

GROUNDS MANAGEMENT

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September 1987

Funding provided by a grant from the University of Minnesota Extension Service Small Business Development Center, Bud Crewdson, Director, in cooperation with the U.S. Small Business Administration and the Minnesota Extension Service.

CREDITS

The editor gratefully acknowledges contributions from the individual authors who volunteered to write articles. Louise Jones patiently edited and produced this work. I would also like to thank Susan Pohlod and Linda Littrell, Department of Agricultural and Applied Economics, who juggled other office responsibilities in typing this document.

The intent of this paper is to present a variety of information and points of view; positions taken by the authors do not necessarily represent policies of the University.

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GROUNDS MANAGEMENT

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INTRODUCTION TO THE GROUNDS MANAGEMENT MANUAL

This grounds management manual is designed to help resort owners and operators ("resorters") plan and implement activities to improve the way their grounds look and make property management easier. It is directed at those already open for business, whether they are new owners or third-generation resorters.

The first part of this manual looks at how the changing resort industry affects grounds management and provides both an overview of general planning principles and a step-by-step planning guide. This is followed by a case study of a Minnesota resort to demonstrate how planning principles can be applied. The last part of this manual offers a series of papers dealing with specific grounds improvements.

Resort conditions cover a wide spectrum. The individual business situation, location, clientele, landscape, and many other factors make it impossible to suggest specific strategies for all the onsite problems that resorters face. Instead, this manual outlines a standard procedure that should help you generate new ideas about construction, arrangement, maintenance, or expansion of the outdoor environment. It should be used as a reference source rather than as a collection of definitive "cookbook" solutions.

GROUNDS MANAGEMENT - A GUIDE TO PLANNING

Barbara A. Koth*

Take a mental walk around your resort property. Are you providing a satisfying and rewarding vacation experience? Are the grounds scenic, peaceful, and convenient? Do you have nice lawns, big trees, and good views? Are cabins screened from each other for privacy? Or are cars parked on the lawns and do walkways pass next to windows? Is storage for maintenance equipment in the middle of a scenic open space? Is the swimming area also used by motorboats?

If you were a tourist, would you spend time here? Be honest with yourself. If your answer is no, take heart. A good plan, using plants and structures to achieve the setting you want, plus some careful work can turn a ho-hum atmosphere into a winning environment. If your answer is yes, you can't afford to relax for too long. The resort industry is changing. Other resort owners are improving and expanding their places. Yours will need to keep pace, too. A good grounds management plan can make all the difference.

What is Grounds Management?

Grounds management refers to the process of creating and managing outdoor spaces for your guests' use. It involves a diverse set of features designed to improve your visitors' recreational experience. These include:

- * Plant materials, which can change the appearance and alter site characteristics such as screening, shade, and wind control.
- * Provisions for movement of guests between different areas of the property, both on foot and by auto.
- * Special-use areas, such as tennis courts and playgrounds to expand the range of leisure options for visitors.
- * A waterfront setting, usually a major onsite attraction and an important focus for outdoor activities.
- * Facilities for winter season use.

Planning and management to integrate these components may be one of the easiest ways to improve guest satisfaction. The appearance and operation of the site greatly influence your guests' vacation experience. First

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impressions are shaped by the "look of the place." The grounds set the stage for all other activity. The outdoors, certainly, are as important as lodging and service quality in customer satisfaction. This does not discount the importance of onsite buildings or, for that matter, offsite attractions such as golf courses or area tours. However, the focus of grounds management is on the outdoor resort environment.

