

TRAIL ADOPTER'S HANDBOOK

The Town of Williston Vermont
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Contact Information

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The information in this Handbook was adapted from the Appalachian Mountain Club *Trail Adopter Handbook* and the Town of Reading, MA *Adopter Handbook* by Maddy Zimmerman for the Town of Williston.

How to Adopt a Trail

- Apply Online by emailing [Simon Myles](#). Please read the volunteer responsibilities to ensure that you can fulfil them. Trails may already be adopted but please reach out.
- Fill out and submit the [Trail Adopter Agreement](#) (to be completed and signed during Training)
- Read the Trail Adopter's Handbook and take the [Maintenance Comprehension Assessment](#) prior to the Training.
- Attend a Trails Maintenance Training before starting work on your trail.
- Perform the necessary trail maintenance tasks. We ask that you visit 4 times a year but the work can suit your schedule. Please:
 - Communicate work completed and any concerns with the Area Manager.
 - Follow the standards set in the Trail Adopter Handbook.

* All forms, applications, and other resources can be found on the Town of Williston's website under the Adopt-A-Trail page.

Volunteer Responsibilities

Adoption Period

The adoption period is one year, and can be renewed with the approval of the Area Manager. This agreement is on a voluntary basis and may be terminated at any time by either party.

Trail Inspections

Trail inspections may include the following tasks: observing the condition of the trailhead, including the parking lot and signage, monitoring trail maps and dog waste bags, monitoring trail conditions and performing basic maintenance, reposting trail markers and signs, blazing, picking up litter, and alerting the Area Manager to any further maintenance needs or problems.

Trail Visits

Volunteers are asked to visit their adopted trail or trail section a minimum four times per year. The days and times of the visits can be at the volunteer's convenience. However, if you'd like to visit more often for shorter periods or can't manage 4 visits a year please do discuss with the Area Manager. We want the trails to be maintained, but in a way that suits your schedule. These are suggestions about the best time to complete different types of maintenance:

- A mid to late summer (July/August) visit consists of maintenance like clearing blocked drainage and pruning overgrown vegetation in the trail corridor.
- Autumn is a great time for any basic trail maintenance task. Thoroughly cleaning drainage after the leaves fall is high priority because it ensures good drainage in the late fall, early winter, and early spring snow melts.
- In late spring (May/June), prior to heavy trail usage, maintenance is best focused on immediate issues such as clearing drainage, blowdowns, and pruning overgrown vegetation.

Watching for drainage problems at this time of year when the water table is high and soils are saturated is especially helpful for learning what drainage features are effective.

The town is keen to monitor the work done by volunteers. Please email the Area Manager after your visits to record the work you completed.

Maintenance

Routine maintenance of a trail includes cleaning drainage areas like waterbars and ditches, keeping the trail free of debris like loose rocks, tree limbs, pruning small limbs from the trail corridor, clearing debris from bridges, benches, and viewing platforms, blazing, and performing basic trail repairs if within your skill range. Information on maintenance needs for specific trails can be found [here](#), and on the Town's website. Instructions on general trail maintenance can be found below.

The Area Manager should be notified if there is an erosion problem, damaged or missing signs, vandalism, large trees down in the trail, or other issues that cannot be handled on the day of a trail visit by the volunteer.

If you are doing trail maintenance or working on a small project on your trail, like laying planks down over a muddy area, and need materials (wood, nails, etc.), you can request materials from the Area Manager. We also have tools to loan out.

Basic Trail Maintenance

Drainage

Drainage maintenance is the most important task of trail adopters. This maintenance includes clearing waterbars, side and outflow ditches, and debris that may come into the trail. Clearing drainage is essential because poor drainage leads to flooded or severely eroded trails, especially during seasons with heavy rainfall or snow melt.

