Maricopa Trail and Park Foundation

Trail Stewardship Program

Trail Crew Volunteer Training Manual

MARICOPA TRAIL AND PARK FOUNDATION

MARICOPA TRAIL AND PARK FOUNDATION

ABOUT

The Maricopa Trail and Park Foundation, a 501(c)(3) non-profit, tax-exempt organization, is dedicated to protecting, preserving, promoting, developing and maintaining the County's regional trails, open space, and parks for current and future generations. The Maricopa Trail and Park Foundation advocates to protect the natural heritage of the region; provides information and education; partners to provide important recreation facilities and amenities; and provides stewardship assistance through the management and training of the organization's volunteer programs.

The Foundation is aligned with the Maricopa County Parks and Recreation Department's Strategic Plan for future development and improvements in the Maricopa Trails and the County Parks System.

The Maricopa Trail winds through the County connecting 10 Maricopa County Regional Parks on a 315-mile scenic and diverse route. A network of volunteers actively help monitor, maintain and protect the 315 miles of trails.

This manual serves as a training guide for the Foundation's volunteers.

ACKNOWLEDGEMENTS

Maricopa Trail and Park Foundation
This manual was researched and authored by Rick Kesselman, Director of Training.
It is a compilation of information and techniques based on the training materials of Volunteers for Outdoor Arizona and other trail organizations.
A special thanks to Liz Turner for her assistance in the layout and editing of this Manual.
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The Maricopa Trail and Park Foundation's Trail Stewardship Program and training manuals are made possible with support from the Foundation's donors, grants, and environmental leadership provided by REI Co-Op, Arizona State Parks and the Federal Highway Administration Recreational Trails Program, Maricopa County Parks and Recreation Department, and Maricopa County.

The material in this manual is intended to provide training assistance and general guidance to volunteers. It is not a legal document. Volunteers for the MT+PF accept full responsibility for their actions. The Foundation may not be held accountable for actions by volunteers. For more information about the Maricopa Trail and Park Foundation, to donate and/or volunteer, go to MCTPF.org.

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INTRODUCTION

This manual has been prepared as a guide to those persons who have agreed to accept the position as a Maricopa Trail and Park Foundation (MT+PF) Trail Crew volunteer and to be part of the Foundation's Trail Steward Program. It provides the Trail Crew volunteers knowledge about the program and what is needed to conduct trail maintenance in a safe, enjoyable and productive experience as they maintain quality trails. It draws on the work of Volunteers for Outdoor Arizona and other trail-building organizations noted at the end of this manual.

The Maricopa Trail and Park Foundatoin is a nonprofit 501(c)(3) organization dedicated to protecting, promoting, developing and maintaining the Maricopa County Park Systems. Maricopa County has entered into an agreement with the Foundation to partner with the Maricopa Parks and Recreation Department (MCPRD) to provide trail maintenance, to enhance and to promote the Maricopa Trail and to ensure the environmental sustainability of the Trail. This will be completed in compliance with the trail planning and design guidelines established by MCPRD.

REGIONAL TRAIL STEWARDSHIP PROGRAM

The Foundation has developed a Trail Stewardship Program to help accomplish its goals. Its structure is the following. The Maricopa Trail is divided into approximately 36 segments in four to six regions. Each region will be assigned a Regional Steward. Each segment is assigned a Segment Steward. The four to six Regional Stewards each manage four to six Segment Stewards. Each Segment Steward manages his/her individual segment trail maintenance events and volunteers.

The Foundation's work is possible only because of the work of dozens of dedicated Trail Crew volunteers. The MT+PF seeks a network of volunteers who can actively help to monitor and to maintain the areas of land that need to be protected and preserved. With a limited number of Park Rangers and land management agency personnel on hand to manage the Maricopa Trail, volunteers are a focal point for land stewardship. Maricopa Trail volunteer learn how to "give back" to these beautiful trails and regional park areas that so many enjoy. Committing to as little as one or two days a year will make a significant difference to the Trail Stewardship Program. No experience is necessary.

The Trail Crew performs basic trail maintenance. The trail must be cleared of debris and obstructions to allow for safe access for all users. The Trail Crew moves rocks off the trail, prunes and brushes vegetation, performs some light basic trail maintenance (i.e. slough removal, clear existing drain dip areas, etc.), checks the condition and effectiveness of the directional signage and collects trash. Trail Crew volunteers are the heart and soul of these trail maintenance efforts.