Benefits of Grounds Planning

Grounds improvement based on well-thought-out plans can reap many benefits to the resort owner. These benefits include:

- * Customer satisfaction. Appearance initially attracts clients, and grounds that function well provide a pleasurable environment while people are visiting. There may be less resistance to regular rate increases if guests see improvements.
- * More revenue. If guests are comfortable they will spend more time onsite, some of it at profit centers. They are also more likely to make return visits. Longer stays and repeat bookings of course translate into increased profitability.
- * Tax advantages. Tax codes can benefit a resorter who renovates or expands. In some cases, major landscape projects on a business property can be considered as depreciable capital improvements, or they can be taken as a deduction in one year as a business expense. Regular maintenance costs are also deductible operational expenses.
- * Financial advantages. A well-thought-out grounds plan is more likely to convince financial institutions to lend funds for facility improvement.
- * Promotional benefits. The grounds reflect an image. Policy shifts, such as selection of a new target market, can be enhanced by a different "look" to the resort. Changes, such as the addition of professional landscaping, will attract attention.
- * Community service and recognition. Private property improvements benefit the local community by creating an attractive place that draws new businesses and residents. Rewards accrue to the resort owner in the form of good working relationships with the local community.
- * Traffic control. Planning provides for the separation of public and private areas on multi-use property, and ensures an efficient traffic flow for pedestrians and autos.
- * Security provisions. Application of grounds management concepts can ease security or vandalism problems in remote places where there is a constant clientele turnover.
- * Maintenance improvements. Ongoing operational goals such as low maintenance and effective support services (trash pickup, snow removal, parking) are part of the planning process.
- * Environmental modifications. Energy conservation, screening, wind protection, and aesthetic goals can be achieved through well-planned manipulation of the resort site.

The Changing Resort Industry

A primary appeal of Minnesota's resorts is the state's abundant natural resources. Located at the water's edge or on the perimeter of forested areas, resorts often serve as a home base from which guests explore the region. At a resort, the outdoors should reflect the attraction of the woods and water wilderness. By taking advantage of the natural setting, the resort owner can continue the theme of fun and relaxation in the outdoors.

Despite the unique market position of Minnesota resorts, there has been a steady decline in the number of facilities. A Sea Grant study shows that over one-half of the resorts in the state were lost between 1968 and 1983, although that trend has slowed significantly since 1980. Total lodging capacity from all sources has in fact increased, but resorts account for a smaller and smaller portion of overnight totals.

Resorters also have to contend with dramatic changes in the tourism industry worldwide. In today's travel market, vacationers can choose from a full set of international and domestic destinations. The decision to stay at a certain local resort versus the one across the lake is the last step in a series of choices that may have started with a consideration of the vacation benefits Minnesota could offer as compared to, say, the Ozarks, Germany, or the rental of a sailboat. Fluctuations in a worldwide economy can also stress resort operations on the local level.

To stay competitive in the 1980s and beyond, resort owners need to consider options that will give them the edge in attracting and serving customers. These options include updating aging facilities, expanding services, and offering specialized activities.

Minnesota's Aging Resorts

A Minnesota Poll conducted in December, 1984, and January, 1985, by the Minneapolis Star and Tribune provides specific details on the operating history of 1025 resorts in the state. The average resort has been in business at the same location for 42 years, indicating that many were established in the early 1940s. Forty-three percent opened their doors over 40 years ago.

Facilities are somewhat newer, averaging 29 years in operation. Many structures were constructed in the mid-1950s, and one-half are 25 years old or more. Two-thirds of resort operators have made major physical changes (renovation, additions) since 1979, and in that same time period 12 percent made modifications to enable them to stay open during the winter season.

The age of onsite buildings has made improvements necessary for many owners, but grounds improvements to bring a 1940s resort up-to-date may not have taken place at the same time. Yet the appearance and function of the grounds need as much attention as the condition of the buildings if the resort is to remain competitive.

New Trends

Regardless of the age of the facility, two dominant trends are changing the resort industry: specialization and service expansion.

The family vacation resort and the fishing resort comprise the bulk of Minnesota's resort industry. To complement these popular, traditional resorts, we are seeing greater variety in accommodations. Nationwide, new resorts cater, with great success, to specialized clientele such as health and fitness enthusiasts, participants in winter sports, single elderly adults, or people learning a language. Attention to these target markets may in fact be particularly effective during the off-season to attract a different visitor segment to fill empty rooms. Specialized clientele, however, demand specialized service and facilities, and place different pressures on the grounds.

