

THE TRAIL FORUM

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Jefferson County Open Space Natural Surface Trail Maintenance Management Plan

By Jeff Bartlett, Trails Specialist, Jefferson County Open Space

This issue of The Trail Forum continues the theme of trail maintenance management. Our last article looked at a maintenance management system used by the U. S. Forest Service. The following article examines the system used by a large county parks agency in the foothills west of Denver, Colorado.

This year will mark the twenty-fifth anniversary of Jefferson County Open Space (JCOS) and its award winning trails program. In that time the program has enjoyed an high level of public support. In a recent survey, Open Space trails received a 88% satisfaction rating from its users, and public opinion polls cite a desire to purchase additional land and further expand our trail system.

With that in mind, we'd like to provide a simple overview of our maintenance plan here at JCOS. If a lot of this sounds vaguely (or strikingly) familiar, just remember what Robert Frost said, "An idea is a feat of association." In fact, much of this process evolved out of the guidelines set forth in the National Park Service's *Trail Management Handbook* developed by Len Hooper.

INSPECTION

Any good maintenance program begins with a means of locating and identifying problems, such as excessive erosion, vandalism, safety issues, and potential areas for re-alignment. To do this, we begin with detailed maps of each of our trail systems, manually drawn on enlarged USGS 7.5 minute quads (*see Figure 1*). We are currently gearing up to convert this to GPS/GIS (Magellan Type).

These maps include trail-specific numerical stations at least every thousand feet along the trail and are virtually always associated with an observable landmark such as a switchback, a junction, a rock wall, etc.

A table with each point, its associated landmark, and the linear distance from the beginning of the trail are included on the back of each map (*Figure 2*).

Armed with this resource, we use both volunteers and staff to inspect our trail system.

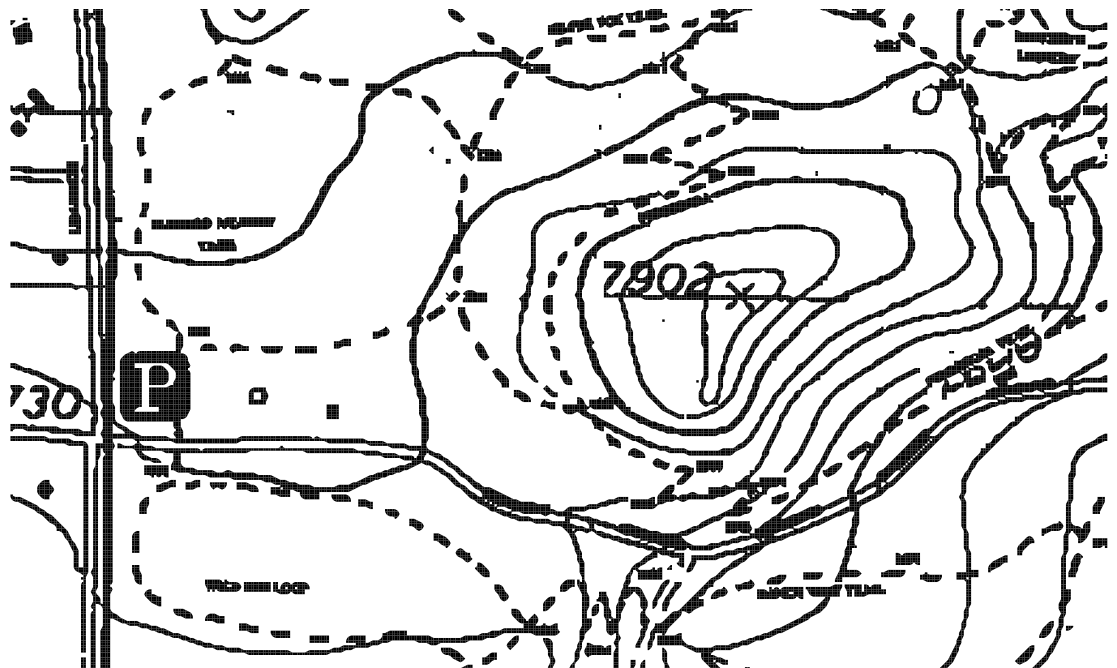


Figure 1 – Section of Alderfer Three Sisters Park trail inspection map.

