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Management

A management plan is an important component to ensure a positive user experience and to effectively manage the potential risk associated with a trail. Those responsible for managing a trail should adopt a trail management plan before a trail is opened. If you do not have a management plan for your trail use this as a guide to assist you in preparing one.

We encourage all trail managers to develop a management plan by adopting policies and procedures in a written document. A management plan establishes expectations for the operations, maintenance and security of the trail.

This chapter provides you with the tools necessary to develop a trail management plan specific to your organization and your trails. It contains policies and procedures which may or may not be applicable to your specific trail. If you are unsure whether a specific practice is needed for your trail, consult your DCNR regional adviser for assistance.

In this chapter we discuss:

1. Trail Management Considerations

- Management Structures
- Trail Management Objectives
- User Safety and Security
- Natural and Cultural Resource Management
- The Physical Corridor
- Programming and Environmental Education Activities
- Conflicting and Competing Uses
- Use of Volunteers
- Monitoring Trail Uses
- Trail Closures
- Trail Accessibility Policy

2. Trail Maintenance Considerations

- Frequency of Maintenance
- Trail Assessments and Inspections
- Hazard Tree Identification, Inspection, and Corrective Action
- Revegetation and Restoration
- Training

Trails should be maintained to be safe and usable at all times. Potential hazards should be clearly identified and marked to alert users until they can be repaired.

Failure to properly manage and maintain a trail may result in an unsafe condition that may become a hazard to the trail users and a liability to those responsible for managing the trail.



Pennsylvania Equine Council Trail Care Crew
Black Moshannon State Park
Centre County

Photo Credit: PA DCNR



Management Plan

Successful trail management plans have two components. The first component addresses the management aspects, including policies and procedures to ensure trail access, provide a quality experience for the user, and minimize maintenance impacts. The second component addresses the maintenance aspects, including policies and procedures for maintaining the trails to provide for user safety, access, and convenience, protect adjacent resources, and preserve trail investment. In the first half of this chapter we discuss the management considerations and in the second half we discuss maintenance considerations.

Trail Management Considerations

A trail management plan¹ typically consists of the policies and procedures for:

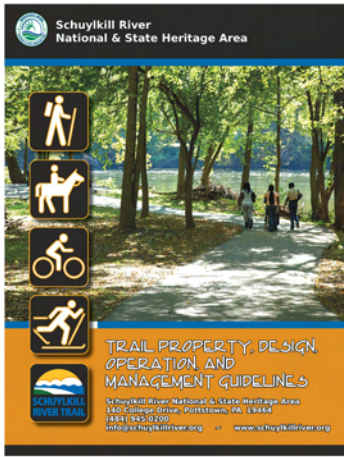
1. Creating the Management Structure
2. Establishing Trail Management Objectives
3. Providing for User Safety and Security
4. Managing Natural and Cultural Resources
5. Managing the Physical Corridor
6. Providing Programming and Environmental Education Activities
7. Managing Conflicting and Competing Uses
8. Managing Volunteers
9. Collecting Trail Use Counts
10. Establishing Trail Closure Policies
11. Establishing a Use of Wheelchairs and Other Powered-Driven Mobility Devices (OPDMD) Policy

The management plan should be adapted to reflect the requirements of the uses being managed on your trail.

1. Creating the Management Structure

In many instances an existing agency or organization will be responsible for managing a trail or trail system. However, in instances where there is not a management structure in place, there are many options to consider when exploring the appropriate management structure for a particular trail. If your trail extends through multiple jurisdictions and/or multiple entities are responsible for its management, a well defined management structure is essential and important to the success of the trail.

¹ Adapted from The Yough River Trail Cooperative Management System, Regional Trail Corporation: unpublished



Schuylkill River Trail Management Plan
Southeast Pennsylvania

Photo Credit: Schuylkill National Heritage Area

Risk Management

The identification, assessment, and prioritization of risks followed by coordinated and economical application of resources to minimize, monitor, and control the probability and/or impact of unfortunate events or to maximize the realization of opportunities.



Before assuming that you need to create a new organization or agency to manage your trail, the first step is to determine whether an existing organization or agency is capable and willing to manage your trail. To accomplish this, identify potential partners and discuss with them your trail management needs and expectations.

The capabilities of agencies and organizations can vary greatly depending on the regulatory, agency, and organizational requirements governing a particular management structure. Therefore, it is important to compare the management needs with the capabilities of existing agencies and organizations to determine if they have the ability and capacity to meet your needs. The following is a list of potential management needs to consider.

Potential Management Needs

1. Organizational and financial administration
2. Organizational sustainability
3. Financial sustainability
4. Administration of volunteers and ability to build and retain pools of volunteers
5. Ability to secure federal, state, and/or municipal funding
6. Ability to secure foundation funding
7. Geographic jurisdiction or potential area of jurisdiction
8. Project planning and design
9. Partnership and relationship building
10. Land acquisition, access easement, and rights-of-way
11. Negotiation/equitable ownership
12. Construction funding
13. Project mobilization and implementation
14. Other resources receipt and management (e.g. donated materials or equipment with operator)
15. Maintenance capabilities/needs or arrangements for maintenance
16. Insurance or insurability/risk management
17. Operations/maintenance funding
18. Accountability to public interest/fiduciary responsibility to public trust
19. Public relations and marketing ability

Your particular trail may have additional management needs. It is important that you identify them early in the process and that you discuss all needs with potential partners who may assist in managing the trail.

If an agency or organization cannot be identified that can manage your trail, then you should determine if there is potential to establish an organization to provide your management needs. There are many types of management

2 Managing Mountain Biking, IMBA's Guide to Providing Great Riding, International Mountain Bicycling Association: 2007



**Regional Trail Corporation
Office, West Newtown Trail
Station**
Westmoreland County

Photo Credit: Betsy Manderino



structures, each type providing opportunities and limitations regarding their ability to manage trails. Management structures typically fall into one of the following categories:

- Municipality Owned/Operated
- Non-Profit Owned/Operated
- A hybrid of the above

Technical Assistance

DCNR's Recreation and Parks Technical Assistance Program can provide you resources to evaluate management structures for your trail system. For more information visit [HERE](#).

Should it be necessary for you to develop and evaluate alternatives for a new management structure for your trail, PA DCNR may be able to provide assistance through its Peer Grant Program. Peer grants are awarded to help municipalities improve their park, recreation and conservation services through a collaborative process. Projects are accomplished through contracts with experienced park, recreation, and conservation professionals from nearby communities who will work closely with local leaders. For additional information on the PA DCNR grant program contact your regional DCNR adviser or visit the website [HERE](#).

2. Establishing Trail Management Objectives³

Effective trail management includes establishing trail management objectives during the trail planning process. The Trail Management Objective (TMO) form developed by the U.S. Forest Service synthesizes the management intention of a proposed or existing trail. The TMO provides a means of recording basic information for future trail planning, management, and reporting. TMOs are a prerequisite for completing an effective trail condition assessment, as well as planning future work required to comply with current standards.

A TMO should be developed during the planning process as it will include trail specifications, level of difficulty, and the number and types of users the trail will serve. In the past, trails were maintained based on their type and level of use and not their intended design use. By establishing TMOs for each trail system, a trail's design and management can better correspond with its intended type and level of use. If you have an existing trail that does not have a TMO, one should be prepared for it based on its existing conditions.

Developing Effective TMOs

Trail sponsors should review and approve TMOs before and after the trail design is completed. This ensures that objectives for the trail are consistent with the location's current and future land management practices. Furthermore it ensures consistent use between trails. TMOs should be updated if the management intent for the trail, special considerations, or other factors change.

³ U.S. Forest Service Trail Fundamentals,
<http://www.fs.fed.us/recreation/programs/trail-management/trail-fundamentals/>



It is essential to establish and document TMOs before you construct a trail to ensure proper management of the trail in the future. The following instructions explain the importance of the information to be documented on the TMO worksheet:

Overall Trail Information

- **Trail Name:** Specify the official trail name.
- **Trail Location:** Specify the trail location based on the naming protocol of the trail sponsor.
- **Trail Length:** Specify the length of the trail in miles. Mileage accuracy recorded on the TMO should correspond to the method of collection: wheel, GPS, map, or unknown.
- **Trail Beginning and Ending Segment:** Specify the location of the trail's beginning and ending segment using coordinates or mileposts.

Designed Use Objectives

- **Designed Use:** Specify the prescribed use for the proposed trail. The designed use is necessary to establish the standards for which the trail is designed, constructed, operated, and maintained.
- **Season of Use:** Specify the season(s) the trail will be open for use. Indicate the specific date(s) or frequency of seasonal closure.
- **Level of Difficulty:** Specify the prescribed level of difficulty for a specific trail based on its corresponding level of difficulty standards.
- **System Layout:** Specify the type of layout the trail will conform to.

Trail Specifications

- **Maximum Grade:** Specify the maximum grade of the trail. Indicate the maximum percent grade for a sustained length of tread, as well as a short length of tread along the proposed trail route.
- **Minimum Clearances:** Specify the minimum clearance of a trail. Indicate the width and height in feet based on a trail's design guidelines.
- **Design Requirements:** Specify the trail's proposed tread width, curve radius, and surface material. This information should be based on the trail's suggested design guidelines.
- **Managed Use:** Specify the mode of travel that is appropriate for a trail, based on its design and management.
- **Prohibited Use:** Specify any use or mode of travel prohibited by an official legal order or the trail sponsor.

Trail Characteristics

- **Sensitive Areas:** Specify all ecologically or hydrologically sensitive areas within the proposed trail corridor.
- **Destinations:** Specify all destinations accessible to or visible from the proposed trail route.