At the same time, some operators have noticed that guests now expect the full range of amenities, such as golfing, swimming pools, trails, and evening entertainment. In particular, young people with high incomes, the lucrative "yuppie" market, demand a variety of services. These may be made available onsite or in some sort of shared arrangement with other resorts. Making these expansions requires an awareness of the various types of improvements, feasibility, and requirements of day-to-day operation. Campgrounds, nature trails, children's play areas, and lakeside facilities all have different requirements and, in combination, change the way a resort functions.

Changes Observed by Resort Owners

Experiences in Minnesota support these impressions. Sixty-four percent of the owners/operators in the Minnesota Poll said that "the things people are looking for in a resort have changed in the last five years." Two-thirds called those changes "significant." Certain leisure interests have assumed major importance compared with five years earlier:

- * 65% report that children's activities are more important now than before.
- * 56% say recreational facilities (tennis, golf) are more important.
- * 37% indicate fishing is more important.
- * 36% say that winter activities are more important.

Although resorters generally believe a wide range of activities is important to enjoyment, actual provision of facilities is not as common. Table 1 compares the importance of activities, as perceived by owners/operators, to their actual availability on the premises.

The figures show that, in line with traditional resort offerings, fishing and boating opportunities are very important and widely available. But there are several unmet recreation needs. The high incidence of jogging and bicycle trails, as compared with expected importance, suggest that these facilities may be easy to construct on most properties, using existing resources.

Table 1. Resort Owners' Perceptions of Activity Importance and Actual Availability on Premises*

Activity	Think Activity is Very Important to Resort Customers (percent)	Activity	Available on Premises (percent)
Fishing	82	Fishing equipment	76
Swimming	68	Swimming pool	10
Boating	62	Boating	95
Camping	53	Camping	50
Golfing	29	Golfing	2
Snowmobiling	28	Snowmobiles	10
		Snowmobile trails	16
Skiing	25	Cross-country trails	12
		Downhill ski runs	1
Tennis	14	Tennis	8
Horseback riding	10	Horseback riding	3
Jogging	8	Jogging or running paths	31
Bicycling	8	Bicycling	15

* Minnesota Poll, Special Report Survey, December 1984 - January 1985, Minneapolis Star and Tribune Research Department.

Implications

The data from the Minnesota Poll suggest that some service expansion is needed to meet new demands. Moreover, the need to compete effectively with other vacation options creates pressure on resort owners to make their facilities more attractive and workable. The ability of individual resort operators to meet these changing demands depends on the capacities and layout of the physical site. Effective action requires a familiarity with grounds management principles. The next section outlines these principles and demonstrates the process for the resort owner.

Grounds Management Planning

The need for onsite planning at a resort is no different from the need for market plans and financial planning. All are fundamental tools used to give a business an edge in growth and profitability.

Attributes of Planning

Planning is a logical and organized activity to help in moving toward your established goals. By following the recommended steps, you can develop various alternatives and then select the one that best meets your management objectives.

Planning is also intuitive. It requires a feel for putting things together on the resort property to create an appeal. Although there are facility and activity standards in the business, there are no absolutes for their arrangement or design. Individual judgment is important in preparing plans that highlight unique site qualities. Your perceptions and feelings are a critical part of the whole planning process.

Grounds management planning involves many specialties, particularly landscape architecture, architecture, civil engineering, and biology. Geology, soil science, forestry, economics, and fish and wildlife, to name a few examples, play a supporting role. You do not have to become an expert in each of these areas, but you do need to be aware of the broad range of issues. Then consult experts as the need arises.

Planning is continuous. It is an ongoing process that should be evaluated periodically, and updated or changed as necessary to meet your changing goals.

Design Guidelines

We all have ideas about how we want the places we live to look. Most of us have been out in the yard planting, mowing, building or painting at some time. Informally, we apply site planning principles to create the outdoor home environment we want. Management for business purposes introduces some additional complexities. The resort accommodates more uses and must also satisfy multiple clients as well as the owner. So, although practices from residential sites are generally applicable to the resort setting, modifications are necessary for commercial operations.