BENEFITS OF PARTICIPATING IN THE MARICOPA TRAIL STEWARDSHIP PROGRAM

- Gain valuable new skills through free training programs and supervised work events.
- Gain valuable experiences for personal & professional enrichment.
- Improve and protect YOUR Maricopa Public Lands.
- Fulfill community service/school credit hours.
- Perform healthy activities with your organization, family and friends. Get in shape.

- Meet new people and make new friends while having fun.
- Set a good example for our children and our community.
- Share your time, skills and expertise.
- Build self-esteem.
- Enjoy the outdoors.

WHO CAN VOLUNTEER AND OTHER INFORMATION

Individuals 18 and over, and minors between 14-17 years, if accompanied by a parent or authorized adult, families, school students groups, corporation employee groups, local clubs, and Scouts. Work events can be tailored to the needs of that group. No pets are permitted.

The work events can take several different forms that may include several volunteers for a few hours to 20 volunteers at a full-day event. Usually, the events are scheduled on Saturdays, between the months of October and May. Event check-in is usually 7:30 a.m., the event begins at 8 a.m., and ends between 12 noon and 3 p.m., depending upon the specific event needs. Each volunteer is responsible for getting to the event check-in location.

SKILLS NEEDED

There are no technical skills needed. Skilled Crew Leaders will train Trail Crew volunteers at the event. Most events can accommodate a wide range of abilities. Event descriptions and fact sheets may include more detailed information. The MT+PF offers free training during the year for those who wish to improve their skills and gain additional trail-work knowledge. We take special pride in helping volunteers to maintain quality trails beginning with their first trail event.

Most, but not all tasks require a minimum physical skill level necessary, i.e. ability to walk on uneven and steep trails, hike several miles depending on the particular event, carry a tool as needed and perform light to medium level of work like clearing vegetation on and near the trail to rebuild eroded sections. Some people like to do the "heavy" work, such as rock removal from the trail, steep-slope tread maintenance, etc. Other people like to clear the corridor and use saws and loppers. Still others like to do the finishing work, such as grooming the trail and ensuring that esthetics have been given consideration and effort. The MT+PF provides all the tools.

There are other important jobs that do not involve trail work. These jobs include pre-event management, such as marketing, promotion, tool procurement and recruiting. On event day, additional volunteers are needed to set-up and assist in volunteer check-in, food/snack duties, photography and tool management.

SAFETY INFORMATION - SAFETY FIRST

- **Volunteer self-monitoring.** Volunteers need to self-monitor to protect their health and safety. This includes monitoring such needs as thirst, hunger, sunscreen application, wearing a hat and safety glasses, pacing yourselves, and remaining alert to environmental hazards such as poison ivy and poison oak, stinging insects and venomous creatures. Volunteers also must remember safety first. This includes monitoring their distance from other volunteers when working with tools, wearing closed-toe and sturdy work or hiking shoes when clearing debris or trails. (Sneakers may be acceptable on lighter work events). *Each volunteer is ultimately responsible for his/her own safety and the safety of others around*

him/her. Safety glasses should be worn when chipping rocks, pruning and brushing, working in dusty conditions, or performing other similar tasks or in the area of such operations.

- **Communication between workers**. When moving along a trail that has other trail workers, always announce your presence ("coming through") to workers, especially if they have tools in their hands, and make eye contact before passing them. When tossing rocks or dirt or cutting branches, be aware of others working in the immediate area. If there is a problem with a co-volunteer that cannot be resolved, immediately notify your Crew Leader. There is a No Tolerance Harassment Policy.

- **Walking distances**. Volunteers should be at least 10 feet apart when walking with tools in hand.

- **Working distances**. Volunteers should be far enough from each other when working so any tool use would not harm any volunteers in proximity.

- **Leaving the Area**. Advise the Crew Leader when leaving the area. Crew Leaders need to know where their Trail Crew volunteers are at all times.

- **Medical Conditions.** Make the Crew Leader aware of any medical conditions that may affect personal safety while working on the trail (heart condition, epilepsy, etc.). Notify the Crew Leader of any persisting situations such as allergies (bee stings, etc.), previous heat injuries, back problems, high blood pressure, etc.

- **Leave No Trace.** This encompasses not only trash, but also tools and clothing. It also means not disturbing or minimizing the disturbance of the area next to and around the trail tread.