International Mountain Bicycle Association's 16 Considerations for Risk Management Planning⁴

1. Create a risk management team and designated leader
2. Write a philosophy statement
3. Establish a trail design and construction policy
4. Establish a trail inspection and maintenance policy
5. Maintain the trail system as specified in the policy
6. Eliminate unreasonable hazards
7. Develop an effective sign program
8. Implement a trail difficulty rating system
9. Institute rules and advise users
10. Develop an emergency action plan
11. Purchase or review an insurance policy
12. Create a record keeping system
13. Develop an incident reporting system
14. Deploy a trail patrol
15. Recruit outside advisors

4 Managing Mountain Biking, IMBA's Guide to Providing Great Riding, International Mountain Bicycling Association: 2007



- Structures: Specify all structures currently located along the trail route or that will need to be constructed.

Trailheads and Amenities

- Trailheads and Access Points: Specify the name and location of all trailheads providing access to the proposed trail route.
- Amenities: Specify all current or proposed amenities located within a trailhead or along the proposed trail route.

Maintenance Requirements

- Routine Maintenance Schedule: Describe the anticipated frequency for completing routine maintenance tasks within this section. Define which maintenance tasks should occur on a weekly and monthly basis.
- Special Considerations and Notes: Note any additional considerations of which trail managers, design, construction, or maintenance personnel should be aware. Provide details or references for corresponding direction.



Trail Management Objectives

Trail Name _____ *Begin Segment* _____ identified by mileposts ☐
Location _____ *End Segment* _____ or coordinates ☐
Total Trail Length _____ Segment Length _____

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Designed Use ☐ Hike / Pedestrian ☐ Bike ☐ Mountain Bike ☐ Equestrian
☐ Cross Country Ski ☐ Snowshoe

Season of Use ☐ Year Round ☐ Winter ☐ Spring ☐ Summer ☐ Fall

Level of Difficulty ☐ Easiest _____% ☐ More Difficult _____% ☐ Most Difficult _____%

System Layout ☐ Linear ☐ Single Loop ☐ Stacked Loop ☐ Multiple Loop
☐ Spoked Wheel ☐ Primary & Secondary Loop ☐ Maze

Trail Specifications

Maximum Grade Sustained _____%
Short _____%
Minimum Clearances Width _____feet
Height _____feet

Tread Specifications

Tread Surface ☐ Stable ☐ Firm
Tread Material ☐ Native In-Place ☐ Native Borrow
☐ Manufactured, _____ ☐ Stabilized Soil
☐ Stone ☐ Pavement

Design Requirements Tread Width _____feet
Target Cross Slope _____%
Minimum Curve Radius _____feet

Accessibility

☐ Complies with ADA – Draft final Accessibility Guidelines for Outdoor Developed Areas

Managed Use ☐ Shared Use Path / Rail Trail ☐ Multi-Use / Shared Use Trail
☐ Hike / Pedestrian ☐ Bicycle ☐ Equestrian
☐ Cross Country Ski ☐ Snowshoe

Prohibited Use ☐ All Motorized Use ☐ ATV ☐ Snowmobile
☐ Hike / Pedestrian ☐ Bike ☐ Mountain Bike ☐ Equestrian
☐ Cross Country Ski ☐ Snowshoe

Sensitive Areas ☐ Wetlands ☐ Seeps ☐ Habitat ☐ Species
☐ Cultural / Historical ☐ EV / HQ Streams ☐ Adjacent Land Use
☐ Other, describe: _____

Destinations ☐ Parks ☐ Connecting Trails ☐ Wildlife Areas ☐ Control Points
☐ Stream Crossings ☐ Trailheads ☐ Vistas ☐ Scenic Areas
☐ Others, describe: _____

Structures ☐ Culverts ☐ Bridges ☐ Rock Walls
☐ Crib / Gabion Walls ☐ Other Walls
☐ Other Structures, describe: _____

Notes

Prepared by _____

Date _____



Trail Management Objectives

Trail Name _____ **Begin Segment** _____ identified by mileposts ☐
Location _____ **End Segment** _____ or coordinates ☐
Total Trail Length _____ **Segment Length** _____

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Trailheads & Access Points **Name** _____ **Location** _____ identified by milepost ☐
 or coordinates ☐

Amenities
☐ Parking, no. of spaces _____
 ☐ Restroom
 ☐ Potable Water
☐ Trash / Recycling Containers
 ☐ Picnic Shelter
 ☐ Kiosk
☐ Message Board
 ☐ Primitive Camping
 ☐ Warming Hut
☐ Bike Rack
 ☐ Air Station
 ☐ High Line
☐ Hitch Rail
 ☐ Corral
 ☐ Horse Stall
☐ Watering Trough
 ☐ Fire Ring
 ☐ Picnic Table
☐ Others, describe: _____

Maintenance Requirements: Identify the anticipated frequency for completing routine maintenance tasks

Routine Maintenance Schedule												
Maintenance Activity	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
EXAMPLE- Mowing	/	/	•	••••	••••	••••	••••	••••	••••	•••	/	/
Mowing												
Trimming												
Trash												
Pruning												
Weeding												
Invasive Removal												
Brush Hog												
Signs - inspect/repair/replace												
Blazes - inspect/re-paint												
Fence - inspect/repair/replace												
Culverts - inspect/repair/replace												
Storm Drains - inspect/repair/replace												
Gates - inspect/repair/replace												
Bridge - inspect/repair/replace												
Maintain Dips												
Grade Ditches												
Trail Grooming												
Trail Surfacing												
Landscaping												
Storm Damage												
Vandalism												
Repair Washouts												

Special Considerations	Notes

Prepared by _____ Date _____



3. Providing for User Safety and Security

The most important consideration along your trail is the safety of the trail users. Therefore, proactive planning, coordination, and response policies are necessary.

Trail Rules

Generally trail rules begin with identifying the permitted uses for the trail. Often the rules also identify uses that are prohibited along the trail. The following rules have been established by the Regional Trail Corporation for the Great Allegheny Passage:

1. No motorized vehicles.
2. Bicyclists and horse riders should wear helmets. Pennsylvania State Law mandates that children under 12 years old wear safety-approved helmets.
3. Keep right, except to pass.
4. Warn before passing. Sound your bell or horn and announce audibly "Passing on your left."
5. Bicyclists yield to walkers/hikers.
6. Equestrians are allowed on specified sections of the trail. Please keep horses off the improved hiker/biker surface. Stay on the grass.
7. Trail open daily, dawn to dusk. No overnight use, except in authorized areas. Reservations are required for groups of 10 or more.
8. Stay on trail.
9. No fires.
10. Keep pets on a leash six feet or less in length, under control, and collect and dispose of pet waste in a proper receptacle.
11. Do not discharge or carry loaded firearms on or near the trail.
12. Please respect private property and stay on the trail.
13. Dumping and littering are prohibited. If you see litter, please pick it up.
14. Permits are required for any special group event of twenty-five or more.

Trail rules should be presented in a multilingual format where appropriate.

Cellular Phones and Cellular Service

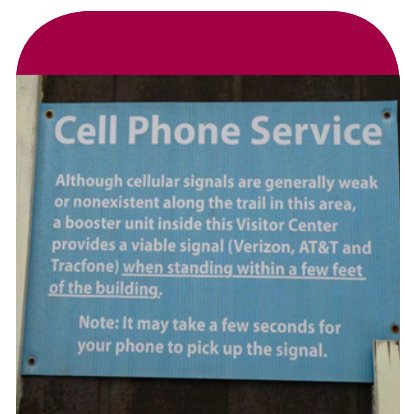
On websites, at trailheads, and on all printed trail maps, identify whether cellular phone service is available along your trail corridor, and provide the telephone numbers for emergency responders. The following is a sample policy:

Cellular phones have become a staple for those traveling. Cell phones provide contact with emergency service personnel during times of need. However, given the remote locations of many trails, one cannot always assume cellular service will be available when needed.



Dr. J Freeride Trail Rules
Allegheny County

Photo Credit: Pashek Associates



Great Allegheny Passage
Rockwood Trailhead
Somerset County

Photo Credit: Somerset County



Therefore, to promote awareness and eliminate reliance on service that may not be available; place cell service notices at trailheads and access points. Notices should indicate whether cell service is available, and if so what carriers can access it along a particular corridor, further, this notice should indicate where service is ‘spotty’ or where access service is unreliable.

Police, Fire, and Ambulance Coordination

Often a trail will pass through a number of municipalities each having jurisdiction. As a result, this provides potential conflicts for emergency service response. The Pennsylvania Emergency Management Agency (PEMA) facilitates emergency services in a coordinated fashion. PEMA policies and procedures govern emergency response procedures and responsibilities along the trail corridor. Therefore, it is important to have public safety agencies involved in the trail planning and design process to ensure their needs are being met.

Post the phone number(s) for the appropriate first responders at trailheads and trail access locations.

Law Enforcement

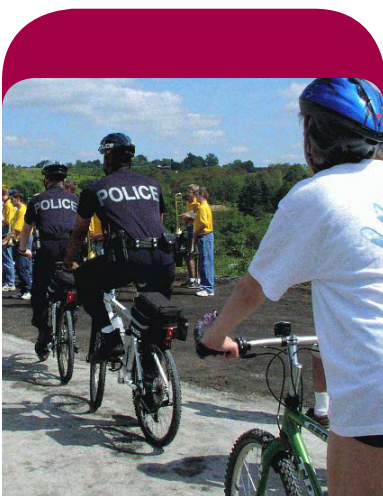
Emergency law enforcement response can typically be activated by dialing 911. On DCNR-owned lands, all responses to emergency and criminal actions are handled by the DCNR Ranger first and then either the State Police or the local law enforcement agency, depending on the location.

Each state agency is empowered to enforce state conservation laws on its lands and, in certain cases, on other lands throughout Pennsylvania. In addition, state conservation agencies can sometimes enforce the state’s criminal and vehicle code on agency-owned conservation lands. State and municipal law enforcement agencies are the primary entities with enforcement powers on all lands.

On non-state owned lands, all responses to criminal actions are handled by either the State Police or by a local law enforcement agency. Where a full-time local law enforcement agency is available, that agency will serve as the primary law enforcement agency and the State Police will function as backup. Where a part-time law enforcement agency exists, that agency will serve as the primary law enforcement agency during its business hours; State Police will fill in during off -hours. Where no local agency is available, the State Police will provide necessary police service on a full-time basis.