Given the wide variety of projects envisioned by creative resort owners, it is helpful to have a set of general design guidelines that can be applied to your specific plan. These guidelines can help you integrate the different parts of your resort property.

The guidelines listed in this section are based on three fundamental principles:

1. Grounds management is for people.
2. Both function and aesthetics must be satisfied.
3. Constraints on land use must be recognized.

In planning for the needs of people, the art of compromise is critical. There are two groups of people at the resort whose demands must be satisfied: (1) the guests, who are seeking a place that meets their leisure expectations, and (2) the staff, including the owner/operator and the service and maintenance staff, who want their operations to function effectively. Satisfying the often conflicting needs of these two groups is the key to site planning.

Function refers to how well a site works. Is it easy to cut the grass? Are auto and pedestrian traffic safely separated? Are there exciting activities for children? Is there severe erosion in the campground? How a resort functions relates in the long run to its ability to generate income.

Aesthetics encompasses how a place looks and the type of experience it can provide. Does the entrance invite and welcome potential customers? Is maintenance equipment screened from view? If families are your target market, does the resort have a family flavor? Do details contribute to the overall "feel" of the resort? Creation of a quality resort means making tradeoffs. The site must operate efficiently, but it must also evoke a satisfying personal response.

Constraints on land use include government regulations as well as the geography and ecology at the resort.

These general principles are the basis for the guidelines listed below. Although they are divided here into separate categories, in reality they overlap and operate as a set.

Aesthetics. In simplest terms, aesthetics refers to appearance. It also concerns how a place "feels."

Create an attractive setting. You don't have to be an expert to know what is attractive to you and what is displeasing. You can use your personal preferences to create a mental "excellence scale" in which you imagine extremes of appearance. In your mind, picture the most attractive setting, and single out those elements that add to its appeal. Then do the reverse, noting features that detract from appearance. Grounds planning options could then be evaluated against this scale. You may need to sharpen your observation skills in creating such a measure.

Establish an experience that "feels right" to the guest. The grounds must have a strong character that make a readily identifiable impression. A theme or design can create a dominant look for the resort property, making the nature of its operations immediately evident. For example, a fishing resort simply does not "feel" the same as a young, upscale sports resort. The setting must also give cues about expected and appropriate activity. For example, trail design and plantings in a campground can discourage visitors from walking through other sites to reach common areas.

Strive for consistency. Consistency in grounds management is essential to achieve these objectives. Consistency refers to similarities in design and management policies that are carried throughout the sites. For example, directional signs of the same design can draw the scattered parts of a property together by creating some consistency. On the other hand, junked appliances that line an entrance road are not consistent with the resort experience, especially those that promote a remote, pristine environment. After you choose a target market and assess the site capabilities, select the main experience that you are trying to provide. Set your standards, and stick with them!

Function. Appearance is irrelevant if things don't work. The grounds must function well both from the management viewpoint and for the comfort of your guests.

Satisfy technical requirements. Each project must meet minimal standards of size, quantity, and orientation to natural forces. Tennis courts should be located perpendicular to the sun's path over the site. The maximum grade for a boat launching ramp is 15 percent. An attractive structure for storage of pool maintenance equipment is desirable at the swimming area. But again, balance operating needs with people concerns.

Explore ways to cut costs. Take advantage of resources the site already offers and limit extensive modifications. Use a rise in the landscape as a quiet area with open views toward the lake, rather than leveling the site. Put a natural harbor in operation, rather than constructing dock facilities where periodic dredging will be necessary. Some investments will pay off in the long run. For example, appropriate structural and plant materials will result in lower maintenance and replacement costs. Attention to detail can mitigate future problems. For example, paving at the base of a wall to accommodate one wheel of a lawn mower saves trimming time by leaving a clean cutting edge.

Provide for ease of control and supervision. Placement of structures and plants affects the movement of people and goods and provide safety and damage control. Good landscape designs achieve a balance between user freedom and control by directing guests to appropriate actions without the resort owner's intervention. Fencing or plantings will keep clients from parking cars outside the cabins, while bare ground will encourage this behavior. Flower beds in a large, open grassy area make ballplaying difficult, and participants are likely to move to the ballfield.

