Chapter 2—Planning Trail Systems

In 2005, 3.9 million horses were used for recreation in the United States, more than a third of the country's 9.2 million horses. All but five States have 20,000 horses or more (American Horse Council 2005). Many of the country's 2 million horse owners seek community and backcountry trail riding opportunities. Recreationists with physical challenges also turn to horses and mules to enjoy outdoor activities that would otherwise be unavailable to them.

The goal of equestrian trail planning is to enable accessible, safe, and pleasurable trail riding opportunities with few environmental impacts. Many communities and agencies are exploring ways to combine trail uses to provide the greatest number of recreation opportunities. Successfully blending horse use with other nonmotorized recreation can maximize opportunities while conserving natural resources. Figure 2–1 shows an example of *blended use*—a seasonal trail successfully shared by different users. By incorporating *universal design principles*—those that include all people—planners ensure access for a greater number of users. *Chapter 11—Designing for Riders With Disabilities* has more information on universal design principles.

Figure 2–1—Unused roads have great potential as year-round or seasonal trails for compatible nonmotorized uses.

Many agencies and municipalities are developing trail system master plans that include and encourage nonmotorized trail use. Such plans provide a framework for the trail system and identify opportunities to improve or expand offerings. This chapter offers an overview of planning concepts used in some areas of the country. For one useful approach, refer to *Appendix D—Trail Proposal and Evaluation Process: Open Space and Trails Program (Pitkin County, CO)*. The appendix covers issues that must be addressed during the development, construction, or maintenance of most trails.

Trail Talk

Trail Planning Steps

Mitchell Overend and Jeff Owenby (1998) look at horse trail planning as a series of steps. They include:

- ✯ Thorough analysis of the area
- ✯ Development of a trail master plan
- ✯ Predesign coordination with potential users
- ✯ Consideration of a unique set of design parameters associated with horses and riders
- ✯ Recognition of potential management and maintenance problems created by natural erosive forces

Benefits of Trail System Planning

Trail systems may be a series of local and regional trails that link with existing or planned trails. Well-planned trail systems increase the quality of user experiences and offer benefits to the broader community. Well-planned trail systems:

- ✯ Conserve the natural environment, native species, and wildlife corridors
- ✯ Provide an alternative to motor vehicle travel by linking other trail systems, parks, open spaces, areas of concentrated activity, and trailheads
- ✯ Provide access to otherwise remote areas that may be difficult to access
- ✯ Provide increased opportunities for healthy physical activity and recreation for all ages

- Potentially increase land and property values, benefiting local and regional economies
- Conserve traditional equestrian use areas and neighborhoods, thereby preserving a distinctive lifestyle choice
- Provide opportunities for funding partnerships and resource sharing

Trail system master planning follows the same general principles used for roads, highways, and bicycle paths. All these routes are linear and link people with destinations. Some trail systems are *multimodal*, incorporating numerous forms of transportation. The best trail systems provide loops and links, avoid potential issues and conflicts, and offer the public the most travel and recreation choices.

Planning successful trail systems depends on identifying essential elements, including:

- Existing trail opportunities, issues, and constraints (multimodal, if appropriate)
- Existing and potential users (multimodal, if appropriate)
- Existing and potential right-of-way requirements
- Unsafe corridor conditions and potential solutions
- Design and user elements that appropriately enhance the corridor
- Optimal and minimal requirements to operate and maintain the system

Trail Talk

Forest Trail Fundamentals

The Forest Service uses five fundamental cornerstones for trail planning and management:

- *Trail Type*—Reflects the predominant trail surface and the general mode of travel accommodated by the trail. The three types of trails are standard/terra trails, snow trails, and water trails.
- *Trail Class*—Indicates the prescribed scale of trail development, representing the intended design and management standards of the trail. Trail classes range from minimal/undeveloped to fully developed. Trail classes are defined in terms of the trail tread and traffic flow, obstacles, constructed features and trail elements, signs, and typical recreation environs and experience.
- *Managed Use*—Indicates the modes of travel that are actively managed and appropriate on a trail, considering the design and management of the trail. There may be more than one managed use per trail or trail segment. Managed uses include: hiker and pedestrian, bicycle, pack and saddle, all-terrain vehicle (ATV), motorcycle, cross-country ski, snowmobile, motorized watercraft, and nonmotorized watercraft.
- *Designed Use*—Reflects the intended use that controls the geometric design of the trail, and that determines the subsequent maintenance parameters for the trail. One managed use is identified as the designed use. There is only one designed use per trail or trail segment.
- *Design Parameters*—Include the technical guidelines for trail survey, design, construction, maintenance, and assessment, based on designed use and trail class. Design parameters include tread width, surface, grades, cross slope, clearing, and turns.