Emergency Medical Services (EMS)

Emergency medical service response can typically be activated by dialing 911. Post EMS response contact information at trailheads and trail access points.



Trail Patrol
Montour Trail
Allegheny County

Photo Credit: Montour Trail Council



Emergency Response Procedures

Trail managers should work with local law enforcement and emergency responders to develop appropriate policies and procedures; often these will vary from place to place. This includes providing the responders with keys to gates so they can access the trail corridor.

Milepost Signs for Emergency Response

Mile posts should be maintained to allow users to identify their location along the trail. The frequency of the mile posts, i.e. every 1/2 mile, 1/4 mile, etc. depends on the nature of the trail. If a person calling in an emergency, states that the victim is near milepost 8.5, response personnel can easily identify an appropriate vehicular staging area to allow for the quickest access to the victim. This enables response personnel to more easily locate the victim.

Trail managers should create maps of all public and private access points that can be used in an emergency. The maps should show the mileage that corresponds to the mile markers installed on the trail. The maps should be distributed to regional EMS, fire, and police.

River, Stream, and Pond Related Emergencies

Should a report of a possible drowning be received, a mountain bike emergency response team should be dispatched. If the location of the victim is unknown, the response team will be able to scan the stream's banks faster and more efficiently than can be done on foot or by vehicle. When the victim is located, resuscitation can be initiated, and necessary equipment can be summoned, speeding assistance to the victim while minimizing impact on the environment.

Winter Emergencies

In the event a skier or hiker should require medical aid, it may be necessary to gain access to the victim by use of snowmobile. Trail conditions may prohibit mountain bikes, ambulances, or other emergency response vehicles on the trail. Local emergency response personnel should identify partners who can provide snowmobiles should the need arise. Snowmobiles should be staffed by EMS personnel and a sled should be available for patient transport. Snowmobile operators must be aware that skiers and hikers may be present on the trail and extreme caution should be used when operating a snowmobile on the trail during the emergency response effort.

Fire and Wildfire Control

In the event of a fire, or possible fire, on the trail, fire chiefs should verify the nature and extent of the fire before moving equipment onto the trail. Efforts should be taken to limit fire equipment on the trail to the extent possible to limit damage to the trail surface.

Campfires and open burning should be discouraged along the trail through local ordinances. This restriction should be posted on trail maps and brochures, and on signs at trailheads and trail access points.



The DCNR Bureau of Forestry has the legal authority and jurisdiction as the wildfire control agency, and coordinates efforts, regardless of land ownership. Most rural fire companies maintain their own trained volunteers and equipment to fight forest and grass fires and maintain a communication network.

4. Managing Natural and Cultural Resources

The resource is not only the trail itself but also the surrounding environment. Therefore resource protection measures should also be implemented.

Adjacent Land Use – Zoning

The issue of adjacent land use is central to protection of the trail as a resource. Since the trail is a relatively narrow strip of land, the quality of the trail users' experience is largely a function of how the land adjacent to the trail corridor is developed.

Overall direction and policy should be developed through a broad-based planning process. The resulting development guidelines should be formalized in a model ordinance, which can in turn be used by local municipalities to modify their land use plans and zoning ordinances.

Visual Management and Open Areas

Open areas and scenic vistas are desirable to maintain at certain points along the trail to ensure variety and an interesting trail experience. Visual management and open area maintenance should be directed primarily by the local municipalities having jurisdiction, and coordinated by the corresponding County Planning Department. The ecological health of the trail corridor should take precedence over aesthetics or providing vistas.

Timber and Vegetation Management

Timber management is carried out for safety and economic reasons. Since the trail is intended as a scenic recreational corridor, it is unlikely that timber harvesting within the trail proper will be permitted. More likely is the fact adjacent lands could be used for timber harvesting.

Weed control is another issue. All possible steps should be taken to ensure that resulting environmental and aesthetic impacts on the corridor are adequately considered and mitigated. Environmentally friendly alternatives to herbicides and pesticides should be explored and exhausted before resorting to chemical measures to control weeds and pests.

Rare, Threatened and Endangered Species and Other Wildlife

Threatened and endangered species are protected under state and federal laws. Trail development, use, and interpretation should take into consideration these protections, and work within the state and federal



**Freemansburg Canal
Education Center**
Northampton County

Photo Credit: Delaware & Lehigh
National Heritage Corridor



**Walnutport Heritage
Attractions Sign**

Photo Credit: Delaware & Lehigh
National Heritage Corridor



regulations to protect these resources. The protection of rare, threatened and endangered species begins during the trail planning process.

The trail corridor provides narrow but continuous habitat for a wide variety of wildlife. This may benefit both wildlife and trail users alike, since viewing wildlife is one of the many reasons people use trails. Protection of wildlife is the responsibility of the Pennsylvania Game Commission, including game, non-game, endangered and non-endangered wildlife species. Should wildlife disturbance be a concern along your corridor, contact your regional Pennsylvania Game Commission office.

Historical and Cultural Resources

Typically, historical and cultural features are located along trail corridors. These features add to and enrich the trail experience. Strive to protect and enhance historic and archeological resources to the maximum extent possible. When trail development and/or activities might negatively affect or disturb cultural or archeological resources, contact the Pennsylvania Historic and Museum Commission by completing a Cultural Resources Notification as described in The Permitting Process, located in Chapter 1.

5. Managing the Physical Corridor

Trailhead Access and Parking

Policies and procedures should be developed to address issues such as:

1. How to deal with not having enough parking
2. Illegal parking
3. Inappropriate parking lots

Signs

Adopt a standardized sign system consistent throughout the length of the trail during the trail's initial development. An effective sign plan includes:

- Directional signs to nearby trail services
- Mileage markers
- Regulatory signs
- Interpretive signs for historic, cultural, and environmental features

Policy should state who is responsible for maintaining signs. Policies should be in place to avoid sign clutter by balancing information with aesthetics. Consider multilingual text where appropriate. Trail kiosks, maps and brochures should indicate that unless marked, do not drink the water from natural sources along the trail.

Visually Speaking

Bring your stories to life

A comprehensive guide to sign development
within the

**Delaware & Lehigh
National Heritage Corridor**



Sign Standards

Photo Credit: Delaware & Lehigh
National Heritage Corridor



Bridges, Stream Crossings, and Drainage Structures

Routine maintenance of existing structures should be performed by the trail sponsor. If the structure is associated with other uses, i.e. vehicular, rail, etc., then inspection and maintenance of the structures will likely be the responsibility of the entity responsible for those uses. In these cases a written agreement should be in place to establish the responsibilities of each organization utilizing the structures.

Landscape Screening

Often, during the design and development phase of the project landscape screening is considered along portions of a trails to enhance the trail experience and ensure privacy for adjacent landowners. Consider material and maintenance requirements of screening options so they are in harmony with their surroundings and achieve the desired effect. Further, plant any landscaping along a trail with native plant materials. Maintenance and replacement of plantings will be the task of the maintenance groups. Before installing landscape screening assess the capacity to maintain the plantings upon installation and into the future.

Connector Trails

It is important to maintain the continuity of the trail experience throughout a trail's entire length. Therefore, where appropriate, plan and develop a trail with its regional significance in mind. The addition of connector trails may occur in the future to provide access to nearby parks, historic, cultural, and environmental features. Trail sponsors typically maintain side and connecting trails with the formalized written consent of the agency owning the land.

Overnight Use/Camping Areas

The development and management of overnight facilities requires more detailed policies and regulations. Such areas should be considered, when appropriate, during the planning process. Policies and procedures should be in place before opening overnight use/camping areas.

Typical facilities at overnight use areas include access to potable water, picnic tables, and toilets. Youth hostels, bed and breakfast facilities, and groups of commercial campgrounds with a high level of facilities usually are available in or near towns with public sewer and water utilities. Provide wayfinding signs to direct trail users to these facilities.



6. Providing Programming and Environmental Education Activities

Special Event and Large Group Use

Trails may be used for special events, such as walk-a-thons, group bicycle rides and environmental education programs. Policies on large group activities need to be established, such as when a trail can be reserved and for what length of time. Also, permit applications and participant releases/waivers should be used. Local municipalities should be involved in developing regulations and providing subsequent enforcement of them for special events and large group use. Special events and large group uses should be permitted through the agency responsible for the day-to-day management of the trail.

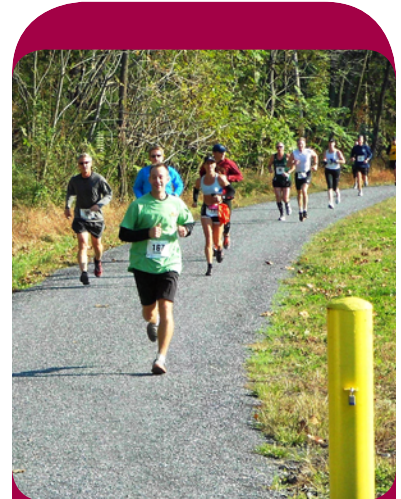
Trail managers may require sponsors to obtain a special use permit when the number of participants will exceed a certain number of registrants, typically in the range of 20 to 25 participants.

Typically the trail's managing agency reviews the application and, barring any conflicts, issues the permit along with the regulations and guidelines letter. Special uses by definition should not occur without appropriate review and control. Sponsors should be required to provide additional facilities, at their cost, as required to meet event needs. This many include: garbage and recyclable collection; providing temporary sanitary facilities; establishing emergency and delivery routes; providing traffic and parking control, etc. All major activities should be centered at a trail access point capable of hosting the special event.