HANDLING TOOLS

Improperly handling tools can cause serious injury to yourself or others. Always carry tools with your hands. Grasp the handle at the balance point. Carry tools down at your side, not on the shoulder, with the most dangerous part face down. Hold the business end of the tool in front of you. Carry only one tool in each hand. When carrying one tool, hold it in the downhill hand. It you are falling, throw the tool away from yourself and others. Tools are stored on the uphill side of the trail with the handles nearest the trail. Don't throw tools to the ground. Choose the right tool for the right job. The wrong tool can force you to work in an awkward position or exert more force than is necessary, wearing out the tools and you.

Posture is important. Be alert for hazardous footing. Make sure you have a firm, balanced and comfortable stance before starting your work. Clear the area you are working of tree limbs, sticks, loose rocks and other debris from your footing area. Make sure your feet are well away from your target area, particularly when you are using a striking tool.

Think about the consequences of every move. If working with a rock or log, plan where to stand when the item moves. Be ready to toss your tool aside and jump free. Avoid cutting toward any part of your body and watch out for coworkers. Maintain at least 10 feet between workers as a safe operating distance when using individual chopping and cutting tools. Use skill, not brute force.

Note: Photos of commonly used trail maintenance tools on the next several pages serve only as visual examples and in no way serves to endorse a specific brand.

COMMONLY USED TOOLS

Pick Mattock. The pick mattock is often recommended as the standard tool for trail work. It has a pointed tip for breaking rocks and a grubbing blade for loosening compacted soil. The grubbing blade also may be used to cut roots or remove bushes and small stumps. A pick mattock can be used to pry rocks.
Watch for overhead or side hazards. A hazard is anything that can interfere with the completed swing of your tool, knocking it from your hands or down onto any part your body. *Keep the tool in front of you at all times. Do not swing a tool over your head.* If you are within a tool-length distance of another worker who is swinging a tools (circle of death), you are in danger of being gravely injured. Always stay at least 10 feet from another worker and ensure others stay outside your circle of death before swinging.

Pick Mattock
Note point/spike on one side and adze on the other.

Cutter Mattock
Note ax on one side and adze on the other.

McLeod. The McLeod combines a heavy-duty rake with a hoe. McLeod's work well on trails with light soils and vegetation or for removing and reestablishing tread when material from the backslope sloughs onto the trail. A McLeod is essential for compacting tread and is helpful for shaping the outslope and backslope. McLeod's are inefficient in rocky or unusually brushy areas.

The McLeod

Bow Saw. This saw is useful for clearing branches from trees. It consists of a tubular steel frame that accepts replaceable blades.

Bow Saw

Folding Hand Saw. This is a small hand-held saw used for smaller cuts or to get into tighter areas than a bow saw.

Folding Hand Saw

Pole Saw. The pole saw is used to cut branches that are out-of-reach. Safely plan the cut and where the branch will fall to protect yourself and those around you. Advise nearby coworkers as to what you are doing and clear the area.

Pole Saw

Tools continued.

Shovel. The round point shovel is used for digging. The square shove, a flat-bottomed model, intended for shoveling loose materials, not digging. *When scooping materials, bend your knees and lift with your legs, not your back.* Push the shovel against your thigh, which serves as a fulcrum. This makes the handle an efficient lever and saves your energy and your back. Don't use the shovel to pry objects out of the trail—that's a job for a pick or a rock bar.

Point Shovel | Square Shovel

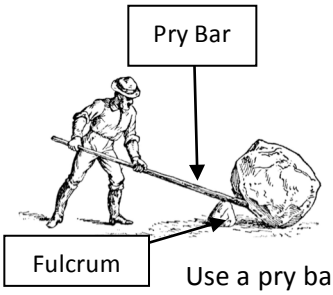
Lopping Shears. Lopping shears have long handles to increase leverage for thicker stems. They are used to trim trees and bushes. Hold them at the ends of the handle and make straight cuts. Do not twist a lopper during cutting. It may damage the tool or leave an ugly or wounded plant. Pruning shears are small enough to fit in one hand and are designed to cut small stems and branches.

Lopping Shears

Rock bars. Use a rock bar, also called pry bar, for lifting or skidding large, heavy objects. These bars are heavy duty. They have a chisel tip on one end. The other end can be rounded or pointed.

Place the tip of the chisel under the object to be moved. Wedge a log or rock between the bar and the ground to act as a fulcrum. Press the handle down with your weight over your palms. Never straddle the bar when prying. When the object rises as much as the bite allows, block it and use a larger fulcrum or shorter bite on the same fulcrum to raise the object farther.

The rounded end of a rock bar is great for compacting material into rock cracks when armoring trail. You also can use the pointed end to break large rocks by jabbing the point into a crack and twisting.