User Involvement in Trail Planning

When urban trails are not available, riders may be forced to share roads with motorists. A similar situation can occur along rural roads or highways. Review existing policies and programs early to determine whether riders can be included in the trail planning process. The planning and development of horse trails often require addressing a broad range of trail user needs.

Resource Roundup

Transportation Planning

A Citizen's Guide to Transportation Decisionmaking by the U.S. Department of Transportation, Federal Highway Administration (FHWA 2001) provides additional information regarding transportation planning. It is available at *http://www.fhwa.dot.gov/planning/citizen*.

Thoughtful planning and communication with other trail users, agencies, land managers, developers, and members of the community are imperative. Many existing trails were formed over a long period through informal use and are highly valued by riders. In such cases, rights-of-way, ingress and egress rights, or special-use easements may not exist. Many of these trails are not contiguous because of physical barriers—private property, fences, roads, railroads, rivers, and canals (figure 2–2). Formalizing trail agreements and involving riders before planning and implementation can go a long way toward reducing problems later.

Resource Roundup

Trail Planning Assistance

Appendix B—Trail Libraries, Trail Organizations, and Funding Resources contains contact information for some trail organizations that provide comprehensive resource information.

Figure 2–2—Utility maintenance roads are often used for recreation trails.

Land Use and Regulatory Framework

Trail planners need to know how regulatory measures will affect proposed projects. In general, State regulations create the framework for local planning through enabling legislation, and local governments guide the nature and character of development. Land use regulations foster excellent trail systems if public transportation and recreation issues are incorporated into local plans and ordinances. There are opportunities at all planning levels to involve riders.

Horse Sense

Regulatory Measures

Trail systems must comply with existing regulatory measures, which vary by jurisdiction. Common regulatory measures include:

- Federal, State, regional, and local agency environmental requirements
- Federal accessibility requirements
- State enabling legislation and requirements
- State land use laws—such as smart growth plans
- State or regional metropolitan area transportation plans
- County and regional plans
  - General land use plans
  - Transportation plans
  - Flood control plans
  - Open space plans
  - Trail plans
- City, town, and municipal plans
  - General plans
  - Zoning ordinances
  - Subdivision ordinances
  - Transportation plans
  - Parks, recreation, and open space plans
  - Trail plans
  - Pedestrian plans
  - Bicycle plans
  - Local area, specific area, and neighborhood plans
  - Development or design standards and guidelines

Easements and Setbacks

The legal right to build a trail—usually through outright ownership, easements, rights-of-way, or permits—affects how wide a trail can be built. Legal requirements may take long periods of negotiation, and can derail trail construction. In addition, many jurisdictions have specific requirements that may not be optimum for horse trails.

For example, Scottsdale, AZ, has trail easements based on the city's trail classification system. In situations where a trail easement overlaps common tracts or easements dedicated for other purposes and it is deemed beneficial, the combined easement and tract width may be dedicated for public trails.

- ✯ Primary trails must be contained within a 15-foot (4.6-meter) easement. Primary trails provide transportation and recreation links between areas of significant community activity. For trails along streets, the minimum setback distance from the back of the curb to the edge of the trail is:
  - » 25 feet (7.6 meters) along expressways and parkways
  - » 15 feet (4.6 meters) along arterials
  - » 10 feet (3 meters) along collectors
  - » The maximum distance feasible in all other locations
- ✯ Secondary trails must be contained within an easement that is at least 25 feet (7.6 meters) wide. Secondary trails provide secondary transportation and recreation links between scenic and open space areas. Secondary trails must be as far as feasible from the edge of the street.
- ✯ Local trails must be contained within a 15-foot (4.6-meter) easement. Local trails often funnel into primary, secondary or regional trails. Local trails must be as far as feasible from the edge of the street.
- ✯ Preserve primary trails are usually located within large open spaces controlled by the city. In situations where preserve primary trails must be located within easements, the easement width must be a minimum of 100 feet (30.5 meters).