Use the "outdoor room" concept. This concept, used by landscape architects for private dwellings, can be applied to a resort setting. The "rooms" are divided according to use: the public area, the common area, the private living area, and the service area. The "walls," made of vegetation or construction materials, define the different use areas. The "ceiling" (trees or sky) defines the upper limits of the outdoor room and offers physical protection. The "floor" can be natural or of manmade materials.

The public area is that portion of the landscape open to public view at all times. It is visible to individuals passing by, as well as to clients entering the property. The common area refers to sites open to use by all paying guests. The private living area is intended for personal use and is screened from public view and accessibility. At a resort, the private living area is of two types--the areas near the individual cabins or housing units, and areas adjacent to the owner's private residence. The service area provides for utilitarian functions.

Classifying the outdoor areas at your resort in this manner helps define their unique qualities. For example, in the public areas where you want to initially attract clients, an aesthetically pleasing place is the dominant concern. In contrast, living areas require maximum privacy and easy access to common areas. Pinpointing the location of the outdoor rooms makes it easier to plan efficient movement between them.

Group similar activities. It is standard practice to locate compatible uses together and to separate them from groups of disparate activities. One distinction is between active sports and passive activities. The former, like basketball, tennis, or softball, require direct personal participation, attract crowds, and are often noisy. Passive leisure pursuits, such as viewing wildlife, fishing, or photography, generally require little landscape modification and are quiet and contemplative. The inherent differences

between these active and passive activities demand separation in space or time.

Another set of activities involves movement along a linear corridor: boating, hiking, bicycling, and snow skiing. In these cases, motorized uses should be separated from nonmotorized activities, just as automobiles and pedestrians are separated in the cities. This is for safety reasons as well as for differences in your guests' expectations. Self-propelled activities are simply not compatible with powered activities. Witness the occasional conflicts between motor boats and canoes, cross-country skiers and snowmobile enthusiasts, and hikers and off-road vehicles. Trails open for hiking should be reserved solely for that purpose, with separate paths constructed for horseback riding.

Constraints on Land Use. Plans for grounds improvement need to take into account restrictions imposed both by natural forces and by government.

Maintain environment productivity. Quite simply, do not exceed the ecological capacities of the site. Development should be encouraged in areas best suited for it by slope, soil, and vegetation conditions, and should be discouraged in areas of significant resource value and hazard. For example, a lowland marsh is a productive wildlife habitat, offering opportunities for guests to view various species. Any development there, such as a playing field, would be prone to periodic flooding and might disturb natural processes.

Violation of ecological principles at the resort is a no-win situation. The development may work for a time, but eventually resort efficiency will drop, either through increased repair and maintenance costs or deterioration of the environment.

Be aware of governmental regulations. Implementation of any grounds management plan for a resort requires awareness of government programs and rules that constrain land use options. State and federal governments may enact legislation defining appropriate uses in coastal zones, wetlands, agricultural areas, and forested zones where local governments may not have the jurisdiction or the ability to control land use.

However, most of the decisions are still made at the local level. One of the most common program areas is zoning codes. These codes may specify the height and size of structures, the percent of the lot occupied, size of open space, or the density of the resident population. Other governmental mechanisms that limit the range of onsite management options include township plans, structure of the local property tax system, capital improvement projections on the drawing board, and building codes.

Design Checklist. These guidelines can help you evaluate changes proposed for your facility. As you consider various alternatives, consult this checklist.

People needs:

- * Does the design balance both guest and operator/staff needs?

Aesthetic needs:

- * Have you maintained or created an attractive setting?
 - Does the setting meet set standards--yours and your guests'?
 - What impressions does the setting give to potential guests?

- * Have you established an experience that "feels right" to the guest?
 - Is there a dominant theme, look, or experience?
 - Does the setting give cues about expected and appropriate activity?
- * Is there consistency to the site?