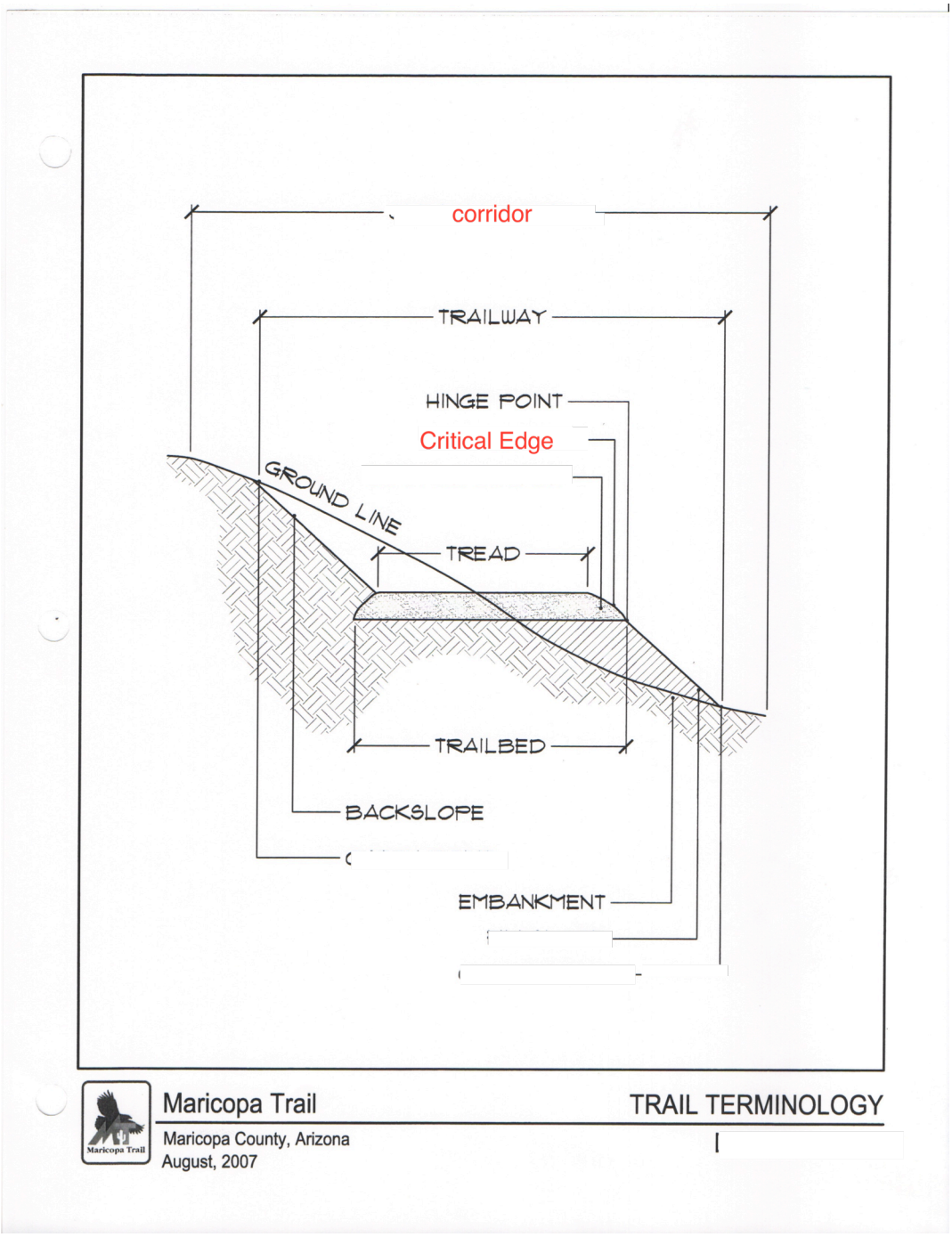
Use a pry bar/rock bar to lift heavy rock.

CORRIDOR MAINTENANCE

A corridor is the full dimension of the trail that extends to the area of both sides of the trail tread and the space above the trail. The entire corridor needs to be cleared of brush; debris and obstacles to make it passable for all trail users. The tread is the width of the traveled portion. It is usually 2 to 4 feet wide. The trail (trailway) is the width of the tread plus 2 to 4 feet on either side of the tread. The corridor height is 8 to 12 feet above the trail. The exact dimensions of the corridor are determined by the needs of the trail users and the Land Manager's standards.

