Trail
1301 Mitchell Blvd
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937-328-7275
nationaltrail@ci.springfield.oh.us

Burlington Bikeway
Ben Pacy
Burlington Department of Parks and Recreation
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Burlington, VT 05401
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Butler-Freeport Community Trail
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Capital Area Greenbelt
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717-652-4079
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Catharine Valley Trail
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2221 Taughannock Park Road
Trumansburg, NY 14886
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Sue.Poelvoorde@oprhp.state.ny.us

Chaatauqua
Jim Fincher
P.O. Box 151
Mayville, NY 14757
716-269-3668
crtt@cecomet.net

Cheshire
Bob Spoerl
PO Box 1856
Concord, NH 03302-1856
603-271-3254
bspoerl@dred.state.nh.us

Clarion—Little Toby Creek Rail Trail
Dale Lauricella
330 South St
Ridgway, PA 15853
814-772-7657

Clark County Simon Kenton Trail
1301 Mitchell Blvd
Springfield, OH 45503
937-328-7275
nationaltrail@ci.springfield.oh.us

Columbia Trail
Albert Kent
P.O. Box 1295
Morristown, NJ 07962
973-631-5136
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Conewago/Lancaster Junction
Lore Verne
1050 Rockford Road
Lancaster, PA 17602
717-299-8215
vernel@co.lancaster.pa.us

Constitution Trail
Jerry Armstrong
109 East Olive Street
Bloomington, IL 61701-5219
309-823-4260

Creekside Trail
Jim Schneider
651 Dayton-Xenia Road
Xenia, OH 45385
937-562-7445
jschneider@co.greene.oh.us

Cumberland Valley
Jerry Angulo
252 Fifth Ave
Chambersburg, PA 17201
717-2263-1713
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D&H Heritage Corridor
Andrew Helgesen
1 Pine Street
Ellenville, NY 12428
845-647-5292 better evenings
aw hel@verizon.net

D&H Rail-Trail
Lynn M. Conrad
P O Box 123
Forest City, PA 18421
570-785-7245
tccrail@epix.net

Delaware & Lehigh Trail (D&L Trail)
Sherry Acevedo
1 South Third St. 8th floor
Easton, PA 19042
610-923-3548
dele.sherry@verizon.net

Delaware Greenways (Cardinal Greenway and White River Greenway)
Lenette Freeman
700 East Wysor
Muncie, IN 47305
765-287-0399

Ernst Trail
John Wallach
747 Terrace St
Meadville, PA 16535
814-333-7063
jwallach@mmchs.org

Falmouth Shining Sea Path
Kevin Lynch

Five Star Trail
Dan Carpenter
RR 12 Box 203
Greensburg, PA 15601
724-830-3959
dcarpent@co.westmoreland.pa.us

Forks Township Recreation Trail
Cathy Kichline
1606 Sullivan Trail
Easton, PA 18040
610-250-2251'
forksmanager@forkstownship.org

Fort Hill Branch
Bob Spoerl
P.O. Box 1856
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603-271-3254
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Ghost Town Trail
Ed Patterson
1128 Blue Spruce Rd
Indiana, PA 15701
724-463-8636
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Gorge Trail
Ron Demmy
1889 Fountain Square Ct. F-1
Columbus, OH 43224
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Harlem Valley Rail Trail
David Shufelt
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Heritage Rail Trail County Park
Thomas Brant
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York, PA 17402
717-840-7411
parks@york-county.org

Heritage Trail
Graham Skea
211 Route 416
Montgomery, NY 12549
845-457-4901
gskea@co.orange.ny.us

Hoodlebug Trail
Ed Patterson
1128 Blue Spruce Rd
Indiana, PA 15701
724-463-8636
indparks@earthlink.net

Houlton to Presque Isle Rail Trail*

Jamestown Connector
Jim Schneider
651 Dayton-Xenia Road
Xenia, OH 45385
937-562-7445
jschneider@co.greene.oh.us