Public Information and Education Program Polices

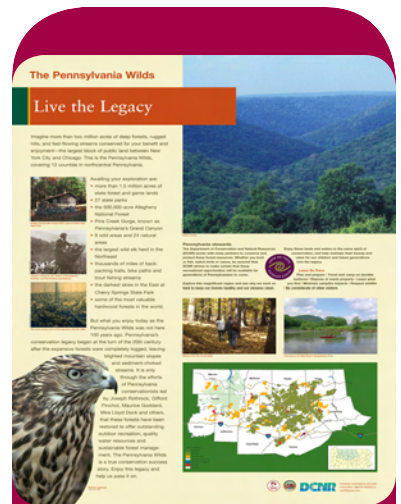
The success of a trail depends on the awareness of its existence by potential users and supporters. Therefore, it is important to ensure that appropriate means are used to inform the public about the trail. This can be accomplished through direct efforts of state, county, and local agencies and through marketing efforts by local municipalities and commercial interest groups.

Public education programs can be developed to illuminate various aspects of the trail and adjacent areas such as history, plant and wildlife biology, ecology, and recreational workshops. The trail could become a valuable educational resource for local elementary and secondary schools, as well as local colleges and universities within the region of the trail. Cell phone tours and smart phone links can be developed and provide a cost effective way to provide a great source of trail information.



Trail Marathon

Photo Credit: Delaware & Lehigh National Heritage Corridor



PA Wilds Interpretive Panel

Photo Credit: PA DCNR



Trails and corresponding events should be promoted within their region. A coordinated effort for promoting the trail should begin with the respective county's tourist promotion agency (TPA). TPAs receive funding for tourist promotion through a hotel tax. To locate the TPA in your area visit this [**WEBSITE**](#).

TPAs typically include trail activity and events in their calendars, and can highlight your trails in their publications. Further, TPAs can assist with applying to PennDOT for transit oriented development (TOD) signs and applying for funding to promote and develop tourist opportunities throughout the trail corridor.

7. Conflicting and Competing Uses

Many of the following issues typically require the enactment and enforcement of local ordinances by participating municipalities.

Motorized Use

Many non-motorized trails have adopted policies that prohibit motorized use. In these instances, the design of the trail should be completed in a manner to discourage motorized use of the trail. Cooperative enforcement efforts by municipalities, counties, and the State Police are necessary to preserve motorized use restrictions. Adopt local ordinances to prohibit motorized use of the trail corridor and establish an escalating scale of penalties for offenders.

Litter and Graffiti

Enforcement of litter and graffiti ordinances will be the responsibility of the relevant municipality or the State Police. Routine monitoring and patrolling by trail users and local support groups will help to decrease these problems. Littering and vandalism is less likely to occur repeatedly in areas where trail monitoring occurs and problems are dealt with in a timely manner.

Hunting

The trail's managing agency is responsible for establishing a policy regarding hunting along the trail corridor. Hunting policies should be developed in consultation with the respective regional office of the Pennsylvania Game Commission. To locate your regional office visit their website [**HERE**](#).

Horseback Riding

Where horseback riding is a permitted use, develop guidance and/or signage explaining proper trail etiquette, like who has the right-of-way, should horses, bikers and hikers meet.



Utilities and Communications Facilities

Use of trail corridors by utilities and communications providers is not unusual. The nature of railroad alignments lend themselves to such uses. An example of this is a trail in which a portion of the railway right-of-way was purchased upon abandonment by a local municipal authority. Today, the right-of-way contains a sanitary sewer line and the authority has an agreement with the local municipalities to use the right-of-way for a public trail. Trail managers are encouraged to seek the advice of legal counsel before entering into an agreement with a utility company.

Where the municipalities obtain ownership of the trail corridor, licensing of utility companies for such uses is often a viable means of helping to recoup trail development costs and operational expenses. To the extent that pipelines and cables are buried, the uses generally do not conflict.

Each application for such use should be reviewed carefully, however, with particular attention being paid to expected frequency of maintenance, required access by motorized maintenance vehicles, and the mitigation of any resulting impacts. The local municipality having jurisdiction should take the lead in regulating this policy.

8. Managing Use of Volunteers

In addition to implementing policies to comply with the Pennsylvania Child Labor Law and Pennsylvania Child Protective Services Law, as recommended in Chapter 4, trail organizations should consider adopting liability waivers.

Liability Waivers

Liability waivers should be signed by individuals and groups who desire to perform any form of work associated with a trail. The form on page 195 is a sample waiver of liability. Before adopting such a waiver, your organization should review your proposed waiver with legal counsel to ensure its applicability and durability in a court of law.

Trail Patrols

Trail patrols are critical for many reasons including:

- Security
- Protection from vandalism
- Promoting safe riding
- Handling conflict
- Trail safety inspection
- Emergency aid
- Providing a presence on the trail

Patrolling requires a cooperative effort between the trail sponsor, local municipalities, partner organizations and local trail support groups.



Armstrong Trail Volunteers
Armstrong County

Photo Credit: Allegheny Valley Land Trust



Trail Patrol
Lehigh County

Photo Credit: Delaware & Lehigh National Heritage Corridor

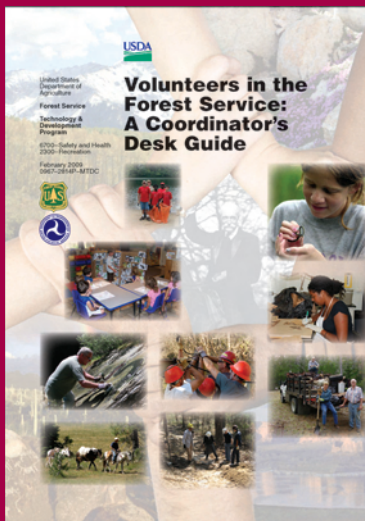


W&OD Trail Patrol Handbook



April 2009
(Version 1.0)

W&OD Trail Patrol Handbook
Friends of the W&OD



Volunteers in the Forest Services: A Coordinator's Desk Guide
U.S. Forest Service

Trail monitoring roles may be assigned to an appropriate group or organization, either for the trail as a whole, or by sections similar to PennDOT's "Adopt a Highway" program. Written agreements should document the roles and responsibilities of the trail sponsor and the monitoring/patrol agency or group.

Monitors should obtain certification by attending a training class conducted by trail partnership organizations. Monitors should wear bright shirts with "Trail Patrol" displayed prominently in large contrasting letters. Persons assigned to monitoring and patrolling the trail should also be trained in trail inspection.

They should keep a record of their time and distance at each outing, as well as document any assistance they may have provided trail users during their outing. They should report their monitoring times and distances to their group's monitoring captain, who in turn should submit regular reports to the trail's managing partner.

They can assist with incidents along the trail, such as helping with bike repairs or administering first aid. Any incident of an urgent nature, such as a wash out or fallen tree should be reported immediately to local authority having jurisdiction. Trail monitors and patrols can also provide non-emergency services, such as information about nearby stores and restaurants, historic and environmental interpretation, and information about the management agency including membership and volunteer opportunities.

Washington & Old Dominion Trail Patrol Handbook

The Friends of the Washington & Old Dominion (W&OD) Trail have prepared the *W&OD Trail Patrol Handbook*⁵. This handbook serves as a good example of a how to establish policies and procedures to train, establish, and manage volunteer trail patrols. Download the the handbook from the Rails-to-Trails Conservancy's website [HERE](#).

Volunteers in the Forest Services: A Coordinator's Desk Guide

Another good resource for developing a volunteer handbook is the U.S. Forest Service's publication *Volunteers in the Forest Services: A Coordinator's Desk Guide*⁶, available from [HERE](#).

Volunteer trail patrols can be trained to address urgent, emergency, and other extraordinary situations that might arise for users along a trail. Patrol members are the "eyes and ears" of the trail. For most of the length of many trails, no other users are there specifically for the well-being of other users; the volunteer patrol is there to help in these situations.

5 Washington & Old Dominion Trail Patrol Handbook, Friends of Washington & Old Dominion: 2009

6 Volunteers in the Forest Services: A Coordinator's Desk Guide, U.S. Forest Service; 2009



Sample Trail Volunteer Release Agreement

WHEREAS, the undersigned, _____ wishes to volunteer his/her services by participating in _____ Adopt-A-Trail Program, in order to inspect and maintain the _____ trail; and

WHEREAS, participation in the project will take place at different times over a year; and

WHEREAS, participation in this project will involve using tools and equipment; and

WHEREAS, the _____ wish to cooperate in said endeavor;

THEREFORE, in consideration for said cooperation the undersigned agrees to the following:

1. To release and hold harmless the _____, and its employees, officers, and agents for any claim or claims which might arise out of any incident connected with or in any way related to participation in the Adopt-A-Trail program. This includes claims for personal injury, property damage, and/or any other type of harm or injury.
2. To release and hold harmless the _____, and its employees, officers, and agents for any claim or claims arising out of any incident connected with or in any way related to the undersigned's participation in the Adopt-A-Trail Program, including claims for personal injury, property damage, or any other type of harm or injury, made or asserted by any other person(s) against the _____.

I HAVE READ THIS RELEASE AND UNDERSTAND ALL OF ITS TERMS. I SIGN IT VOLUNTARILY, WITH FULL KNOWLEDGE OF ITS SIGNIFICANCE, AND WITH THE INTENT TO BE BOUND BY IT.

Signature

Date

Name (printed)

Telephone Number

Address

Volunteer Waivers of Liability

Additional Volunteer Waivers of Liability can be found on the American Trails website **HERE**.



9. Collecting Trail Use Counts

The level of use for the trail will have a direct correlation to the frequency of maintenance required. Monitoring the type and volume of use, and evaluating the effect that level of use has on the trail, provides the trail manager information needed to schedule inspections and routine maintenance. Monitoring the type and volume of use can be done by several methods.

- Mechanical counters
- Sampling of trailhead parking
- Visual counts
- Trail registers

Monitoring trail use is important to determine the impact of use on the trail and to determine the frequency of routine maintenance activities. Continued monitoring alerts the trail manager to a change in the level of use, which will require a change to the maintenance schedule.