ALDERFER THREE SISTERS

STATION	FEATURE	LINEAR DISTANCE
0014	Junction with Fenderosa Trail	0
0101	90 degree turn to north	305
0102	End of trail @ lookout	1104
0201	South junction with Western Trail	320
0302	Junction with Winwood Trail	729
0403	Drain dip	1130
0504	Band in trail from NE to NW	2102
0605	Open band in trail from N-NE to N-NW (Hazard noted trail to west)	2720
0706	Working through patch, turn 180° north	3307
0808	North junction with Adams Trail	4172
0901	South junction with Adams Trail	0
TOTAL		+/- 1300

Figure 2 – Example of the chart used to identify points on the trail log maps.

VOLUNTEER TRAIL INSPECTORS

Our Volunteer Trail Inspector Program typically draws between twenty and thirty individuals annually. In the spring of each year, the new volunteers are given a 4-6 hour induction, then spend an equivalent length of time on a park learning what a trail “should” look like. Each volunteer is asked to dedicate approximately six hours a month, and are assigned specific trails to inspect each month. These trail inspection assignments are changed monthly.

We rely on this group to patrol each and every mile of trail in our system at least once a month during peak periods of use. They are charged with finding and reporting major new problems (a washout for instance), immediate safety concerns, missing signage, or vandalism. (Situations which might compromise the safety of park users are dealt with the next working day where possible.) More detailed inspections are left for our staff.

STAFF INSPECTIONS

JCOS employs eight permanent Trail Specialists year-round. Trail Specialists patrol the entire system at least four times a year, identifying the more technical needs of the system (sites requiring new water bars, check dams, or possible reroutes). Projects are noted on inspection/assignment forms (*see figure 3*) which asks for the pertinent information in the format of our trail maintenance database.

DATABASE

As information is collected it is entered into a database we developed using Quattro Pro. At this time, there is a separate database for each park. Projects are entered in fields for “Trail Number,” “Site Code,” “Work to be Done,” “Priority,” “Special Tools Required,” “Reported by,” and “Date.” This information can then be sorted according to trail name and/or project priority and printed directly to an assignment form. Completed assignments are automatically sorted out and transferred to a “Completed Tasks” archive which we maintain both as a record of work performed and as a guide for identifying problem sections of trail.

WORK CREWS

In addition to our permanent staff, JCOS typically employs 10-15 seasonal technicians in addition to our summer Youth Work Program (discussed later). As stated earlier, safety issues are typically dealt with immediately by any available member of staff. Other issues identified during our inspections are typically dealt with by crews of 1-5 seasonals under the direction of a permanent staff member. At least one such crew is assigned to maintenance issues on any given work day throughout the 6-9 month “summer” season.

ALDERFER/3 SISTERS ASSIGNMENT SHEET				DATE _____	
0 ALL TRAILS 1 BROTHERS SKT 2 HIDDEN FAWN 3 PONDEROSA 4 SISTERS 5 WILMONT 6 RANCH VIEW					
7 EVERGRN EAST 8 EVERGRN WEST 9 WILD IRIS 10 BLUEBIRD 11 HOMESTEAD 12 SILVERFOX 13 SUMMIT					
1. ASSIGNMENTS (When completed fill in date)					
FINISH	TRAIL	TASK	TOOLS	PARK#	
	3	north and west of 0314 install log check dam		54	
	3	at 0306 rebuild switchback with log	4	51	
	3	50 yards down from 0312 ned 3 soil water bars		58	
2. FUTURE WORK (Indicate in table below)					
1 CHAINSAW 2 POLESAW 3 PRUNERS 4 PIONJAR 5 WHEELBARROW 6 COMEALONG 7 BRISTAR					
8 DEFLECTOR 9 WOLMANIZED POST					
TRAIL #	TRAIL DESCRIPTION			TOOLS	PARK#

Figure 3 – Example of the trail inspection/assignments form used by JCOS.

LIGHT MAINTENANCE

Light Maintenance, or “bars & drains,” takes place at least three times a year on the entire system, but may be increased as conditions warrant. This is a "quick and dirty" run through the system to insure the basic integrity of the trails. This includes cleaning and servicing water bars and drains, tightening signs and posts, racking loose rock, and performing light corridor clearing.

HEAVY MAINTENANCE

More significant projects, such as installation of new water bars, check dams, or turnpikes, and rebuilding switchbacks, rock walls, or similar structures are scheduled throughout the year. A crew is typically assigned a park then allocated whatever time is necessary to deal with all of the items on the trail log. Heavy maintenance can also include re-establishing cant by either knocking down the outer berm or filling in concave trail with imported materials, Pionjaring or otherwise removing embedded rock, major corridor clearing (including line of sight improvements), and revegetation efforts.