The Pitkin County, CO, Open Space and Trails Program builds its trails with two different surfaces—asphalt (paved trail) and crushed stone (stone trail). (See *Appendix D—Trail Proposal and Evaluation Process: Open Space and Trails Program (Pitkin County, CO)* for more information.) The trails are used for recreation and as an alternative transportation system. In some cases, two parallel but separate treads are used to accommodate different user groups. During shared-use trail planning and land acquisitions, the Open Space and Trails Program bases final and construction easement widths on the trail type. The minimum easement width is based on the paved trail (whether or not there is an adjacent stone trail), the cross slope of the site, and whether cut- and fill- or full-bench construction is used. The final easement widths vary from 12 to 46 feet (3.7 to 14 meters). Corridor widths also depend on whether or not there is an adjacent stone trail. The optimum tread separation is 15 to 150 feet (4.6 to 45.7 meters). The recommended corridor width varies from 50 to 100 feet (15.2 to 30.5 meters). Narrow widths are allowed in certain circumstances. Widths of more than 150 feet (45.7 meters) may be preferred to preserve desired features or open space.

Other communities are looking at acceptable building heights and building setbacks alongside trails. One perspective is to make building setbacks as far from the trail boundary as possible to prevent forming an urban trail canyon. Another perspective is that a setback means less building space and might mean fewer businesses that can serve trail users or enhance their experience.

Federal, State, Regional, and Local Agency Environmental Requirements

Trail construction on Federal lands, or lands where Federal funds are involved, must conform to laws such as the National Environmental Policy Act (NEPA), the National Historic Preservation Act (NHPA), and the Endangered Species Act (ESA). Specialists should review proposed trail routes to determine potential adverse effects. When Federal funds are not involved, professional ethics suggest voluntary compliance with the intent of the NEPA and NHPA regulations.

The U.S. Army Corps of Engineers regulates construction in navigable waterways and wetland areas of the United States. The agency's primary concern in wetland areas is to limit the volume of fill and to avoid placing fill where it would interfere with normal runoff entering the wetland. Getting approval for a wetland trail generally involves sending a letter to the local Corps of Engineers district headquarters, perhaps a site visit by a Corps representative, and the issuance of a Clean Water Act Section 402 or 404 permit.

Trails that cross land or water under the jurisdiction of Native American or Alaskan Native tribal governments, U.S. Department of the Interior agencies, such as the Bureau of Reclamation and U.S. Fish and Wildlife Service, or similar agencies, may be subject to additional regulations.

Horse Sense

Environmental Analysis

On Federal lands or when Federal funds are involved, agencies are required to conduct an environmental analysis. This analysis often includes an impact assessment. The assessment process alerts businesses, residents, transportation planners, trail planners, interested parties, and decisionmakers to the potential effects of a trail project. Federal land management agencies have processes for conducting an environmental analysis. The processes range from simple to complex, depending on the agency, project size, and potential environmental effects.

Many States and some counties, municipalities, and local agencies also have environmental regulations covering recreation development, including trails. Project managers need to be aware of other laws and regulations that might apply. Occasionally, large areas have been established to coordinate regulations among many towns and counties. The Adirondack Park Agency is a good example. This agency's regulations apply to 6 million acres of New York State's Adirondack Mountains, including all or parts of 12 counties and more than 100 towns and villages. Roughly 45 percent of the land is owned by the State—the rest is privately owned.

Early in the planning stage, determine the regulations that govern development in the area being considered. When many agencies have jurisdiction, the agency with the most stringent regulations usually governs.

Federal Accessibility Requirements

Trails need to be accessible to people with differing physical abilities. All trails don't have to be accessible to all people, but accessibility must be considered for new trail construction and major reconstruction. This is a legal requirement under Section 504 of the Rehabilitation Act of 1973. Accessibility requirements apply to all sites, facilities, or activities under the jurisdiction or ownership of Federal agencies, and to many State, local, and private sites, facilities, and activities. For more information read *Chapter 11—Designing for Riders With Disabilities* and *Appendix F—Summary of Accessibility Legislation, Standards, and Guidelines.*

Smart Growth Plans

Many States, counties, cities, land management agencies, and regional coalitions recognize the impacts of uncontrolled urban growth and are implementing plans that attempt to direct the nature of this growth. Open space provisions and *multimodal transportation systems*—those involving different types of motorized and nonmotorized travel—are common topics addressed in these plans. Riders must be involved during the preparation of smart growth plans if they want the plans to include nonmotorized trails that meet their needs.