The Rails-to-Trails Conservancy's publication *Trail User Survey Workbook*⁷ provides a user-friendly methodology for small trail organizations to collect factual information regarding trail users and the economic impacts of trail development. The workbook includes: methods of data collection, data recordation, reporting and analysis, survey templates, Microsoft Excel formatted spreadsheets and sample reports from other completed trail-user surveys. This workbook can be obtained [HERE](#).

10. Establishing Trail Closure Policies

Trail users need to be cautious of the construction and periodic maintenance of trails, as well as roads and other facilities they intersect. Forewarn trail users of trail closures and give reasonable detours to bypass closed sections of the trail. If there is no alternative route, close the entire trail until the respective trail segment can be re-opened. Acknowledge trail closures at trailheads and access points with appropriate signage.

Closure of trails generally occurs for the following reasons:

- Seasonal closures like hunting, snowfalls, breeding seasons, etc.
- Construction closures like trail construction, culvert maintenance and/or replacement, bridge construction/replacement, etc.
- Closures due to overuse or any negative resource impact

Best practices for notifying trail users of closures is to publicize trail closure information on your trail organization's website, municipal websites, etc. Trail construction zones should be signed with standard signage at the



Trail Counter Box
York County

Photo Credit: Pashek Associates



North Country National Scenic Trail Register

Photo Credit: PA DCNR

⁷ Trail User Survey Workbook, Rails-to-Trails Conservancy: 2005



entrance to the affected segment of trail, and indicate the times and dates of closure. Further it is recommended the trail be gated, barricaded or otherwise blocked to prevent access to the closed segment of the trail.

11. Establishing a Wheelchairs and Other Power-Driven Mobility Devices (OPDMD) Policy on Trails⁸

In 2010, the U.S. Department of Justice (DOJ) issued an ADA ruling that addresses the use of wheelchairs and other power-driven mobility devices (OPDMD) on trails.

The DOJ rule, which implements the ADA, applies to state and local governments and public entities. The ADA does not apply to federal agencies with the exception of wheelchair use in federally designated wilderness as detailed in ADA, Title V Section 508 (c). The federal agencies are governed by the 1968 Architectural Barriers Act (ABA) and the 1973 Section 504 of the Rehabilitation Act.

Therefore, to avoid challenges to any restrictions you may impose on your trails, your agency should adopt an OPDMD policy for its trails. Otherwise, your trails are considered open to every type of OPDMD, regardless of whether they have been planned, designed, and/or constructed for those uses.

Your OPDMD policy should to be crafted to respond to your specific trail system. If more than one entity is responsible for a trail corridor, it is important that all parties involved collaborate in developing a uniform policy for the entire trail corridor.

The DOJ now categorizes mobility devices for individuals with mobility related disabilities either as wheelchairs or as OPDMD.

The DOJ defines a wheelchair as:

“a manually-operated or power-driven device designed primarily for use by an individual with a mobility disability for the main purpose of indoor or of both indoor and outdoor locomotion.” This definition does not apply to federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207(c)(2).

And, the DOJ defines an OPDMD as:

“Other power driven mobility device: any mobility device powered by

⁸ Additional information on OPDMDs can be found at: <http://www.americantrails.org/resources/accessibile/power-mobility-questions-answers.html>



Other Powered Driven Mobility Devices

Photo Credits:
Top - Americantrails.org
Mid - Actiontrackchair.com
Bottom - Triangleglides.com



batteries, fuel, or other engines - whether or not designed primarily for use by individuals with mobility disabilities - that is used by individuals with mobility disabilities for the purpose of locomotion, including golf cars, electronic personal assistance mobility devices (EPAMDs), such as the Segway® PT, or any mobility device designed to operate in areas without defined pedestrian routes, but that is not a wheelchair within the meaning of this section. This definition does not apply to Federal wilderness areas; wheelchairs in such areas are defined in section 508(c)(2) of the ADA, 42 U.S.C. 12207(c)(2).”

The DOJ rule requires a public entity to make reasonable modifications in its policies, practices, or procedures to permit the use of OPDMDs by individuals with mobility disabilities unless the public entity can demonstrate that the class of OPDMD cannot be operated following legitimate safety requirements.

This is based on actual risks and not speculation regarding the device or how it will be operated per § 35.130(h), or on any of the other assessment factors DOJ has provided in § 35.137(c) and § 35.137(b)(2). Public entities can only use these factors in determining whether a particular OPDMD can be allowed in a specific facility as a modification to its policies, practices, or procedures. The focus of the analysis should be on the appropriateness of the use of the device at a specific facility, rather than whether it is necessary for an individual to use it. These assessment factors help public entities to determine whether allowing the use of a particular OPDMD in a specific facility is reasonable.

OPDMD Assessment Factors

1. The type, size, weight, dimensions, and speed of the device;
2. The facility’s volume of pedestrian traffic (which may vary at different times of the day, week, month, or year);
3. The facility’s design and operational characteristics (e.g. whether its service, program, or activity is conducted indoors, its square footage, the density and placement of stationary devices, and the availability of storage for the device, if requested by the user);
4. Whether legitimate safety requirements can be established to permit the safe operation of the OPDMD in the specific facility; and
5. Whether the use of the OPDMD creates a substantial risk of serious harm to the immediate environment, natural, or cultural resources, or poses a conflict with Federal land management laws and regulations.”

Under the DOJ rule, all public entities should make reasonable modifications to their policies, practices, or procedures to allow the use of an OPDMD by an individual with a disability. Further, public agencies should develop and



publicly post their policy stating the following:

- The procedure by which claims that the OPDMD device is being used for a mobility disability will be assessed for legitimacy (i.e., a credible assurance that the device is being used for a mobility disability, including a verbal representation by the person with a disability that is not contradicted by observable fact, or the presentation of a disability parking space placard or card, or State-issued proof of disability);
- The type or classes of OPDMDs that are permitted to be used by individuals with mobility disabilities;
- The size, weight, and dimensions of the OPDMDs that are permitted to be used by individuals with mobility disabilities;
- The speed limit for the OPDMDs that are permitted to be used by individuals with mobility disabilities;
- The places, times, or circumstances under which the use of the OPDMD is or will be restricted or prohibited;
- Safety, pedestrian, and other rules concerning the use of the OPDMD;
- Under which circumstances storage for the OPDMD is made available; and how and where individuals with a mobility disability can obtain a copy of the OPDMD policy.

If that class of OPDMD is allowed, a person who has a disability may not be denied the opportunity to use that device. The public entity may ask a person using a power-driven mobility device if the mobility device is necessary. A public entity should not ask a person using a mobility device questions about the nature and extent of the person's disability.

Sample OPDMD Policy

An OPDMD policy should be based on a rationale that addresses the assessment factors specified in the DOJ ADA ruling.

Sample Policy Statement

This policy was developed to maximize trail accessibility for individuals with mobility disabilities while at the same time maintaining the safety of other hikers, bikers, and horseback riders who use the trails and being responsible stewards of the environment on and around these trails.

Sample Determining Rationale

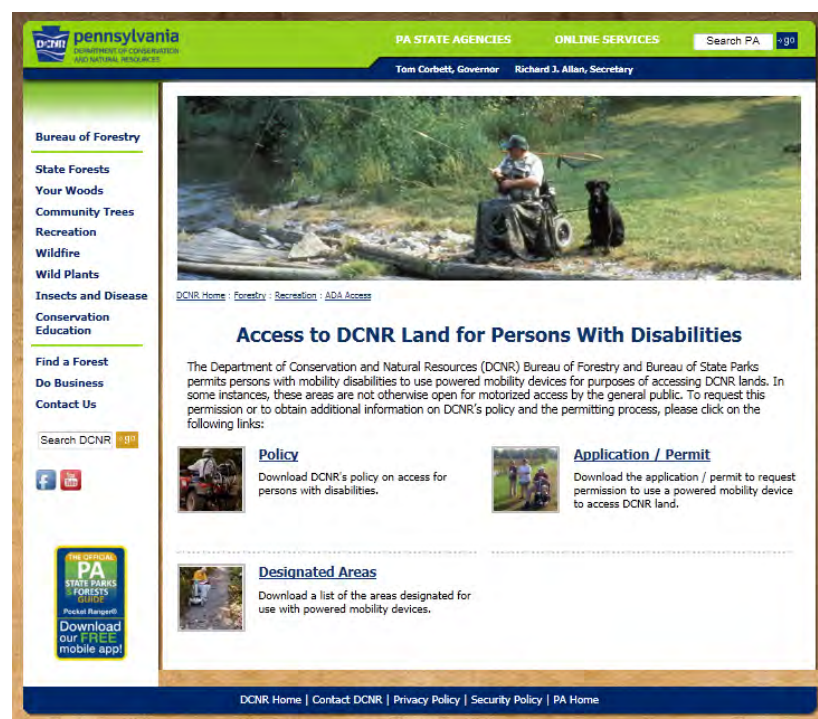
- Electric-powered devices only: Internal combustion powered devices are prohibited as they emit exhaust that is detrimental to the health of other trail users. In addition, many trails are parallel to and in close proximity of waterways thus creating potential for significant environmental risk from a spill of fuel or oil used in a gas or similarly powered combustible- fuel device. Finally, the loud sound generated from combustion powered devices is neither consistent with peaceful enjoyment of the outdoors nor appreciation of nature and is thus



inherently contradictory to the functions of the trails.

- Motors producing 300 watts or less: (One of the DOJ assessment parameters for regulating OPDMDs is speed. Because speed cannot be accessed from vehicle specifications, the power of the motor has been used as an equivalent, with higher power translating to higher top speed.) A fit individual using a traditional bicycle can maintain a power output of approximately 300 watts for a period of ten minutes. Allowing mobility devices equivalent to a fit bicyclist produces no safety threat to other trail users. Allowing OPDMDs with motors of 300 watts and above, and thus higher speeds, does present increased danger to other trail users.
- Vehicles are no more than 36 inches wide: Rail trails are typically built to 8 feet wide specifications. With two-way traffic, that gives a four feet width for vehicles to pass. Any OPDMD wider than three feet begins to encroach on the opposite lane and becomes a safety hazard to both the operator and other trail users. In addition, bollards and gates at trail access areas and road crossings have a limited size and thus are significant barriers to wider vehicles.