See corridor graphic on next page.

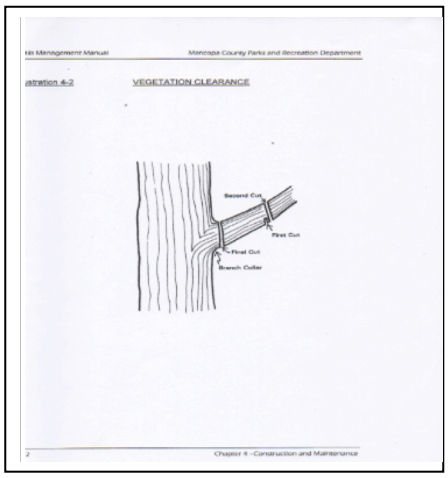
CORRIDOR MAINTENANCE GRAPHIC



Brushing/Pruning/Grubbing. Brushing is the removal of plants, bushes and tree vegetation in the trail corridor. It encompasses pruning and grubbing. Pruning is the cutting of trees and branches that are outside the tread but within the corridor. Grubbing is the removal of both living and dead vegetation from the tread. Loppers, bow, hand and pole saws are the tools to use.

When pruning, remember new growth will grow back in the cut areas. Be sure to remove enough growth to allow the corridor to remain unobstructed for a long period of time. Except when confronted with rare plants, err on the side of over-cutting. Cut branches where they intersect with the trunk or branch from which they are growing. Do not cut the middle of a branch. Tuck the cuttings under similar vegetation off the trail with the cut end facing inward. Do not leave them in piles. Shape plants and trees to a natural, rather than a “haircut” look. This may involve pruning on all sides of the tree or branch to keep it looking natural.

When removing a branch, use a three-step process. The tree collar is a bulge at the bottom side of the junction of a branch with the trunk. The first cut is 6 to 10 inches above the collar on the bottom side of the branch to be removed. Make a small cut in the branch, no more than one-quarter of the diameter of the branch. The second cut is on the top of the branch 3 to 4 inches further up the branch. Continue cutting at this area until the branch is totally cut. Two persons should be assigned to saw large branches. One person saws while the other person is positioned to remove, but not catch, the falling branch. Make sure the area is free from other workers. The last cut removes the “hat rack." This final cut should be close, but not flush with the trunk, approximately one-half inch from the collar. First make a shallow cut around the circumference through the bark to prevent banana peeling. Then cut off the protruding branch, the “hat rack."

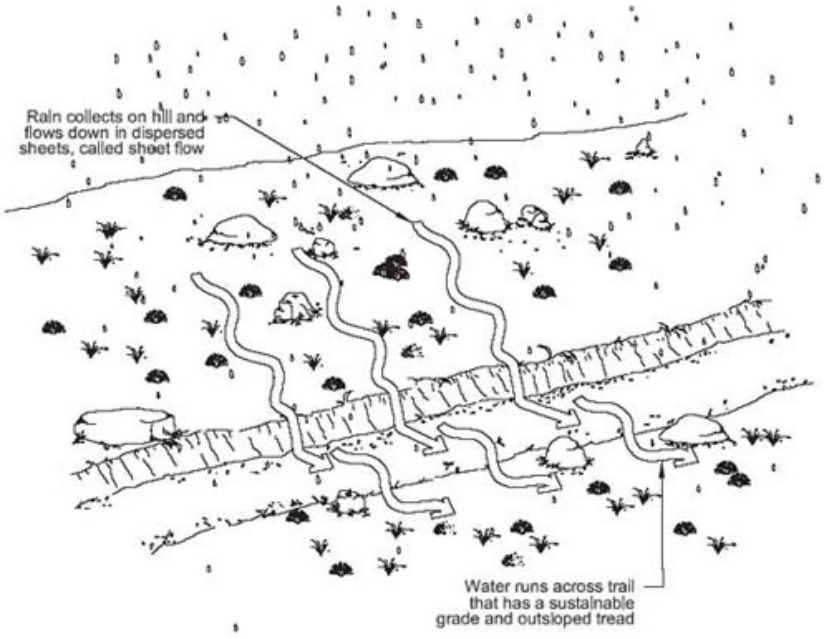


When grubbing, remove the entire root ball to prevent it from re-generating. When grubbing larger plants, first prune them back to get better access to the root ball. When highly valued or rare plants cannot be trimmed and must be removed, consider relocating them.