Erosion can cause significant damage to existing trail construction. These problems and their environmental impact can be lessened through proper trail drainage maintenance. Foot traffic and water flow are the two main variables that accelerate erosion on trails. Foot traffic compacts soil on the trail treadway, which reduces the soil's ability to retain water, and creates a channel for water to flow. Additionally, foot traffic causes the churning, or loosening of soil, which happens with every step. Combined, churning and compaction cause numerous erosion problems.

The steepness of the trail and the amount of water running down it accelerate erosion as well. Water running down a trail is the greatest cause of erosion, with the volume and velocity of the water determining the extent of the erosion. Reducing either velocity or volume will benefit the condition of the trail- less water means less erosion. Disrupting the flow of water on the treadway reduces the velocity of water, while removing water from the trail treadway reduces the volume.

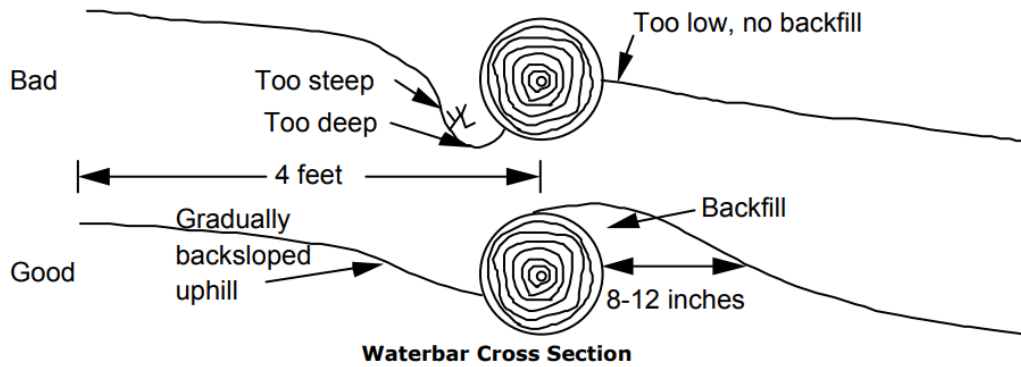
Erosion control structures help control and divert the water flow and prevent erosion, and are put in place on trails that do not have sufficient water drainage. Two common erosion control structures are the check dam and the waterbar. Check dams are built in trail treadways that do not allow for water drainage and are good structures for retaining soil. They break water velocity and do not divert the water from the treadway. Waterbars direct the flow of water out of a trail and into areas that do not have foot traffic, reducing the volume of water on the trail. The use of both waterbars and check dams help control and reduce trail erosion.

Drainage-Cleaning Tools

The hazel hoe (or adze hoe) and the garden rake are common tools used to clean drainage. A shovel can be helpful when removing large amounts of soil, while a pick mattock or cutter mattock is helpful when removing roots or rocks from a treadway. Some adopters have found the garden hoe to be an easily accessible, light weight, and effective tool for clearing drainage. The town has tools available to loan.