DCNR has adopted an OPDMD policy for state parks and state forests. You can find this policy [HERE](#).





Sample ADA Trail Accessibility Policy

A. _____ trails are available to individuals with a mobility disability as follows:

Wheelchairs: Wheelchairs, as defined by 28 CFR § 35.104, are permitted on all _____ trails approved for pedestrian access.

Other power-driven mobility devices (OPDMDs)

OPDMDs, as defined by 28 CFR § 35.104, are permitted on _____

_____ trails as follows:

1. The OPDMD must be electric-powered. Internal combustion engines are not permitted.
2. The OPDMD must have an electrical output of no more than 300 watts.
3. The OPDMD must be no more than 36" in width.

Please note that electric bikes (ebikes) meeting the above criteria, and which allow the user to pedal or alternatively run on battery power, are permitted on all _____ trails approved for bicycle use. User discretion is advised as some approved bicycle trails may not be suitable for all types of ebikes.

B. Users of a OPDMD or wheelchair must operate the device at a safe speed considering the condition of the trail and the other users traveling on the trail.

C. The adoption of this Policy does not represent an endorsement that the park trails or other park properties are safe for the use of an OPDMD or wheelchair. Users must exercise reasonable caution and care while operating such devices on the _____ trail system.

If you have any questions regarding this policy or the accessibility of _____ trails, please contact _____.

OPDMD Policy Examples

Additional OPDMD policy examples can be found on the American Trails website [HERE](#).





Good trail maintenance practices are important. They:

1. Provide positive user experiences, thus generating repeat customers.
2. Reinforce that the trail is an important regional recreation and transportation resource.
3. Are effective in deterring vandalism, litter, and dumping in the trail corridor.
4. Promote positive relationships with adjacent landowners.
5. Help to create a sense of community throughout the trail corridor, and encourage a sense of pride.
6. Restore native plant communities disturbed by trail construction and other uses.
7. Reduce liability and provide a defense when an accident does occur.

Trail Maintenance Considerations

The development of a trail does not end with its construction; rather it is the beginning of a process. Proper planning and design, along with quality materials and workmanship during construction will keep the maintenance costs low. Conversely, trail degradation will occur quickly without an effective maintenance program, no matter how well you plan, design, and construct a trail. Overall, if routine maintenance does not occur, maintenance costs will dramatically increase.

It is important to document trail maintenance practices in writing to ensure you have the work force, materials, and finances to maintain your trail properly. Trail maintenance should be an ongoing activity once a trail is dedicated.

To assure the success of the trail system, local partners, agencies, and municipalities should work together to define the roles and responsibilities to maintain the trail and adopt good maintenance practices are adopted. This does not mean the municipalities perform all of the work. More often, it means coordinating the efforts of volunteer organizations and providing aid when needed. State, local, and county agencies may be available to assist groups in planning trail improvements. Further, they may also be able to provide material, equipment and/or in-kind services for trail maintenance. Volunteer efforts should be coordinated to ensure the necessary services are provided in a timely manner. Document all agreements in writing between the participating parties.

Maintenance components of your trail management plan should consider the following:

1. Frequency of Maintenance
2. Trail Assessments and Inspections
3. Hazard Tree Identification, Inspection, and Corrective Action
4. Revegetation and Restoration
5. Training

The maintenance of trails is ongoing and a necessary activity that will ensure the continued use and the safety of the trail users.



1. Frequency of Maintenance

The frequency of trail maintenance varies depending on the type of maintenance activity being undertaken.

- Scheduled Maintenance
- Seasonal Closure and Opening
- Winter Maintenance
- Periodic Grooming
- Corrective Maintenance
- Deferred Maintenance

Trail maintenance tasks should be documented in the trail management plan and should be adopted by the agency/organization responsible for the trail. Maintenance requirements are dependent on the type of trail and amount of visitation it receives.

Scheduled Maintenance

Scheduled maintenance is the normal maintenance needed to restore a trail to its intended standard after prolonged wear and tear of normal use and exposure to the elements.

Develop an annual trail maintenance schedule using historical maintenance and known maintenance requirements from previous inspections or deferred maintenance. This living document should be adapted to the changing conditions of the trail.



Clearing the Trail Corridor

Photo Credit: PA DCNR



Typically, scheduled maintenance tasks are as follows. This list can be altered as needed to meet the needs of the trail, its users, and the communities that a trail passes through:

- Trimming or removing vegetation, dead limbs, or standing dead trees
- Removing debris, deadfalls, or loose impediments
- Cleaning out ditches, swales and culverts
- Repairing and revegetating minor erosion on slopes or embankments
- Grooming the tread surface
- Minor repairs such as replacing missing or broken posts or signs
- Mowing
- Trimming
- Trash removal
- Pruning
- Weeding
- Invasive Removal
- Brush hog
- Signs – inspect / repair / replace
- Fence – inspect / repair / replace
- Culverts – inspect / repair / replace
- Storm Drains – inspect / repair / replace
- Gates - inspect / repair / replace
- Bridge - inspect / repair / replace
- Maintain dips
- Grade ditches
- Trail grooming
- Trail surfacing
- Landscaping
- Storm damage
- Vandalism
- Repair washouts
- Garbage pick-up at trail access points
- Mowing of berms
- Cleaning of restrooms at trailheads
- Sweeping trails with a rotary brush to remove dirt and leaf litter
- Erosion control, repair of drain pipes and cleaning of swales
- Patching, regrading, and compacting of surface
- Inspecting, repairing, replacing signs, traffic markers, bollards, and gates
- Cleaning culverts, catch basins, and other drainage structures
- Maintaining and completing preventative maintenance on support facilities
- Inspecting trail-related structures to ensure they are in a safe condition
- Plowing trailhead parking lots in the winter



The following is a typical calendar for scheduled maintenance:

Frequency of Scheduled Maintenance												
Maint. Activity	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec
EXAMPLE- Mowing			•		
Mowing												
Trimming												
Trash												
Pruning												
Weeding												
Invasive Removal												
Brush Hog												
Signs - inspect/repair/ replace												
Fence - inspect/repair/ replace												
Culverts - inspect/repair/ replace												
Storm Drains - inspect/ repair/replace												
Gates - inspect/repair/ replace												
Bridge - inspect/repair/ replace												
Maintain Dips												
Grade Ditches												
Trail Grooming												
Trail Surfacing												
Landscaping												
Storm Damage												
Vandalism												
Repair Washouts												



Seasonal Opening and Closure

If seasonal closures occur along a trail, inspect and maintain portions of the trail that require maintenance. Sometimes this maintenance can be intensive, especially in areas prone to blow downs. For those trails with winter closures the tread surface may need to be graded, compacted, and or groomed in preparation for increased use during wet conditions of the spring season. Fall maintenance should focus on clearing and trimming of vegetation sufficiently to account for the next growing season. Repair and stabilize eroded areas to prevent future erosion.

Winter Maintenance

Collaborating agencies should decide and document what the winter maintenance policy will be for the given trail. Avoid plowing trails that include winter uses such as cross country skiing and snowshoeing. In urban environments, where pedestrian and bicycle use is expected to continue throughout the winter months, consideration may be given to plowing the trail. Regardless of the decision made, it should be communicated to trail users so they know what to expect during inclement weather. This is an important issue and should be posted on a trail kiosk or rules sign.

Periodic Grooming

The frequency of periodic grooming of the tread surface is dependent on the level of trail use and the amount of surface displacement. Simple grooming may require re-grading and compaction of the in-place tread surface materials. More intensive grooming may require placement and compaction of additional tread surface materials to address minor rutting or erosion.

Corrective Maintenance

Corrective maintenance is necessary for the restoration of areas or structures severely damaged or destroyed by overuse, inadequate scheduled maintenance, abuse, vandalism, or unexpected natural events. Corrective maintenance is usually unexpected and may require more planning or design than scheduled maintenance. Corrective maintenance includes:

- Reinforcement and replacement of trail subbase and tread surface
- Stabilization of severely eroded or sloughed embankment
- Reconstruction of grade dips, or other water control structures
- Replacement or major repair of culverts, bridges, or retaining walls

Regardless of the level of planning and effectiveness of the scheduled maintenance program, the unexpected will occur. Address unexpected emergencies by establishing a contingency line item in the annual maintenance budget. Ideally, a long-term capital improvement budget should be in-place to repair/replace major structures.



Removing Blow Downs

Photo Credit: PA DCNR



Deferred Maintenance

Deferring maintenance is a deliberate decision to delay maintenance due to a lack of labor, budget considerations, or specific conditions. Deferring routine and scheduled maintenance can make funds, maintenance personnel, or equipment available to perform corrective maintenance. For example, scheduled maintenance for grading and re-compacting may be deferred to make a crew available to perform corrective maintenance to address a liability. Reschedule deferred maintenance when resources become available. Never defer corrective maintenance that is safety-related unless that section of trail can be bypassed or closed.

Maintenance of Signs

Incorporate a regular maintenance program for signs into your trail management plan. Sign maintenance is important from a safety and liability perspective. Further, signs are highly visible and their maintenance or lack of maintenance leaves the visitor with a positive or negative impression about the trail. Well-maintained signs convey a sense of pride and reduce vandalism while poorly maintained signs may contribute to a diminished visitor experience, including disorientation of trail users.

The following guidelines are recommended:

- Maintain a record of all signage, including location, GPS coordinates, type of sign, and photo.
- Inspect signs regularly, especially after each winter season, for weathering and visibility.
- Repair or replace damaged or missing signs as soon as possible.
- Secure loose or tilting signs in an upright position.
- Clear vegetation from around signs to maintain visibility.
- For signs mounted on living trees, loosen fasteners as necessary to accommodate growth of the tree.
- Review signage content to ensure continued relevance and accuracy.
- Obsolete, damaged, or surplus signs should be reused or recycled whenever possible.
- When signs have been weathered or otherwise damaged or destroyed, consider the reasons for the damage. If the sign was eaten by wildlife, consider less palatable materials. If weather or natural events damaged the sign, consider stronger materials, a different location, or a different system for mounting the signs. If the sign is damaged by water or decay, consider applying a sealer or preservative (assuring compatibility with color, aesthetics, and environmentally sustainable practices) or replacing the sign with a more water-resistant material. When signs are damaged due to vandalism, managers should consider a different location or temporary signage that is not expensive to replace.