Trail Maintenance. Trail maintenance includes clearing the trail of all vegetation and debris; properly shaping the backslope to allow a smooth sheet flow off the hillside onto, across and off the tread; removing any slough; restoring the tread to the designed width; reshaping the tread and restoring it to the correct outslope. Outslope is a method of tread construction that leaves the outside edge of a trail lower than the inside in order to shed water off the trail. Generally the tread should have an outslope at about 2 percent except where there is a drainage dip built into the tread where it can be up to 8 percent. Trail maintenance also includes removing any berm buildup on the outer edge of the tread and maintaining the drainage outlets so that they are properly sloped and free of any obstructions. Clearing the tread includes removing obstacles such as protruding roots and rocks.

See diagram next page.

A rolling contour trail lets water sheet across the trail. A properly maintained trail prevents sheet flow from being channeled down the trail, where it could cause erosion.



On hillside trails, ***slough*** (pronounced ***sluff***) is soil, rock, and debris that has by wind or rain washed from the hillside down to the inside of the tread, narrowing the tread and leading to tread creep. Slough that is not removed is the main reason trails "creep" downhill.

Sloughing makes the outside edge of the trail the flattest place to walk. Many trail users have a natural tendency to travel that flat edge. Backslopes that are too steep may slough material onto the tread, narrowing the trail. Your job is to bring the trail back uphill to its original location and design and keep it there.

Remove the slough by loosening the compacted slough with a pick-mattock. Using a McLeod, pull the slough into the center of the tread. Blend the slope back into the hillside. Using a shovel, remove the soil disbursing it randomly on the downhill slope. Do not drag this excess soil downhill over the outside edge. Finally, reshape the tread to restore outslope and remove any loose soil. Avoid disturbing the entire backslope unless it is absolutely necessary to do so. Then compact the tread thoroughly.

Berms are made of soil that has built up on the outside of the tread forming a barrier that prevents water from sheeting off the tread. Berm formation is the single largest contributor to erosion of the tread. Not all berms are bad. Some are designed into the trail for various purposes. Check with the Segment Stewards or Crew Leader to determine if a particular berm should be removed. To remove berms use the pick-mattock, shovel and McLeod. Disburse all removed material randomly on the downhill side of the tread. After removing the berm, restore the disturbed area back to its designed condition and slope.

Clearing Rocks From the Trail. Loose stones and rocks on the tread can impede the flow of water off the tread and are an obstacle and uncomfortable to users. Remove all loose rocks and stones bigger than 2 inches in diameter. When rocks are dislodged from the tread, fill in any holes with dirt and compact it to the level and slope of the surrounding tread.

When picking up rocks, use the power of your legs not your back. *The two most common injuries in rock work are pinched (or smashed) fingers and tweaked (or blown out) backs.* Skidding rocks is easiest. Rolling them is sometimes necessary. Lifting rocks is the last resort. Both sets of injuries are a result of using muscles first and brains last.

Safety first. Be careful no one is in the line or area where you are tossing the rocks. Plan where the rock should go and anticipate how it might roll. Spread rocks randomly on the downhill side of the trail to look natural.

Maintaining Drain Dips (Grade Reversals). The single most important determinant of trail sustainability is how well it sheds water. The biggest issues with all trails, even in the desert, are how the trail affects water flow and how the trails are affected by water flow. A drain dip is a carefully shaped depression built into a trail to divert water from the trail. It is a reverse in the grade of the trail tread, accompanied by an outslope, which will divert water off the trail tread. To function properly, drain dips need to be maintained. Sediments and debris that build up in the trough must be removed and the tread surface reworked to restore their shape and outslope.

Check your Work. *When working, look at the area from a distance down the trail from both ends to see if it looks correct. Do it right rather than fast. Be proud of what you do. Most importantly, be safe, learn and have fun while doing quality work.*

CHECK SIGNAGE

Check that there are enough signs and cairns visible to users coming from both directions on the trail that clearly show the direction of the trail. Do any signs need to be added, repaired, removed or replaced?

LEAVE NO TRACE IN TRAIL WORK

The objective is to leave the work area in as natural in appearance as it was found and minimize the effect of the activity.

During work activities, attempt to confine your movement to the tread, thereby minimizing the destruction of the area outside the trail. Do not, if possible, stand on the downhill area of the tread while cutting and shaping the tread or removing slough and berm from the existing tread.

Try to thinly disburse excess material (duff and soil) outside of the corridor on the downhill side of the trail to keep the area looking as natural as possible.