General Plans

The overall blueprint for community planning is in the city, town, or municipal comprehensive general plan. Trail planning is frequently one part of the general plan, along with other broad considerations such as transportation, water, and open space provisions.

Flood Control Plans

Flood control agencies recognize the economic and public relations benefits of including recreation and green space in projects and programs. There may be opportunities to integrate trails into shared use plans. Trails can sometimes take advantage of maintenance roads and open space in flood plains.

Zoning Ordinances

Zoning ordinances guide the character of urban, suburban, and rural areas by dictating allowable uses and densities. Zoning ordinances that assume motor vehicles are the primary mode of transportation may make it difficult to establish a safe and usable trail system. In addition, many zoning ordinances do not require enough rights-of-way to accommodate trail systems. A community's general plan often includes provisions for trail systems, which are implemented through zoning ordinances. Horse-friendly zoning ordinances are necessary to keep equestrian trail-based communities viable.

A rezoning request and the subsequent review by local planners and the community are key times for comprehensive evaluation of transportation needs. Figure 2–3 shows one way of announcing a public meeting to discuss zoning issues. Transportation improvements—and impacts—for horse trails or vehicle routes can best be coordinated during this detailed review. Ordinances often address linking amenities and destinations with separate corridors for trails and motor vehicles. Subdivision regulations may require land developers to build trails or plan for future trails. These regulations can help riders maintain access to public lands and recreation opportunities that may otherwise be blocked by private developments.

Figure 2–3—Zoning reviews offer prime opportunities for planners and the public to evaluate transportation and recreation needs.

Resource Roundup

Zoning for Horses

The Equestrian Land Conservation Resource (ELCR) offers information of interest to riders regarding zoning, legislation, partnerships, planning, trail reports, studies, funding resources, and related topics on the ELCR *Library of Resources* Web page at *http://elcr.org/index_resources.php.*

Multijurisdictional Trail Planning

Trail system planning frequently involves more than one land-management jurisdiction. Multijurisdictional and regional planning efforts that encourage links between trail systems can increase recreation opportunities. Trail systems that span the boundaries of land management agencies or communities require interaction and communication between the many stakeholders. Decisions on trail standards, locations, names, maintenance, amenities, resources, and liability can become complex. The earlier these issues are addressed in the planning process, the better. Broad-based trail organizations play an important role. They can contribute a comprehensive vision—helpful when promoting regional trail systems to planning agencies.

Planning multijurisdictional trail systems is a relatively new concept. The lack of clearly defined procedures, processes, laws, requirements, and responses to liability concerns are potential deterrents. Reviewing successful case studies of projects with many partners can help planners understand the process. Raising public and agency awareness of the benefits that come from a well-planned trail system can provide an excellent foundation for support. When the framework for a trail system clearly defines the increased benefits, the plan is more likely to garner approval. *Chapter 16—Learning From Others* includes an overview of several trail system master plans.

Often State and local legislation limits the liability of public or private landowners who make areas publicly available for recreation or education. Consult *Chapter 14—Considering Liability Issues* for more information regarding liability concerns.

A formal agreement ensures a successful, long-term, multijurisdictional trail system. The formal agreement can define important design standards, trail user guidelines, funding opportunities, management and maintenance responsibilities, liability, and stewardship, and can include a schedule for future trail enhancements. Agreements address financial resources, the overall integrity of the project, and long-term commitments.

Trail Talk

Working Across Boundaries

Forest Service District Ranger Ron Archuleta (2006) suggests some ingredients of a successful multiple-partner project:

- ✯ Mutual benefits and mutual understanding of the benefits
- ✯ Open communication and dialogue
- ✯ Discussion centered around interests, not positions
- ✯ Desired conditions that are established and understood
- ✯ A strategic plan that defines the work and who is accountable for it

The Planning Process

A planning process can be simple or complex. It also can be intuitive or highly rational and procedural. Local conditions and politics determine the most appropriate process. The following example uses a complex, rational model that assumes a need for documenting and defending all decisions. The model includes six phases an agency or organization could follow to develop a comprehensive trail plan.

- ✯ Phase 1—Initial project organization
- ✯ Phase 2—Inventory and data collection
- ✯ Phase 3—Analysis
- ✯ Phase 4—Conceptual planning
- ✯ Phase 5—Plan adoption
- ✯ Phase 6—Implementation

Phase 1—Initial Project Organization

During initial project organization, planners identify the need for an equestrian trail system, develop a public involvement plan, and identify and engage partners—for example, agency representatives, trail user representatives, and landowners.