Cleaning Drainage

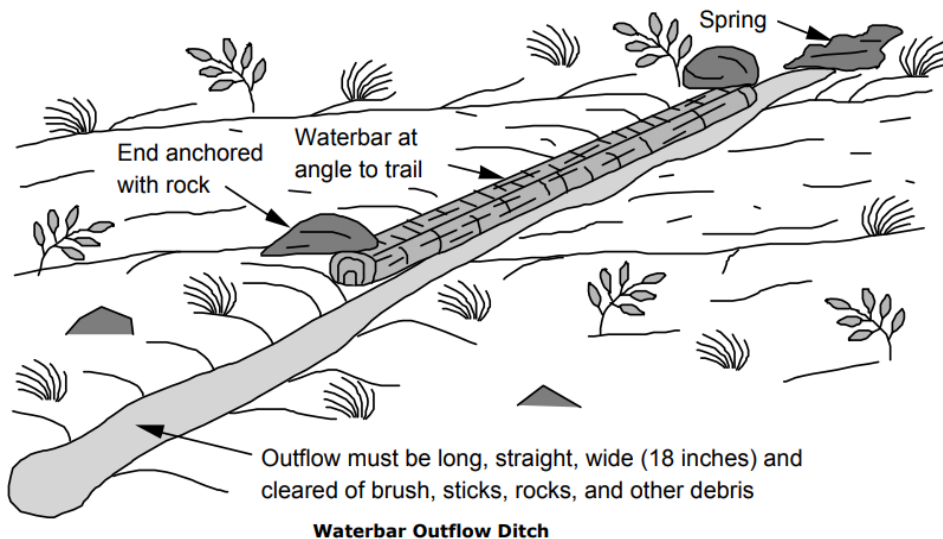
When cleaning drainage, pull all of the debris from the uphill side of the waterbar (or other erosion control structure) and deposit it on the downhill side. Mound soil along the downhill side of the structure as backfill. You should discard organic matter like leaves and roots away from the trail. Having the uphill trail sloping gradually down to the waterbar and having sufficient backfill is very important because if the structure lacks this, erosion will occur above and around the waterbar, and the water will not be properly diverted from the trail.



AMC Trail Adopter's Handbook. (Dec. 2015).

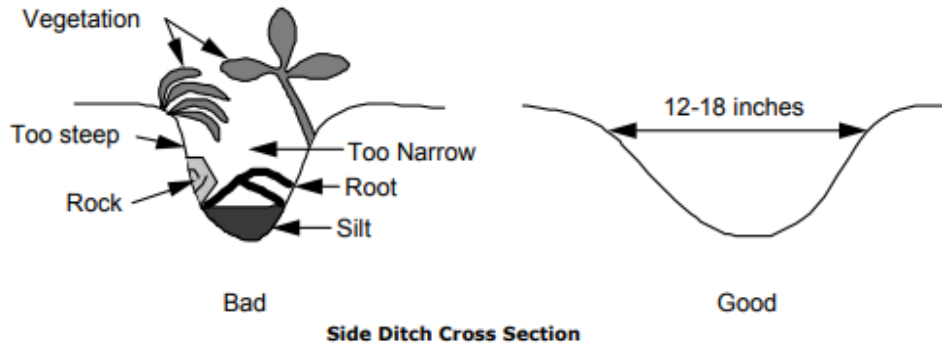
The outflow ditch at the end of the waterbar should be straight, about 1.5 feet wide, free of roots, and have sloped sides to ensure that the water does not pool at the bar. The outflow ditch should be sloped enough so that water is carried away, and be long enough that the water does not reenter the trail further on. A good, wide ditch requires less maintenance and cleaning.

Shallow streams intercepting the trail should also be cleared of debris to ensure no blockage of water flow, which would cause water to run onto the trail.



AMC Trail Adopter's Handbook. (Dec. 2015).

Side ditches, another type of erosion control structure, are useful in wet soils. They are effective at diverting water from a trail in areas where a waterbar cannot be used. Ditches can be dug on either side of the trail (or both sides) and should end at the next waterbar, where the water will be diverted away from the treadway. Like waterbars, ditches need to be monitored and cleaned of debris so they work properly. Organic matter like mud and leaves should be discarded away from the ditch because they hold water and make the trail more muddy.



AMC Trail Adopter's Handbook. (Dec. 2015).

Blazing

Blazing, or trail marking, is an important piece of trail maintenance. Along with helping hikers to stay on the trail, blazing has a low environmental impact compared to large, obtrusive signs. A well kept trail corridor is the most helpful for guiding hikers in the correct direction—blazing is intended to reassure hikers, not guide them every step of the way. Although important, blazing is not the top priority of adopters.