MAKE A DIFFERENCE! HOW TO VOLUNTEER

Please contact us to volunteer. Let us know the best way to reach you (telephone or email) and what kind of work you are interested (if known). Contact us by telephone, email or through our website. We do not share our volunteer contact information with others.

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HOW TO DONATE

The Maricopa Trail and Park Foundation is incorporated and recognized as a public charity or 501(c)(3) tax exempt organization by the IRS. Donations help make it possible for the Foundation to continue the work on the Maricopa Trail. Donations may be made online or by check mailed to the MT+PF address.

GLOSSARY OF TERMS

Access Trail. Any trail that connects the main trail to a road or another trail system.

Alignment (**Tread Alignment**). The exact route taken by a trail.

Archeological site. An archaeological site is a place (or group of physical sites) in which evidence of past activity is preserved (either prehistoric or historic), and which has been, or may be, investigated using the discipline of archaeology and represents a part of the archaeological record.

Backslope. The hillside area immediately uphill from the tread that is cut away to allow water to flow slowly, rather than drop onto the trail like a waterfall.

Branch Collar. The swelling in a woody plant that forms at the base of a branch where it is attached to its parent branch or to the tree's trunk.

Berm. A build-up of dirt, mounded soil, sand or other material along or next to the outside edge of the tread.

Brushing. The removal of plants, bushes and tree vegetation in the trail corridor to allow trail users unobstructed movement and visibility while still preserving the natural look of the area. A significant threat to trail integrity comes from plants and trees growing into trail corridors, or from trees falling across them.

Clinometer. A hand-held instrument for measuring the grade of a trail and slope of the cross slope (hillside).

Contour Lines/Trail. A line on a map that joins points of equal elevation. If the trail follows the hillside contour, it neither gains nor loses elevation.

Corridor. The full dimensions of the trail which include the tread and both sides of the trail and the space above the trail that needs to be cleared of brush, debris and obstacles to make it passable for all users. The dimensions of the corridor are determined by the needs of the target user and the Land Manager's standards.

Critical Edge. The rolled outside edge of the trail that insures that water will leave the trail when it reaches the outer edge. Rounding the outside edge helps water to leave the trail.

Cross Slope. This is an important cross-sectional design element of a trail tread. The cross slope allows the water to drain from the tread laterally and helps minimize or eliminate the flow of water down the tread, which causes erosion. Cross slope is provided to provide a drainage gradient so that water will run off the surface of the tread and off the downside of the tread to a drainage system or ditch. Treads are usually constructed with a 2 to 3 percent cross slope.

Duff. A layer of decaying organic plant material deposited on the surface of the ground principally comprised of leaves, needles, woody debris and humus.

Drainage Dip. A carefully shaped depression built into a trail to divert water from the tread. A reverse in the grade of the trail bed, accompanied by an outslope, which will divert water off the trail tread.

Erosion. The gradual wearing-away of land surface materials, especially rocks, sediments, and soils, by the action of water, wind or trail users. Trail erosion can be accelerated by a combination of water, gravity and trail users.

Fall Line. The direction unimpeded water flows down a hillside (slope).

Full Bench Cut. The total width of a newly constructed trail tread that is excavated out of the hillside and the trail tread contains no compacted soil.

Grade. The amount of elevation change between two points over a given distance expressed as a percentage. Commonly known as rise over run. A trail that rises 8 vertical feet in 100 horizontal feet has an 8 percent grade.

Grade Reversal. A reverse in the trail grade, usually a short dip followed by a rise that forces water off the tread.

Gradient. The degree of inclination or rate of ascent or descent; incline, steepness. Gradient can be expressed numerically in many ways. One common way to describe the average steepness or gradient between two points is to state the difference in elevation (ED) divided by the horizontal distance (HD).

Grub (**Grubbing**). To dig or clear roots and tree stumps near or on the ground surface of the trail tread.

Half Rule. A treads grade shouldn't exceed half the grade of the sideslope. If the grade is steeper than half the grade of the side slope, it is considered a fall-line trail.

Hollowing Out (**Cupping**). The formation of a trench within the tread usually caused by user traffic or water.

Inslope. The slope of the trail tread toward, rather than away from the backslope of a hillside.

Invasive Species (**Flora/Fauna**). An invasive species is a plant, fungus, or animal species that is not native to a specific location (an introduced species), and which has a tendency to spread to a degree believed to cause damage to the environment, human economy or human health.

Kiosk. A small physical structure that displays information for people walking by. They are common near trailheads where they provide trail users with maps, warnings and other relevant information.