Federal, State, and local governments should involve the public in planning for trail systems. Public involvement adds a unique local and personal perspective. Local residents and visitors are often best-equipped to identify trail network and access opportunities, as well as potential problem areas.

Horse Sense

The Benefits of Early Community Involvement

Early community involvement during trail system planning ensures that:

- ✯ Plans are more responsive to community needs.
- ✯ Projects receive increased community support.
- ✯ Public opposition can be detected early.
- ✯ Potential conflicts can be mitigated through enhancements or compromises.
- ✯ Competing interest groups are better able to understand and resolve differences.
- ✯ Closer ties are forged between agencies and communities.
- ✯ Litigation threats are minimized.

Provide participation opportunities for all segments of the community. Make efforts to contact trail user groups through a variety of outlets. Be sure to provide plenty of advance notice to community organizations, retailers who offer products or services for trail users, the media, publications serving trail users, and advocacy groups. Post notices on public bulletin boards at places such as local tack and feed stores, restaurants, and gas stations near horse facilities.

Horse Sense

Public Outreach Techniques

Use a combination of public outreach techniques to encourage more representation and broad-based opinion.

- ✯ Public meetings
- ✯ Open house meetings
- ✯ Statistically valid written or verbal surveys
- ✯ Informal Web-based surveys
- ✯ Stakeholder interviews
- ✯ A collaborative task force or small focus groups
- ✯ A public advisory committee of interested riders and agency liaisons
- ✯ Site tours, hikes, and rides within an equestrian area or along a trail corridor
- ✯ Newsletters, Web sites, and publications

Phase 2—Inventory and Data Collection

During inventory and data collection, planners research and map existing trails or potential routes, including relevant jurisdictions, neighborhoods, stables, arenas, destinations, and trailheads. They conduct a public needs assessment, identify desired trail and trail system criteria, and conduct a comprehensive inventory of existing trails and conditions. The inventory contributes to finding the best opportunities for planned trail networks within rights-of-way. Field reviews verify the existing trail conditions and identify the opportunities for equestrian and multimodal trails. Field reviews also identify issues and constraints. Field measurements and photographs support the inventory.

The site-condition data serve as the inventory's foundation. When planning the inventory, identify the potential information source, such as map or onsite reconnaissance. For instance, aerial and general planning maps may provide helpful information regarding major land uses, physical barriers, and drainage patterns. In areas that use the Public Land Survey System, section maps often provide detailed information regarding size and width of rights-of-way, parcels, and easements. Soil maps may be available from the local soil and water conservation district, U.S. Department of Agriculture, Natural Resources Conservation Service, county extension office, or Web sites. A site reconnaissance visit can help identify specific conditions that affect the nature and quality of a trail corridor.

Resource Roundup

Earth Images

Google Earth has links to satellite imagery, maps, and other geographic information at *http://earth.google.com*.

A geographic information system (GIS) database can help organize and manipulate data collected for a trail inventory. If GIS data already exists, the inventory is verified and existing trails and corridors are mapped. If no GIS data is available, record existing trail locations using global positioning system (GPS) data to produce accurate maps.

Resource Roundup

Aerial Views

Aerial photographs of all areas in the United States are available from the National Aerial Photography Program. Aerial photographs provide a standardized set of cloud-free images taken over 5- to 7-year cycles. Each photo centers on a quarter section of a 7.5-minute (1:24,000 scale) U.S. Geological Survey quadrangle map, and covers a square area of about 5.5 miles (8.6 kilometers) on a side. Additional information about the National Aerial Photography Program's map and photo resources can be found at *http://edc.usgs.gov/products/aerial/napp.html*.

Field photographs, with location and orientation coded to a map, support field data collected for the mapping process. It is possible to link them to a GIS database. Photographs also can document structures, vegetation, fences, trenches, or other obstructions that block trail corridors or render trail segments impassable. The value of a trail inventory increases when it is updated and maintained on a regular basis.