Sign Maintenance

For additional information on sign maintenance refer to the Delaware & Lehigh National Heritage Corridor's Sign Maintenance: Projecting your image, Protecting your Investment, **AVAILABLE HERE.**





Priorities for sign maintenance are:

1. Signs required for user safety
2. User restrictions and advisory signs
3. Destination and identification signs, blazes, and trail logos, and
4. Informative and interpretive signs

There is a fine balance between providing good information and diminishing the trail experience with too much signage. An abundance of signage can also be a burden on the trail managers and those responsible for maintaining the signs.

Maintenance of Road Crossings

Best practices for maintaining road crossings include:

- Conduct an annual inspection after the winter season to determine the condition of the trail crossing signs, pavement markings, and associated gates or other trail signs.
- Inspect and repair any damaged gates, bollards, delineators, fencing, or signs used for your trail at the crossing.
- Repaint or reapply trail crossing markings as they fade, in accordance with the approved trail crossing plan. Depending on traffic volume, pavement markings last at least two to seven years before noticeable fading occurs.
- Replace signs at trail crossings if damaged or heavily faded. Straighten the sign post if leaning or reinstall if knocked over. Typically signs are manufactured to last fifteen years or more without losing reflectivity. Stop signs, however, lasts only about seven years before fading, depending on sun exposure.
- Examine the vegetation and foliage at the crossing to ensure sight distance requirements are met and the signs are not blocked from view. Do this once each summer with full foliage present.
- Examine and fill in any portion of the trail that has settled where it meets the roadway. if there are ADA accessible ramps examine them and make sure they are in good repair.
- Contact the agency responsible for the road, either the municipality or PennDOT, if any shoulder washouts or roadway damage occurs and ask them to repair those areas.
- In the end your trail crossing should look like it does on the approved trail crossing plan.



Unless there is major damage or vandalism year to year there really isn't much to do. A quick annual inspection should be all that is needed and maybe minor tweaks. Of course if you defer this maintenance more work would need to be done.

On state roads PennDOT will typically take care of the following maintenance items:

- The entire asphalt road surface and paved or unpaved shoulders
- All traffic signs other than those specifically associated with the trail crossing.
- All pavement markings not specifically associated with the trail such as double yellow lines, edge lines, curve warning, etc.
- Drainage structures associated with the roadway.

2: Trail Assessments and Inspections

Trail Assessment and Inspection Forms (TAF) provide a means of recording basic information for current and future trail planning, design, construction, and maintenance. TAFs document current trail conditions and help identify subsequent work required to satisfy current trail standards. A sample TAF is at the end of this section.

After completing a TAF, a trail's intended use, overall condition, and necessary maintenance can be determined. Trail sponsors/managers should be responsible for reviewing TAFs and ensuring that any required maintenance on a trail or trailhead be addressed. A review of completed TAFs will help trail managers identify areas or sections of trails that require maintenance attention. In areas that require more maintenance than expected or are too costly to maintain, trail redesign or improvements may be considered. TAFs should be updated if the management intent for the trail, special considerations, or other factors change.

The instructions below explain the significance of each field on the TAF worksheet:

Overall Trail Information

- **Trail Name:** Specify the official trail name, double-checking for correct spelling.
- **Trail Location and County:** Specify the trail location and county.
- **Trail Length:** Specify the length of the trail in miles. Mileage accuracy recorded on the TMO should correspond to the method of collection: wheel, GPS, map, or unknown.
- **Trail Beginning and Ending Segment:** Specify the location of the trail's beginning and ending trail segment.
- **Name and Date:** Specify the name of the person who conducted the assessment.



Designed Use Objectives

- **Designed Use:** Specify the prescribed use for the proposed trail. The designed use is necessary to establish the standards for which the trail is designed, constructed, operated, and maintained.
- **Season of Use:** Specify the season(s) the trail will be open for use.
- **Level of Difficulty:** Specify the prescribed level of difficulty for a specific trail based on its corresponding level of difficulty standards.

Trailhead and Access Points

- **Name:** Specify the name of all trailheads and/or access points.
- **Location:** Specify the location of each trailhead and/or access point.

Trail Tread/Surface

- **Condition:** Specify the current condition of the trail tread or surface.
- **Materials:** Specify the type of materials used to create the trail tread.
- **Average Width:** Specify the average width of the trail tread. Identify the minimum and maximum width observed along the trail.

Drainage

- **Drainage:** Specify the drainage conditions of a trail. Identify any and all drainage issues that need to be addressed.
- **Bridges and Culverts:** Specify the level of condition of bridges and/or culverts along the trail corridor.
- **Dips:** Specify the level of condition of dips along the trail corridor.

Road/Railroad Crossings

- **Condition:** Specify the level of condition of road and/or railroad crossings intersecting with the trail.
- **Sight Line:** Specify the level of condition of sight lines to and from road and/or railroad crossings intersecting with the trail corridor.
- **Accessible:** Specify if there are accessible road and/or railroad crossings intersecting with the trail corridor.

Adjacent Land Uses

- **Adjacent Land Uses:** Specify all current land uses that are adjacent to the trail corridor.
- **Historical and Other Structures:** Specify the level of condition of all historical and/or other structures along the trail corridor.

Signage

- **Blaze/Marking Color or Style:** Specify the blaze and/or marking color and style at trailheads and along the trail corridor.
- **Overall Condition:** Specify the overall condition of blazes and/or markings at trailheads and along the trail corridor. Identify the condition of specific blazes and/or markings where applicable.
- **Replace Signs:** Specify all areas at trailheads and along the trail corridor where blazes and/or markings need to be replaced.



Inspection Procedures

A complete inspection of the trail should be a routine scheduled event, performed by trained personnel/volunteers familiar with the trail. Perform trail inspection in conjunction with scheduled maintenance or as a separate action to determine the need for additional work.

Inspectors should review the trail management objectives for a section of trail before inspecting the trail. It is also helpful to review the previous inspection and maintenance records. The inspector should determine the current condition of the physical features of the trail and document deficiencies, change of conditions, and the need for corrective maintenance.

Trail inspectors should carry a trail map, inspection checklists, and tools for minor maintenance relating to safety. Photographing current trail conditions is an excellent way to document and monitor changes in conditions. Inspectors should identify deficiencies that create safety concerns and hazards to the trail users.

Items to look for include:

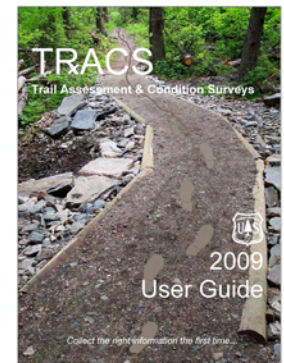
- Erosion
- Failure of water diversion features
- Trail degradation
- Vegetation or materials extending into the horizontal or vertical clear area
- Deadfalls, dead limbs, or standing dead trees that could fall within the clear area
- Loose impediments on the treadway (that exceed the level of difficulty)
- Sloughing or erosion of embankments
- Missing or damaged regulatory or warning signs and other signage
- Vandalism

After identifying and repairing safety hazards, the second highest priority is repairing damage from improperly functioning drainage features. The inspector should inspect the inlets and outlets of all culverts, ditches and swales, to ensure they are free of debris and functioning properly. Evidence of a breakdown of drainage includes erosion, ponding of water, wet areas, and rutting of the trail tread. Correction of improperly functioning drainage may be a matter of maintenance or may require trail improvements or re-routing. Allowing a trail to continue to degrade from poor drainage quickly leads to costly corrective maintenance or trail closure.

The inspector should also be attentive to evidence of heavy use and trail tread condition requiring immediate maintenance. Record the general condition of the tread throughout various sections of the trail.

Trail Assessment Protocols

For a comprehensive review of trail assessment protocols, refer to the U.S. Forest Service's *Trail Assessment & Condition Surveys (TRACS)* document, available [HERE](#).





The frequency of inspection depends on the maintenance history of the trail, sustained level of use, and special events. Special events include acts of nature, as well as planned events such as organized club events or poker runs. Inspections should be frequent enough to correct potential problems before they become a safety issue or lead to more costly corrective maintenance.

An experienced and licensed professional engineer should be used to inspect structural facilities such as bridges and retaining walls. Schedule the frequency of structural inspections based on the age and condition of the structure.

Using Volunteers to Perform Inspections

The trail management plan should specify who is responsible for conducting trail inspections and the frequency. Either paid staff or trained volunteers can conduct trail inspections.

Regardless of who completes the inspection, results should be documented and retained in case a liability claim is filed by a trail user. By following the policies and procedures documented in the trail management plan, the risk of liability can be reduced. Volunteers should be trained in performing inspections and recording information on the TAFs. TAFs can be adapted to meet your trail's specific needs.