Jane Addams Trail
Steve Ehlbeck
1122 South Burchard Ave
POB 417
Freeport, IL 61032
815-235-6114

Jay to Farmington*

Knobstone Trail
Nila Armstrong
402 West Washington Street
Room 271
Indinapolis, IN 46204
317-232-4070

Kokosing Gap Trail
Phil Samuell
Post Office Box 129
Gambier, OH 43022
740.397.0311
psamuell@arielcorp.com

Lackawanna River Heritage Trail
Jesse Ergott, Community Program Officer
Lacjawanna Heritage Valley Authority
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Mayfield, PA 18433
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jergott@lhva.org

Lagrange to Medford*

Lebanon Valley Rail-Trail
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Lebanon, PA 17042
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Little Miami Scenic Trail
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937-562-7445
jschneider@co.greene.oh.us

Little Miami Scenic Trail
1301 Mitchell Blvd
Springfield, OH 45503
937-328-7275
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Montgomery County
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Norristown, PA 19404
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Montour Trail
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Pittsburgh, PA 15241
412-476-5761
mckeownp@libcom.com

New York State Canalway Trail
John Dimura
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Albany, NY 12209
518-436-3034
john_dimura@canals.state.ny.us

Newport to Dover Rail Trail*

Noho
Ned Huntley
Northampton DPW
125 Locust St.
Northampton, MA 01060
413-587-1570 x 107
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Ohio to Erie Trail-Greene County
Jim Schneider
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jschneider@co.greene.oh.us

Oil Creek Bicycle Trail
Daniel K. Bickel
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Oil City, PA 16301
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Ontario Pathways
Kyle Gage
2370 McBurney Rd.
Clifton Springs, NY 14432
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Panhandle Trail
Washington County
100 West Bean St. Suite 604
Washington, PA 15301
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Paulinskill Valley Trail and Sussex Branch Trail
Elliott J. Gott, Superintendent
Kittatinny Valley State Park
PO Box 621
Andover, NJ 07821-0621
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Pine Creek Trail
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rsiefert@state.pa.us

Prairie Grass Trail
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Springfield, OH 45503
937-328-7275
nationaltrail@ci.springfield.oh.us

Rochester Syracuse and Eastern Trail
Dave Morgan
1350 Turk Hill Road
Fairport, NY 14450
585.223.5050
dmorgan@perinton.org

Saint John Valley Heritage Trail*

Simon Kenton Trail
Nancy Lokai-Baldwin
POB 91
Urbana, OH 43078-0091
937-484-3335
nlb@foryou.net

Solon to Bingham Rail Trail*

Southern New England Trunkline Trail
Bay State Trail Riders Association Inc.
Becky Kalagher
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Douglas, MA 01516
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bstra@charter.net

Schuylkill River Trail—Thun Trail and Bartram Trail Sections
Wayne Bowen
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Pottstown, PA 19464
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wbowen@schuylkillriver.org

Struble Trail
Robert C. Folwell
Capital Projects Coordinator
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West Chester, PA 19380-5469
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Sugar River Recreation Trail
Clyde Kimball, Area Supervisor
NH
603-419-9827

Swatara Trail
Memorial Lake State Park
R.R. 1 Box 7045
Grantville, PA 17028
717-865-6470
memorialsp@state.pa.us

The 400 State Trail
Elroy-Sparta Trail
Lacrosse River State Trail
Don Strait
PO Box 99
Ontario, WI 54651
608-337-4775

Veterans Memorial Greenway/ Airline Trail North
Mark Paquette
979 Main Street
Willimantic, CT 06226
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Wall Township Bicycle Path
Township of Wall
Kenneth L. Critchlow
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Wall, NJ 07719
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Kcritchlow@Townshipof Wall

Wallkill Valley Rail Trail
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Yough River Trail North
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Yough River Trail South
Douglas V. Hoehn
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Rails-to-Trails Conservancy
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