YOUTH WORK PROGRAM

In addition to the above-mentioned resources, JCOS trails department also employs approximately 100 teenagers and 12 - 14 crew leaders for a seven week period during the summer months. This work force provides a unique level of maintenance. When unleashed on a trail system, these kids work every foot of trail, restoring it to like-new conditions wherever practical. This can include removing encroaching vegetation, re-establishing outslope, and rebuilding failed erosion control devices.

The YWP works through all of our parks each year, targeting trails with high levels of use. The balance of the trails on those parks have similar levels of maintenance completed on a three-year rotational cycle. Our goal is to cover 65-75 miles of trail each year with this work force. They also provide a supplemental work force for other heavy maintenance and construction projects.

REROUTES

Our trail log currently contains several proposed reroutes ranging in length from a hundred yards to over a mile. These are typically sections of trail that have been identified as perennial problem spots.

STATISTICS

Our current management process has evolved over the course of the past decade. During that time we have averaged approximately 45hrs/mile for staff and 250hrs/mile for our Youth Work Program.

The feeling among our staff is that the implementation of this process has increased our efficiency. We are much better at identifying problem locations, tracking work required and when it is completed, and identifying the special needs of a project. It also manages to keep the less interesting or difficult projects from falling through the cracks.

WHAT A DYNAMIC BUSINESS!

In Jefferson County we are extremely fortunate to have strong support from our community, both financially and philosophically. At the same time, we are being asked to help protect a resource which lies in the backyard of a thriving metropolitan area. Last year our 110 miles of natural surface trails carried over one million users, a figure which will only increase as our population climbs and subsequently eats up the remaining open spaces. Increasingly, our jobs will be to help protect a diminishing resource while allowing more and more people to use and enjoy that resource. Subjects like carrying capacity, user conflicts, multi-use vs. segregation, and maintenance standards will become vital. Increasingly we find ourselves asking far-reaching questions like, "What constitutes a legitimate hazard or liability?" "Can we provide for everyone's needs?" "Can we (or should we) create situational standards?" "Are our customers always right? and if not, how do we handle it?" We'd like to urge all of you to take advantage of this forum to share ideas and methods, both good and bad, so we can all meet those demands in the years ahead. Should you like to have additional information or have specific questions about the information above please contact Kim Frederick at (303) 271-5987.

New Trail Building Publications

A Handbook on Trail Building and Maintenance

By Stephen S. Griswold; Fifth Edition;

While this book was prepared for use at Sequoia and Kings Canyon National Parks, the basic principles are applicable to most trail situations. The author has distilled the experiences of building and managing this 800-mile trail system into a well-organized manual. The 136 pages of text are supplemented with over 50 drawings of tools, techniques, and details of construction. Topics covered include: Trails and Trailworkers, Backcountry Living, Trailwork and Tools, Trail Maintenance Standards, Rockwork Construction Standards, and Log Structure Standards. Details of techniques include drainage, bridges, trail rehabilitation, walls, fences, gates, signs, and much more.

A Handbook on Trail Building and Maintenance is available for \$10.95 (add \$3.50 shipping; Calif. residents add .84 sales tax) from Sequoia Natural History Association, HCR 89 - Box 10, Three Rivers CA 93271-9792; (209) 565-3758; Fax (209) 565-3728; E-mail: a-seqnha@inreach.com

Trail Planning, Construction, and Maintenance: A Bibliography Supplement

By Jean Albrecht, Forestry Library, College of Natural Resources, University of Minnesota, St. Paul

Trail Planning, Construction and Maintenance: A Bibliography was first published in 1984. The purpose is to bring together literature that will enable trail planners, managers, and users to benefit from what others have learned through research and experience. The new supplement is a World wide Web server which can be accessed at this Internet address: <http://minerva.forestry.umn.edu>

Print copies of the 1992 edition are available from the Interlibrary Loan Division, St. Paul Campus Libraries, 1984 Buford Ave., St. Paul MN 55108; fax (612) 624-9245. Please submit requests on standard interlibrary loan forms through your nearest library (USDA employees, use Standard Form AD-245).

The Trail Forum is intended to bring the latest technical information on trail design, construction, and maintenance to the trails community. Articles, information, and suggestions are always welcome. Please contact Lois Bachensky, USDA Forest Service, R-2 Engineering, P O Box 25127, Lakewood CO 80225 (303) 275-5199; Fax (303) 275-5170