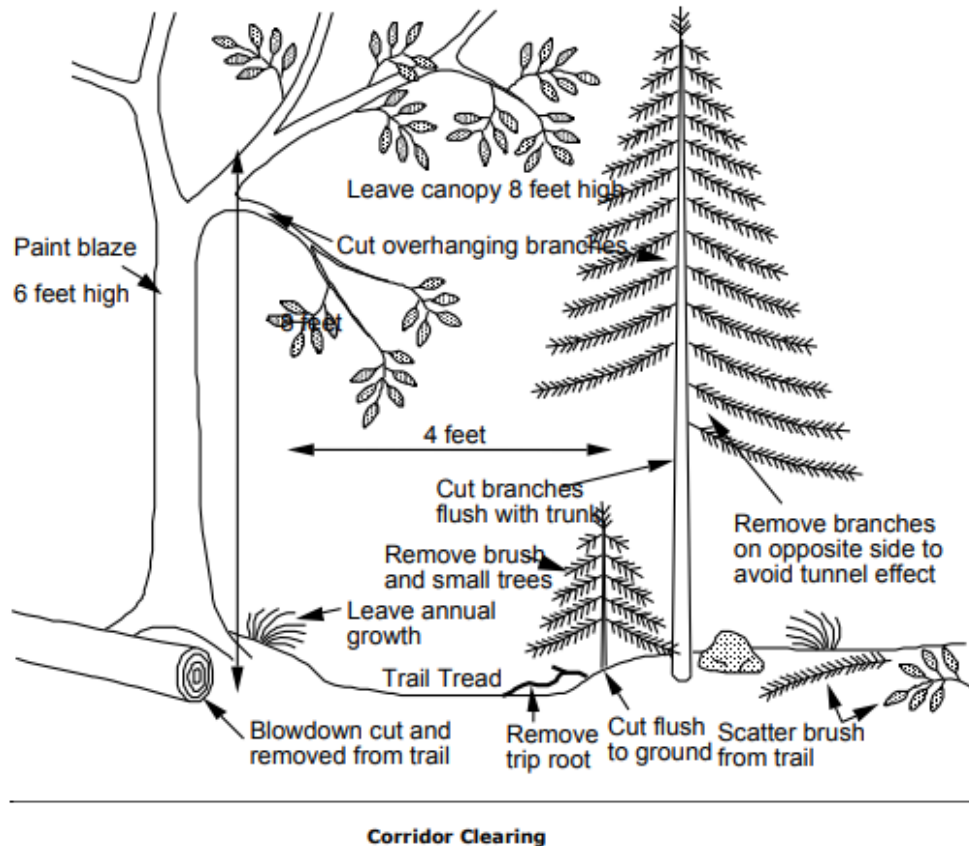
On Williston's trails, we currently have arrow markers acting as blazes on our trails. Putting these markers up (and remarking) by nailing them to trees along the path is a responsibility of the adopter. Tools used for this are a hammer and nails. When attaching a sign or marker to a tree, do not hammer the nail all the way into the tree. Leaving about $\frac{1}{4}$ " - $\frac{1}{2}$ " of nail sticking out of the tree allows the tree room to grow without being restricted by the sign.

Clearing Vegetation

Clearing vegetation involves clearing brush growing along the sides of a trail and clearing blowdowns and limbs from the treadway. Without regular brushing, even trails with heavy foot traffic can become overgrown quickly, so this is another important task of adopters. Proper trail clearing allows for a hiker with a pack to walk through without touching trees or brush and creates an open line of sight for the hiker. The appropriate height and width (trail corridor) for a trail varies with the type of trail and its location. In wooded areas, a width of 4 feet and a height of 8 feet is usually sufficient. Be careful of limbs that may hang down into the corridor after heavy rain or snow fall. Limbs of trees should be cut flush with the trunk, branches growing towards the trail should be trimmed back to the closest limb growing away from the trail. To avoid sharp stumps, low-growing shrubs and young trees should be cut flush with the ground. In the presence of fragile vegetation like moss, avoid widening the trail to protect the plant life. Remove dead roots from the trail, avoid over pruning near corners of trails as it encourages cutting corners, and avoid over pruning in wetlands because hikers will widen the trail more. Near and around our trails, Williston has many areas of wetlands, vernal pools, and other ecosystems that support unique animal and plant life, so please be careful and mindful of over pruning and what you are pruning in these spaces. Invasive species have no limit to how much they can be pruned and removed. Information

on invasive species in Vermont can be found on the [Adopt-A-Trail website](#), in the right sidebar under “Forms & Resources.”