Outflow. The direction and area that the water flows off the trail.

Outslope. A method of tread construction that leaves the outside edge of a tread lower than the inside, in order to shed water off the trail. Generally the tread should not have an outslope greater than 2 percent except where there is a drainage dip built into the tread where it can be up to 8 percent.

Pruning. The removal of vegetative growth that intrudes into the defined trail clearing area of a trail.

Sheet Flow. The flow of rain water that spreads and flows downhill on a thin sheet. It is the primary cause of trail erosion by water.

Sideslope. The natural slope of a hillside measured on the fall line.

Slope. The measure of steepness or the degree of inclination of a feature relative to the horizontal plane. Gradient, grade, incline and pitch are used interchangeably with slope. Slope is typically expressed as a percentage. The slope is obtained by dividing the rise over run. Multiply this ratio by 100 to express slope as a percentage.

Slough. (Pronounced "sluff"). Soil and debris washed down from the backslope onto the trail bed and uphill (inside) side of the trail.

Social Trail. Unplanned/unauthorized trails that develop primarily through human and animal traffic and are not maintained by any land manager.

Trail. A defined route.

Trail (**Travel**) **Corridor**. The full dimensions of a route, including the tread and the area on either side and above the tread. This area is usually 3 to 4 feet to either side of the tread plus the tread width. This area also extends 8 to 12 feet high depending upon the type of trail users.

Trail Profile. A list of a trails characteristics, including but not limited to, length, width, soil composition, trail grade, elevation change, GPS coordinates, degree of difficulty, season of use.

Tread. The travel surface of the trail.

Tread Watershed. The area of a tread watershed extends from the ridge top down to the trail and along the trail crest to a grade reversal.

TOOL DEFINITIONS

Loppers. A cutting tool used for pruning, especially for bushes and trees. Do not use it to cut limbs greater than 2 inches in diameter. Do not twist the handle when cutting a branch. This can bend the blade.

Bow Saw. A metal-framed crosscut saw in the shape of a bow with a coarse wide blade used for cutting branches.

Folding Saw. Similar to a bow saw, but smaller and easier to carry. Easier to use in tight places.

Pulaski. A hand tool commonly used for wild-land firefighting and trail work. It combines an axe and an adze (hoe) in one head. It can be used to both dig soil and chop wood.

Pick Mattock. A versatile hand tool used for digging, grubbing and chopping. The head comprises of two ends, one end is a pick and the other an adze (hoe).

Pole Saw. A small curved saw blade mounted on a long handle used for pruning branches beyond arm reach.

Post Driver. Also called a post pounder, post knocker or fence driver. A tool used for driving fence posts and similar items into land surfaces. It consists of a heavy steel pipe, which is closed at one end and has handles welded onto the sides. One person normally uses it, but larger versions may require two.

McLeod. It is a standard tool used during trail work. The combination tool has a large hoe-like blade on one side and a tined (teeth like) blade on the other. It can remove slough and berm from a trail, tamp or compact tread, and can shape a trail's backslope. The head of a McLeod is not made for pounding so use it for shaping, not swinging.

Rock Bar. A long, straight metal bar used as a hand tool to deliver blows to break up and loosen hard or compacted materials (e.g., soil, rocks, concrete) or as a lever to move objects. It is also used to pry heavy boulders and rocks from the ground. Often the key to using a rock bar is leverage.

Shovel. An implement consisting of a broad blade or scoop attached to a long handle, used for taking up, removing, or throwing loose matter, such as earth. Shovels should never be used to pry rocks. Back injuries are the most common injuries associated with shovels. Remember to bend from the knees instead of the waist, and lift with your legs not your back.

Sledgehammer. A large, heavy hammer used for such jobs as breaking rocks and driving in fence posts.

MARICOPA TRAIL AND PARK FOUNDATION
TRAIL STEWARDSHIP PROGRAM
VOLUNTEER TRAINING MANUAL REFERENCES

REFERENCE AND RESOURCES

Volunteers for Outdoor Arizona Training Materials
"Equestrian Design Guidebook for Trails, Trailheads, and Campgrounds 2007"
"United States Forest Service Trail Construction and Maintenance Notebook"
"Lightly on the Land, The SCA Trail Building and Maintenance Manual, Second Edition 2005"
"IMBA Trail Solutions 2004"
Arizona Trail Association Training Materials
Maricopa County Trail Design and Construction Manual
Volunteers for Outdoor Colorado
Okanogan Trail Construction Co.