Whether or not a trail goes through a master trail system planning process, eventually the proposed or modified route is scouted and mapped. Many of the tools employed during trail system planning also are used for locating individual trails. GIS studies, topographical maps, and aerial photos help identify factors and physical conditions that affect the placement of the trail. Factors include legal and social concerns—ownership boundaries, traffic crossings, and similar considerations. Physical conditions include topography, hydrology, soils, vegetation, wildlife habitat, slopes, and grades. By plotting the relevant factors and physical conditions on the map, control points are established. Once the control points are plotted, on-the-ground surveys will help determine the location and configuration of the trail.

Control points the trail must connect or avoid may include:

- Topographical features—for example, gaps, passes, outcrops, and water bodies
- Stream or road crossings
- Other trails or transportation systems
- Densely populated areas
- Points to avoid—for example, hazardous areas, habitat for protected or dangerous species, poor soils, cultural resources, undesirable distractions, or sensitive areas
- Points to connect—for example, scenic overlooks, waterfalls, and popular recreation areas

Phase 3—Analysis

During the analysis phase, planners develop a vision and goals for the trail system. They search for and evaluate potential project partnerships, and make maps of potential trail corridors, rights-of-way, destinations, and trailheads. Permits are researched and specialists are engaged to evaluate environmental factors, historical and cultural concerns, engineering or construction considerations, and so forth. Opportunities, constraints, and liability issues are determined and a suitability analysis of all potential corridors is conducted. The corridor and the trail alignment depend on each other and must be considered before the land is obtained. The trail corridor is chosen partly because it can contain the trail and the trail alignment is chosen partly to take optimum advantage of the corridor.

Resource Roundup

Interagency Trail Data Standards

The Interagency Trail Data Standards (ITDS) are a core set of 34 standardized trail data attributes with corresponding definitions and values.

The ITDS provide a terminology that trail managers and the public can use for recording, retrieving, and applying spatial and tabular information. This makes it easier for trail information to be accessed, exchanged, and used by more than one individual, agency, or group.

Ease in sharing data increases the capability for enhanced and consistent mapping, inventory, monitoring, condition assessment, cost control, budget development, information retrieval, and reporting.

The ITDS apply to all Forest Service, U.S. Department of the Interior, National Park Service, Bureau of Land Management (BLM), and U.S. Fish and Wildlife Service managed trails, including National Scenic Trails and National Historic Trails. The ITDS can also be applied to trails managed by State or local governments and other entities.

Access the ITDS and find out more at *http://home.nps.gov/gis/trails.*

Resource Roundup

Trails in Densely Populated Areas

In the *Trails Design and Management Handbook* (Parker 1994), the Pitkin County, CO, Open Space and Trails Program outlines information on corridor selection in densely developed areas. The handbook lists scenarios ranging from the best case (using a long-established route or boundary that is attractive in itself) to the worst case (squeezing a trail between a major highway and a commercial or developed area). Also addressed are routes between areas with two very different uses, routes in a highway right-of-way, and routes hemmed-in by development or fences. The handbook has detailed information on the trail design process, trail specifications for shared-use trails with hard or unpaved surfaces, and the trail proposal and evaluation process.

A suitability analysis can be used to rate how trail corridors could accommodate horse trails. This is a critical step that bridges the identification of issues, opportunities, constraints, and the selection of the best plan. Use public and professional input to create a list of attributes that will be evaluated. The list could include access to a trailhead, location of stock water, identification of potential trail loops, or inclusion of scenic trails. Local riders can help determine the importance of corridor attributes during public meetings.

Horse Sense

Suitable or Not?

The following questions examine important factors in any trail system. The answers affect the trail's rank in a suitability analysis for horse trails. Not all questions are applicable to all situations.

- ✯ Does the trail provide links to local destinations, such as neighborhoods, stables, equestrian centers, trailheads, and open spaces?
- ✯ Does the trail provide links to regional destinations, such as regional parks, open spaces, major equestrian centers, and major trail systems?
- ✯ Does the trail provide loop opportunities or incorporate local or regional trails to create a continuous route back to the trailhead?
- ✯ Does the trail infringe on privacy concerns of adjacent property owners? For example, can mounted riders see into outdoor living areas in residential neighborhoods?
- ✯ Does the land use adjacent to the trail create a negative or unsafe experience for the rider? For example, does the trail pass near a shooting range, golf driving range, model airplane field, railway corridor, overhead transmission line, deep ruts and water drainages, or an unattractive site such as a landfill?
- ✯ Is the trail corridor wide enough to accommodate many trail users, including stock and their riders? Is the anticipated trail appropriate for equestrian use?
- ✯ Does the trail have access points appropriate for equestrian use? For example, do trailheads have adequate parking for horse trailers?
- ✯ Is the trail corridor free of hazards or potential safety problems that would affect riders? Do trail conditions, such as separate treads for different nonmotorized users, promote a sense of safety?
- ✯ Does the trail provide relatively little conflict between motorized traffic and riders through such accommodations as a comfortable setback from streets and appropriate crossings?
- ✯ Is legal access to the trail corridor available or potentially available? Is the trail corridor under public control of Federal, State, county, or municipal land management agencies?