Functional needs:

- * Have technical needs been met, including the effects of natural forces (such as sun, wind)?
- * Have you explored ways to cut costs?
 - Does the project take advantage of existing resources?
 - Are appropriate structural and plant materials used?
 - Is there attention to details that can save money?
- * Does the site provide for ease of control and supervision?
 - Is there a balance between user freedom and control?
 - Are circulation and safety concerns met effectively?
 - Does the property arrangement discourage property damage?
- * Has the property been divided by function: public, common, private living, and service areas?
- * Are compatible activities grouped together? Are disparate activities separated?

Constraints on land use:

- * Has environmental productivity been maintained?
 - Have you developed areas best suited to the activity?
 - Have you developed areas of significant resource value or hazard?
- * Does the project comply with government standards and regulations?

The Planning Process

Whether you are considering a minor addition to your resort or a property-wide assessment, you can best translate your concerns into action by using the planning process described below. The basic procedure is to document and analyze current conditions, evaluate various options that meet your objectives, implement the preferred alternative, and then monitor the results. The scale of the project determines the scope of the planning effort, but the basic steps are the same.

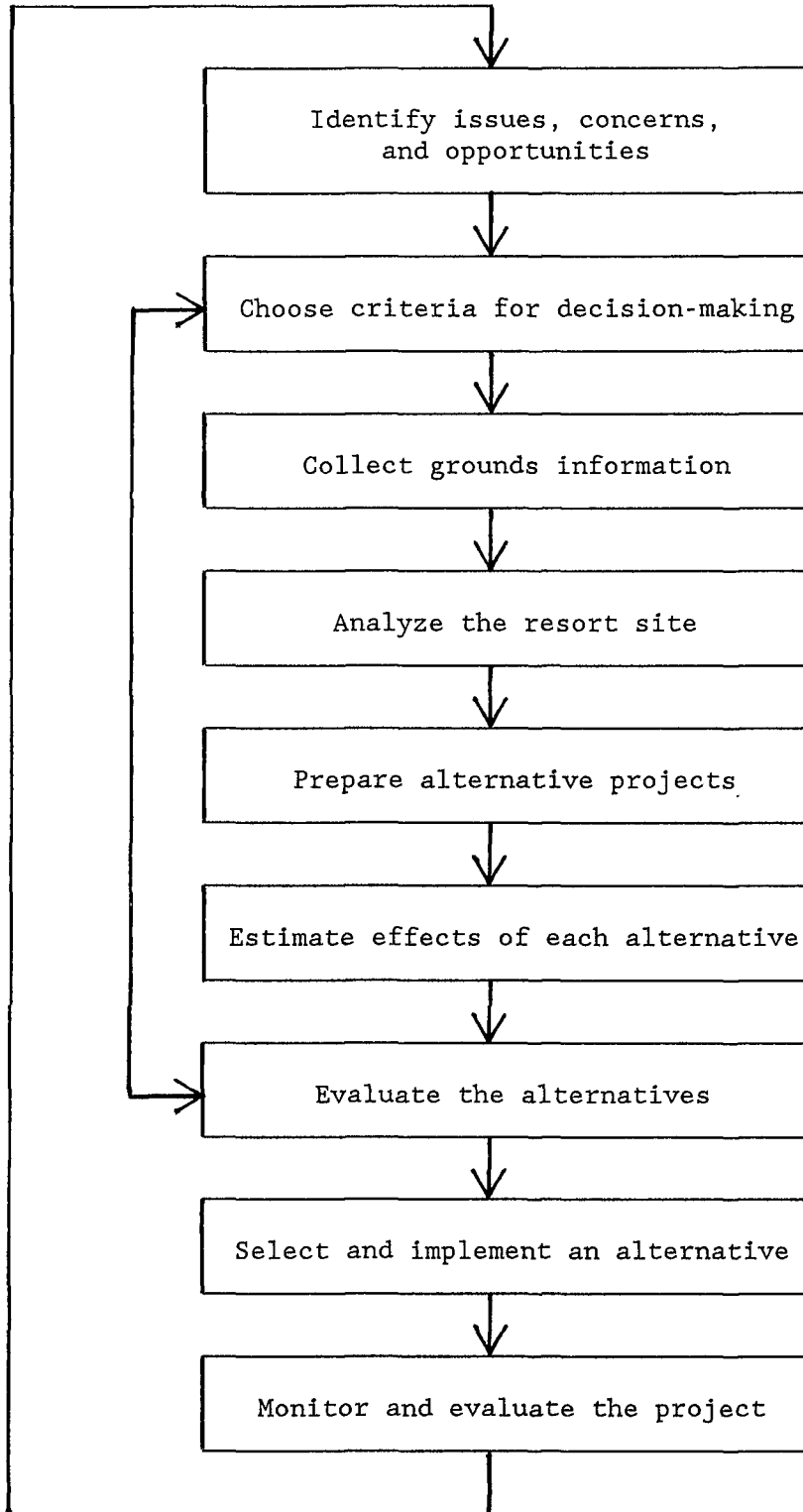
Figure 1 illustrates the connections between each step. The feedback loops show that planning is a continuous activity, where new information may refine the outcome.