After brushing, remove all branches and debris from the trail, and away from erosion control structures to ensure a clear and safe pathway for hikers. Downed trees that are small enough for you to move should be carefully dragged by the butt until the top is completely off the trail.



AMC Trail Adopter's Handbook. (Dec. 2015).

Restocking Trail Maps & Bags

Please notify the Area Manager if the dog waste bins or trail maps need restocking.

Trail Assessments

Performing trail assessments is an optional task for adopters. A trail assessment happens each year for every trail, and involves walking the trail and using an app called Survey 123 on your phone to mark the locations of larger maintenance issues. These issues can range from trail sections needing drainage, to blowdowns that need removal, to bridges that need to be repaired. All you have to do is mark where the issue is on the app, take a photo if you can, and briefly describe the problem. To access the Trail Assessment Survey, follow the steps provided below. This information can also be found on our website under Forms & Resources. Those who are interested in learning more, please inquire at a training session.

To access the Trail Assessment Survey:

1. Download the Survey 123 app.*
2. [Follow this link to get to the Trail Assessment Survey.](#)
3. To collect data, click on the Trail Assessment Survey in the app and then click “Collect” at the bottom of the screen.
4. In the field, access the survey on the app, using cellular data.
5. When finished collecting data, hit “Send” to send the data to the Area Manager.

*After downloading the application, it may ask you to sign in. To avoid this, follow the provided link to the survey.

Trail Work Safety

Practicing proper safety techniques when working with tools is crucial in doing trail work and keeping yourself and others safe. Correct usage of trail work tools, general safety information, and carrying techniques will be discussed below.

Carrying & Transport Techniques

When carrying tools to a work spot (also known as packing in), smaller, lighter tools are best strapped to a pack. Heavier, larger tools that can't be strapped to a pack should be carried in your hands, at your sides. In the event of a slip or fall while hiking with tools, this ensures that you can more easily throw the tool away from you as to not land on it. Tools should not be thrown to the ground otherwise, because in order to function properly the tools need to be taken care of. Don't forget your tool in the woods when working off of a path, and avoid leaning any tool against a tree or standing it up on its own. This is dangerous because the tool could fall and cause injury.

Tools

Some basic tools that are helpful for trail work are clippers, a bow saw, a tool to clean drainage (hazel hoes are recommended), and a blazing kit. Some basic trail maintenance tools including shovels, hand saws, hammers, nails, shears, and some safety equipment can be loaned out at the Town of Williston Planning and Zoning Office (7878 Williston Rd). Any adopter wishing to borrow a tool needs to ask the Area Manager. If you already own a garden hoe or pruning shears, those can be used for basic maintenance as well. The following information is descriptions of common tools and how to use them.

Clippers and Pruning Shears-

These are one of the best tools for trail adopters. There are many variations of basic clippers, with most providing up to a two inch diameter cut. Hand clippers can be very helpful when pruning smaller bushes and clearing other vegetation from a trail corridor.

Bow Saws and Pruning Saws-

Frequently used, hand saws are made out of a variety of metals, and the blades can range from 21 to 36 inches in length. Smaller saws can be utilized when cutting limbs or saplings while larger saws can cut blowdowns to be cleared. Adopters have found that materials such as garden hose segments, cardboard, and aluminum act as great sheaths. Saws can be strapped to a pack, or carried in your hand (if safely sheathed) when hiking your trail.