During the evaluation, each attribute receives a score of 0, 1, or 2, based on how well it satisfies the criteria. *Appendix E—Sample Evaluation Criteria for Trail Corridor Suitability Analysis* shows this suggested scoring method.

Trail Talk

Suitable Steps

During the development of the *Scottsdale Trails Master Plan: On the Right Trail* (Todd & Associates, Inc., and others 2003), planners developed six steps for a trail corridor suitability analysis:

- ✯ Identify several attributes that define the most suitable trail corridor.
- ✯ Assign weights to attributes—public input is critical at this step.
- ✯ Identify trail corridors to be analyzed.
- ✯ Analyze each trail corridor using trail attributes and assign an appropriate score.
- ✯ Analyze the numerical scores and divide them into suitability levels.
- ✯ Map all trail corridors by suitability level.

Phase 4—Conceptual Planning

During the conceptual phase, planners identify all feasible alternatives and choose the best overall plan. They set priorities for projects needed to complete the system plan based on criteria, goals, and objectives. Planners identify funding and determine project action and implementation plans. This also is the time to develop design guidelines for the trail system.

Trail Talk

Prioritizing Trail Projects

Scottsdale, AZ, prioritized projects during its trail system planning process by examining the project criteria and attributes listed below.

- ✯ Safety—The project corrects an issue on an existing trail.
- ✯ Completion—The project completes an unfinished undertaking along a primary trail corridor.
- ✯ Connection—The project provides a critical connection opportunity. It is the only route available.
- ✯ Suitability—The project is along a corridor with the highest trail suitability.
- ✯ Gap—The project completes a gap, providing a significant usable and continuous trail corridor.
- ✯ Use—The project is along a corridor with heavy existing or potential use.
- ✯ Destination—The project greatly improves access to a neighborhood, community, or regional destination.
- ✯ Priority—The project enhances a primary trail.
- ✯ Most miles—The project completes more than a specified number of trail miles using the funding and resources available.

Using this method, planners applied the criteria to potential projects and assigned a score of 0, 1, or 2. Higher numbers indicated a higher positive value. For example, an initial score of 2 for the priority criterion indicated the project enhanced a primary trail. Assigning an initial score of zero to safety indicated the project did not correct an existing trail safety problem. Some criteria were assigned weighting factors of 1, 1.5, or 2, which increased their overall score.

Additional factors include sensitivity to budgets and community support. For example:

- ✯ Are there constraints that would require expensive or inappropriate trail construction techniques to accommodate trail users?
- ✯ Would the trail require above-average maintenance to accommodate riders?
- ✯ Is there reasonable support by the public to include stock and riders in the trail corridor, or is there strong, organized opposition that would be difficult to mitigate?

The answers to these questions may break scoring ties or more evenly distribute projects if scores are very close. See *Chapter 16—Learning From Others* for more information about the Scottsdale trail system master plan.

Phase 5—Plan Adoption

During the plan adoption phase, plans are submitted for approval or adoption by appropriate jurisdictional authorities. Examples of jurisdictional authorities include county boards of supervisors, city councils, and parks and recreation commissions.

Phase 6—Implementation

During the implementation phase, promotion continues and funding alternatives are pursued. As funds become available, project priorities are integrated into annual capital improvement programs and operations budgets. Project managers work to standardize design guidelines across jurisdictional boundaries. If necessary, they develop a process to incorporate trails into the public review process for private development.

The implementation phase also is a time to review, update, and revise the master plan. A master plan provides an agency with a vision and specific direction for a limited period, often 5 years. Changes are inevitable. It is important to adjust the plan according to the local development climate and pace, available budget, and public need. Certain corridors may need to be relocated or modified based on site-specific constraints or as levels and types of use become apparent.