1. Identify Issues, Concerns, and Opportunities

Begin by identifying those issues, concerns, and opportunities that you think are important. Your personal experiences underlie the entire procedure.

- * Issues refer to subjects or questions of general interest relating to resort management. Example: children of repeat clients are growing up and now enjoy and expect a wider variety of recreation activities.
- * Concerns are issues or problems requiring a solution. Example: inadequate sewage capacity.

Figure 1. The planning process



- * Opportunities are those situations which you could take advantage of to enhance your guests' experience or make your work easier. Example: The Chamber is organizing a familiarization ("fam") tour for travel writers and is looking for a resorter to host the visitors overnight.

In short, pull together all the ideas you've had in the past about the property and how it works. What's your strong point, the unique attributes at your place that might give you an edge in attracting and keeping customers? What are recurring problems? What are some projects you have thought about undertaking? What are your competitors doing? Include your "wish list" of what you want the resort to be. Information sources such as your marketing plan, client profile, financial situation, and industry trends can provide you with additional insight into issues, concerns, and opportunities.

Use this step as an opportunity to think through the future for your establishment. Decide where you are competitive, and where you need to make some changes. Some grounds management options will no doubt emerge.

2. Choose Criteria for Decision-making

Planning assumes that several options exist and that these alternatives can be weighed against each other. To evaluate your options, you first need to determine the criteria on which your decision will be based. These criteria depend on your management objectives.

It is likely that most criteria, and those given the greatest weight, will be related to finances. Examples are: cost of the project, expected revenue returns, time to recover the investment, and cash flow/liquidity implications.

Other criteria might include operational concerns, environmental quality, aesthetics, and the time frame (long- or short-term). Listing these items according to their importance in reaching your goals will help you sort out the tradeoffs you may need to make later.

3. Collect Grounds Information

Your next step is to take stock of your property so that you know exactly what you have to work with. The way to do this is to make a sketch of your resort. This is a time-consuming process, but well worth the effort. If you already have a detailed topographic map, landscape plan, or a plot map drawn to scale, you can save time by using that as a starting point.

You will need to get out and walk through your property to make an accurate sketch. First, assemble the following tools:

- * Pencils.
- * Ruler to measure and use as a straight edge for drawing.
- * Outdoor tape measure, 50 to 100 feet long.
- * Graph paper.
- * Clipboard or other surface to draw on.
- * Shovel.

Once you have your equipment, put on your most comfortable shoes and head outside. At first you may be overwhelmed by the sheer size of the area you have to cover. But you can probably break it down into about four manageable areas: the approach, the office entrance, grounds adjacent to individual rental units, and common recreation areas.

As you walk over you property, sketch as many details as you can. Include the following items in your drawing:

- * Property lines, including easements or rights-of-way.
- * Buildings, showing windows, doors, steps, walks, decks, patios, or porches.
- * Driveways, with connections to roads.
- * Utility poles, wires, underground pipes, sewers, septic tanks or drain field, oil or gas tanks.
- * Fences or enclosures.
- * Changes in elevation and slope.
- * Views of neighboring property or buildings, and desirable or undesirable views.
- * North point, direction of prevailing winds, and path of the sun across the property.