Hazel Hoes and Grub Hoes-

These tools are especially useful in cleaning erosion control structures like waterbars and drainage. Garden hoes are a lightweight, easily accessible alternative.

Shovels-

Another tool with many variations in shape and size, shovels are handy for removing large amounts of loose soil from drainage and installing structures like waterbars and side ditches. Do not use shovels to pry rocks as they may break.

Swizzle Stick-

Also known as a weeder, this tool is a straight or serrated blade attached at one or two points to a long handle. It is used for clearing brush and other vegetation along trails. When using a swizzle stick, maintaining a safe distance from others is very important because it is swung like a golf club. Avoid laying an uncovered swizzle on the ground.

Axes, mattocks and chainsaws – Not authorized for volunteers

The town does not want volunteers to swing axes or mattocks or use chainsaws on the trail. If a downed tree or other issue requires use of these tools please contact your area manager.

Safety While Working

The table below contains information on the risks and necessary safety equipment for specific tasks in the field. Besides protecting yourself, be aware of your surrounds and others you are working with. Carrying a first aid kit with you when doing trail work is highly recommended.

Task	Risks	Safety Equipment
Brushing	Bees, eye pokes, rotten trees, loose footing, blisters, sharp branches, sharp tools	Eye protection, gloves
Log work	Sharp tools, slippery logs, back strain, loose footing	Gloves, shin guards
Rock work	Crushed fingers and toes, back strain, loose footing, striking head with pry bar, abrasions, rocks rolling downhill	Gloves, shin guards, hard hat
Tree cutting	Falling branches and timber, spring poles, bees	Gloves boots, hardhat,
Alpine work	Back and arm strain, dehydration, overexposure to sun, rain or wind	Sunscreen, sunglasses, sun hat, adequate clothing and water, leave before storm

First Aid

Along with the risk of potential injury when performing trail maintenance and using tools, you may encounter injured hikers at some point in time. Having basic first aid knowledge and carrying a first aid kit is a must. First aid kits can be bought, or assembled by buying the individual items. Another helpful resource is a first aid manual. These booklets contain concise instructions for treating conditions that are common for hikers.

Recommended First Aid Kit Contents

This is a list of basic first aid supplies you may want to carry with you when doing trail work. It is not a detailed, or exhaustive list, and just a recommendation.

Antibacterial cream (like Neosporin)	Band-aids
Disinfectant (like alcohol pads or a spray)	Extra drinking water
First Aid Handbook	A flashlight
Pain relievers (Advil, Tylenol, Benadryl)	Notepad, pen, pencil

Adapted from the Appalachian Mountain Club *Trail Adopter Handbook*.

Further Readings:

[AMC's Complete Guide to Trail Building and Maintenance*](#)

*The Williston library has a copy of the second edition of the *AMC field guide to trail building and maintenance*

Birkby, Robert C. *Lightly on the land: The SCA Manual of Backcountry Work Skills*, Student Conservation Association, 2nd ed., The Mountaineers, Seattle, WA, 341 pp., 2nd ed.

Waterman, Laura and Waterman, Guy. *Forest and Crag. A History of Hiking, Trail Blazing, and Adventure in the Northeast Mountains*. 2nd ed., Appalachian Mountain Club, Boston, MA, 928 pp., 2003.

Waterman, Laura and Waterman, Guy. *Backwood Ethics. Environmental Issues for Hikers and Campers*. 2nd ed., The Countryman Press, Woodstock, VT, 280pp., 1993.

Literature Cited

AMC *Trail Adopter's Handbook*. 15th Edition, (December 2015). Retrieved June 18, 2019, from <https://www.outdoors.org/volunteer/volunteer-trails/adopt-a-trail>.

The Town of Reading, MA., *Reading Adopt-A-Trail Handbook 2012-06-14* (2012). Retrieved June 18, 2019, from <https://www.readingma.gov/adoptatrailprogram>

AMC's Complete Guide To Trail Building & Maintenance. Fourth Edition, (2008).