Trail Assessment Form

Trail Name _____ **Begin Segment** _____ identified by mileposts ☐
Location _____ **End Segment** _____ or coordinates ☐
County _____ **Total Trail Length** _____ **Segment Length** _____
Conducted by _____ **Date** _____

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Designed Use ☐ Hike / Pedestrian ☐ Bike ☐ Mountain Bike ☐ Equestrian
☐ Cross Country Ski ☐ Snowshoe ☐ ATV ☐ Snowmobile
☐ Others, _____

Level of Difficulty ☐ Easiest ☐ More Difficult ☐ Most Difficult

Trailheads & Access Points **Name** _____ **Location** _____ identified by milepost ☐
 Latitude N _____ or coordinates ☐
 Longitude W _____

Notes

Trail Tread / Surface **Condition** ☐ Good ☐ Fair ☐ Poor ☐ Needs Improvement
Materials _____ **Average Width** _____, min. _____, max. _____
Grade _____% **Cross Slope** _____%

Notes

Drainage ☐ Drains properly ☐ Draining onto or across trail surface
☐ Water staying on trail ☐ Needs drainage structure

Bridges and Culverts ☐ Good ☐ Fair ☐ Poor ☐ Cleanout

Dips ☐ Good ☐ Fair ☐ Poor ☐ Cleanout

Notes

Road / Railroad Crossings

Condition ☐ Good ☐ Fair ☐ Poor ☐ Needs improvement
Sight Lines ☐ Good ☐ Fair ☐ Need to prune ☐ Unsafe
Accessible (Note Exceptions) _____

Notes



Trail Assessment Form

Trail Name _____ *Begin Segment* _____ identified by mileposts ☐
Location _____ *End Segment* _____ or coordinates ☐
County _____ *Total Trail Length* _____ *Segment Length* _____
Conducted by _____ *Date* _____

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Adjacent Land Uses (Check all that apply)

☐ Forest ☐ Farm ☐ Residential ☐ Commercial ☐ Industrial ☐ Encroachment

Notes

Historical and Other Structures

Condition ☐ Good ☐ Fair ☐ Poor ☐ Needs Improvement
☐ Needs to be replaced ☐ Needs to be cleared out

Notes

Signage (includes trailhead and reassurance markings, blazes, etc.)

Blaze / Marking Color or Style _____

Overall Condition ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Regulatory ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Wayfinding ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Interpretive ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Wooden / Routed ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Reassurance Markings ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Intersections ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Pavement Markings ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Others (fiberglass, etc.) ☐ Good ☐ Fair ☐ Lacking ☐ Needs Maintenance

Replace Signs:

Notes



Trail Assessment Form

Trail Name _____ *Begin Segment* _____ identified by mileposts ☐
Location _____ *End Segment* _____ or coordinates ☐
County _____ *Total Trail Length* _____ *Segment Length* _____
Conducted by _____ *Date* _____

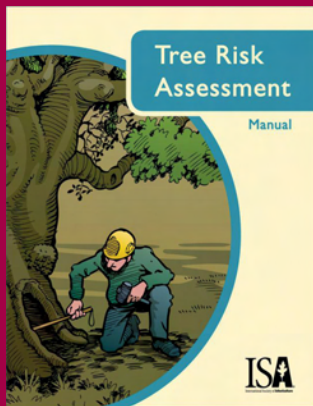
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Other Notes and Summary

Please return this form to



In their publication *Tree Risk Assessment*, the International Society of Arboriculture provides a tree risk assessment form, available [HERE](#).



3 Hazard Tree Identification, Inspection, and Corrective Action

A tree is considered hazardous when structural defects are likely to cause failure of all or part of a tree within striking distance of a target. A target can be a vehicle, building, or an area where people or their equipment are likely to stop and congregate, such as park benches, campgrounds, picnic tables and environmental education areas. Identifying hazard trees is not an exact science. Many times trees will fail though they appear healthy. One cannot always accurately determine the hazard potential of every tree, but following a few basic inspection techniques can identify many hazard trees so corrective action can be taken.

Trees in poor condition should be inspected more closely for structural defects including cracks, cankers, decay, weak branch unions and root problems. Be sure to inspect trees carefully and systematically. Examine all parts of the tree, including the trunk flair, main stem, branches and branch unions. A pair of binoculars or a spotting scope will allow for a more complete examination of the tree canopy.

Close inspection should occur in any public overnight and day use areas, along trails and roadways, and adjacent to buildings. Again, a hazard tree is defined as having a defect and a target. Tree inspections should be conducted using consistent procedures.

A widely accepted method of assessment is the USDA, USFS Risk Assessment Scale, which prioritizes hazard trees based on three criteria. The three assessment criteria are tree condition, failure potential, and probability of target impact. Tree condition considers the amount of deadwood, foliage and trunk decay. Failure potential is rated according to the severity of the defects. Probability of target impact is ranked based on frequency of use. Trees determined to have low probability of failure and target impact should be considered for their value as wildlife habitat.

Tree inspections should occur in the spring before leaf-on, in mid-summer, and after leaf-off in the fall. This inspection schedule allows trees to be observed in various states and provides ample time for corrective action to be taken. Areas more heavily used by the public should be inspected immediately after severe storms that cause blow downs, leaning trees, or large hanging branches.

Tree inspections should be documented. This documentation should include the date(s) of the inspections, the area(s) inspected, the person(s) conducting the inspection, and whether this inspection was a routine inspection or conducted because of a storm event. Using the USFS Risk Assessment Scale allows for easy and consistent documentation over a



multiple year period. If necessary, trail maintainers can provide this document to the landowner as a recommendation for corrective action.

Following the identification and inspection of trees, if a tree is found to have a deficiency, the appropriate corrective action should be taken promptly. Use the USFS Risk Assessment Scale to prioritize hazard trees that require corrective action. These corrective actions could include moving the target, pruning the tree to remove the hazardous portion, or removing the entire tree. Landowners/managers can contact a professional arborist if they do not have sufficient equipment or properly trained people to carry out tree pruning or removal.

Additional information on hazardous trees and the USDA, USFS Risk Assessment scale can be found **[HERE](#)**.

Only properly trained and certified personnel should work with trees, especially when it comes to felling trees and/or working with power equipment, such as chain saws.

4. Revegetation and Restoration

It is important to stabilize and restore vegetation in areas damaged by trail construction. Restoration often leads to better habitat for animals, a richer diversity of species, healthier ecosystems, and cleaner water. Furthermore, this process allows for the establishment of aesthetically pleasing natural areas rather than those marred by overuse and abuse.

Restoration work can vary from simple undertakings to multi-year efforts to revegetate and erase the impacts of human effects on the land. Areas in need of this type of maintenance include: bootleg trails, shortcuts across switchbacks, inappropriate campsites, permanently closed trails, logged-out areas, and barren riparian areas. In some cases, especially in heavily impacted areas no longer subject to erosion, agency personnel may determine that restoration efforts are not necessary. This is because these areas will probably not suffer any further damage regardless of future use.

The decision to restore an area is best made by informed land management personnel. This planning should ensure that the work is appropriate and will be effective, as well as have a realistic understanding of the size, duration, expense, and demands of the undertaking. Restoration projects require careful planning and a commitment to achieve objectives. This work includes activities such as site and soil preparation, seeding, transplanting native vegetation and container-grown plants, as well as on-site plant propagation.

A benefit of proper revegetation and restoration is that it will require less maintenance in the end. This is an important selling point when working with doubtful landowners, officials, and others.

Your trail management plan should provide guidelines on policies and procedures for revegetation and restoration.



5. Training

Training is critical to the success of a trail. Management can not assume trail users, volunteers, or staff have the knowledge and skills necessary to properly use the trails, and to perform their duties and functions in the manner required to maintain a safe, inviting, and well-maintained trail environment.

Your trail management plan should incorporate a summary of the various training components to be offered, their intended audience and the intended frequency of the education/training program. The following is a sample summary table:

Component	Audience						Frequency and Location
	Designer	Land Manager	Maint. Staff	Trail Patrol	Volunteers	Trail Users	
Safety Training		•	•		•		
Trail Etiquette						•	
Proper Trail Use					•	•	
Outdoor Ethics					•	•	
Trail Construction	•	•	•		•		
Trail Maintenance			•		•		
Water Crossing Construction			•		•		
Trail Inventory Procedures	•	•		•			

Trail Etiquette

DCNR's pamphlet *Trail Etiquette: Promoting User Compatibility Through Understanding and Cooperation*, available [HERE](#), provides the recommendations for trail etiquette based on the type of trail users one encounters.



Land Ethics

A responsible trail management plan would be remiss if it did not include policies addressing use of the outdoors in a sustainable manner, so that its resources will continue to be available for future generations to enjoy.

Leave No Trace

Leave No Trace is a national and international program designed to assist outdoor enthusiasts with their decisions of how to reduce their impacts when they hike, camp, picnic, snowshoe, run, bike, hunt, paddle, ride horses, fish, ski, or climb. The program strives to educate all those who enjoy the outdoors about the nature of their recreational impacts, as well as techniques to prevent and minimize such impacts. Leave No Trace is best understood as an educational and ethical program, not as a set of rules and regulations. The Leave No Trace principles are summarized as follows:

1. Plan Ahead and Prepare
2. Travel and Camp on Durable Surfaces
3. Dispose of Waste Properly
4. Leave What You Find
5. Minimize Campfire Impacts
6. Respect Wildlife
7. Be Considerate of Other Visitors

Additional information on Leave No Trace, is available [HERE](#).

When trails are designed or managed for equestrian use, Leave No Trace guidelines for equestrian trails should be followed. The Pennsylvania Equine Council's Ride Smart brochure, available [HERE](#), is a good example of equine Leave No Trace guidelines.

Tread Lightly!

Like Leave No Trace, TreadLightly! is an educational program dedicated to increasing the awareness of how to enjoy the outdoors while minimizing impacts. It emphasizes responsible use of non-motorized, and motorized, travel and low impact principles related to outdoor recreational activities. It is summarized as:

- T**ravel & recreate with minimum impact.
- R**espect the environment and the rights of others.
- E**ducate yourself, plan and prepare before you go.
- A**llow for future use by leaving it better than you found it.
- D**iscover the rewards of responsible recreation.

Additional information on the TreadLightly! program can be found [HERE](#).

"A land ethic, then, reflects the existence of an ecological conscience, and this in turn reflects a conviction of individual responsibility for the health of the land. Health is the capacity of the land for self-renewal. Conservation is our effort to understand and preserve this capacity."

Sand County Almanac
Aldo Leopold





McCune Trail
Ohiopyle State Park
Fayette County

Photo Credit: PA DCNR



North Country Trail
Lawrence County

Photo Credit: Andrew Bashaw