Many communities rely on private development funds or funding partnerships for equestrian trail projects and programs. It is important to integrate horse trails into private developments according to approved trail plans and ordinances. Coordination is essential between all agency departments that develop trail projects and those that review the proposals. Reviewers evaluate development proposals for compliance with zoning and subdivision requirements, ordinance provisions, and the goals and objectives of the comprehensive general plan.

A helpful tool for private trail developers is a checklist of agency submittal requirements. Include general requirements for plan submittal, specific trail requirements, and specific language required for trails. Give the checklist to developers at the earliest stages of a proposal.

Trail System Operations and Maintenance Concerns

A successful trail system requires an ongoing operation and maintenance (O & M) program to ensure that the recreation experience encourages trail use and provides appropriate user safety. O & M programs identify items to be maintained and specify maintenance levels, funding resources, and work responsibility. Successful trail system maintenance may involve partnerships between a managing agency and community organizations, homeowners associations, private landowners, public utility companies, railroad companies, or volunteer recreation groups.

The initial research and documentation during planning forms the basis for subsequent actions. Information about land ownership, maintenance responsibility, and the land itself becomes part of the project database and forms the baseline for future maintenance programs. Include other relevant management information—prescriptions for vegetation management, hazard corrections, waste treatment and disposal, inspection requirements, maintenance schedules, fire prevention, and so forth. Consider whether separate O & M plans are appropriate for individual sites, or if one plan should cover an entire trail system and related sites. Incorporate procedures to notify user groups and community associations of work responsibilities. Make the program ongoing and cyclical to ensure safe, high-quality recreation opportunities. The steps in this ongoing program include the following:

- Evaluation—What is the existing condition of the trail and related facilities?
- Maintenance program—What is required to keep facilities safe?
- Maintenance schedule—How often is maintenance needed?
- Response to special situations—What components need repair from damages caused by weather events, accidents, vandalism, or other events?

In some areas, trail classifications and their related components—such as signs, tread surface, and trail width—guide the maintenance program. Some

agencies base the frequency of trail evaluations on trail classifications and use levels. For example, high-use trails in highly developed areas may need more frequent monitoring and evaluation than low-use trails in areas with low development.

Manage maintenance frequency for specific trail segments or facilities based on the maintenance plan or unique conditions. The land manager is responsible for overseeing or maintaining all public trail facilities on private land and establishing a consistent level of maintenance and care.

An annual operating budget is needed to fund an ongoing trail operation and maintenance program. Often, operating budgets reflect the development and use levels of trails and facilities. Annual maintenance budgets can be averaged by cost per designated distance, such as a mile (or kilometer), work units, or recreation sites. The average costs are then multiplied across an entire trail system. This approach works best when most trail segments have similar requirements. Other budgetary approaches may look at trail maintenance needs of specific locations.

Resource Roundup

Management Aids

Trail planners and managers may find the following management tools helpful:

- The National Trails Training Partnership offers numerous resources regarding trail maintenance and operations, including a maintenance checklist for urban trails, maintenance management systems, a cost example, and other useful materials. The information is available at *http://www.americantrails.org/resources/ManageMaintain*.
- *Rail-Trail Maintenance and Operation: Ensuring the Future of Your Trail—A Survey of 100 Rail-Trails* by Tim Poole (2005) discusses trail maintenance responsibility, cost, practices, and related issues. It is available at *http://atfiles.org/files/pdf/railtrailmaint.pdf*.
- The Forest Service's Recreation & Heritage Resources Integrated Business Systems offers reports and management tools that help identify program inventory, develop measurable quality standards, determine management costs, prioritize work programs, develop and allocate budgets, and monitor and measure resources. The tools are available at *http://www.fs.fed.us/r3/measures*.
- Trails Management Handbook FSH 2309.18, (U.S. Department of Agriculture, Forest Service 1991) gives practical information regarding the Forest Service Trail Maintenance Management System. Subjects include operations, maintenance activities, and cost planning. *Chapter 4—Trail Operations and Maintenance* is available at *http://www.fs.fed.us/im/directives/fsh/2309.18/2309.18,4.txt*.
- TRACS (Trail Assessment and Condition Surveys) is a system developed by the Forest Service to collect and maintain trail data consistently. By incorporating a common set of terminology, business rules, data fields, and standard trail specifications and drawings, TRACS helps maximize efficiency, while providing flexibility. More information is available at *http://www.fs.fed.us/r3/measures*.