You will also need to take note of soil, land suitability classes, and vegetation. These subjects may require technical expertise. Help is available from the Minnesota Extension Service. Contact your County Extension Agent for consultation or reference material as you work through the data collection.

The Approach. Start with the first area your guests see. "Arrive" at your resort.

- * How big is the entry area? Measure, then sketch it out.
- * What manmade landmarks are there, including signs, driveways, and gates?
- * What natural landmarks catch your eye (big trees, plant groupings, boulders)? If you can, name the various types of trees and shrubs.
- * Outline grassy areas or areas where there is supposed to be grass.
- * Do a little digging. Mark areas where you have good black dirt, sand, rocky soil, etc.

Follow the route your guests will take to the check-in point, usually the main entrance to the lodge. Sketch it out.

Office entrance. Again, measure and sketch out the entire area that your guests will see as they park their car and walk to the main office. Include:

- * Relative locations of the parking area and buildings.
- * Roads, walkways, and paths.
- * Major features like benches, signs, trees, shrubs, and flower beds.
- * Soil characteristics.

Grounds management does not cover the inside condition of your resort, so you don't need to go indoors. However, you will want to consider views from the lodge and guest quarters when planning.

Individual rental units. Proceed to locations your guests will see as they move from the check-in point to their living area. Sketch the grounds adjacent to each rental building, and write down major features. Continue this activity for all cabins. Guests who stay in the farthest cabins will expect the same high-quality environment as customers near the lodge. Be sure to list items common to all cabins as well as the unique features of each building.

Recreation areas. Next, move on to the common areas that are open to all guests: beaches, boat landings, hiking trails, riding paths, picnic areas, playing fields, and tennis courts. Measure and sketch each special-use area. Include whatever details are appropriate for the business objectives and the issues, concerns, and opportunities you have identified earlier. Include areas you may develop in the future. Measure the meadow if you are thinking of a playing field. The more you learn about exactly what you have and where it is situated in relation to other onsite facilities, the easier it is to expand your grounds options.

4. Analyze the Resort Site

Once you have made a property sketch, you are ready to analyze the strengths and weaknesses of the grounds.

Begin by making a functional or "bubble" diagram which condenses the information from the sketch. This bubble diagram (Figure 2) takes general categories of use (for example, parking or hiking), and places them in a spatial relationship to each other. For example, what is near the active sports area? What are the implications of a maintenance storage building adjacent to the resort entrance? This assessment relies on the design principle that similar activities should be grouped together and disparate ones should be separated.

In addition to analyzing the overall design, it is essential to pay attention to details. How does each individual site component look, and how does each part work? Note details such as dead or diseased plants that need to be removed or replaced. Are the rock barriers really keeping guests from driving up to the cabin? A good way to analyze these details is to prepare a rating scale for each grounds feature, where "1" equals "high quality--no changes needed" and "5" equals "needs extensive repair--replacement or removal."

Your analysis also needs to take into account the suitability of the land. Attributes that influence the range of acceptable land uses include soil type, slope, bedrock structure, porosity/permeability of soil, compaction qualities, and depth of the water table. A comparison of existing conditions with set standards (known as suitability measures) may explain some current problems or head off future troubles.

Your final step in analyzing the site is to ask yourself how the resort works. Use the bubble diagram, the rating scale, and land suitability measures to help you answer these questions:

- * What are the positive and negative aspects of the grounds?
- * What features should be preserved or enhanced?
- * What features should be changed or corrected?
- * What are the limitations of the site?
- * What are your feelings and reactions to the site?

5. Prepare Alternative Projects

Many resorters begin planning at this point, with a vague, partially formed ideas about a new project. But it is worthwhile to first work through the situation analysis--the four steps described above--in order to have a clearer view of past conditions that brought you to this point. The analysis can provide additional information that may help to redefine the problem and shed some new light on possible solutions.

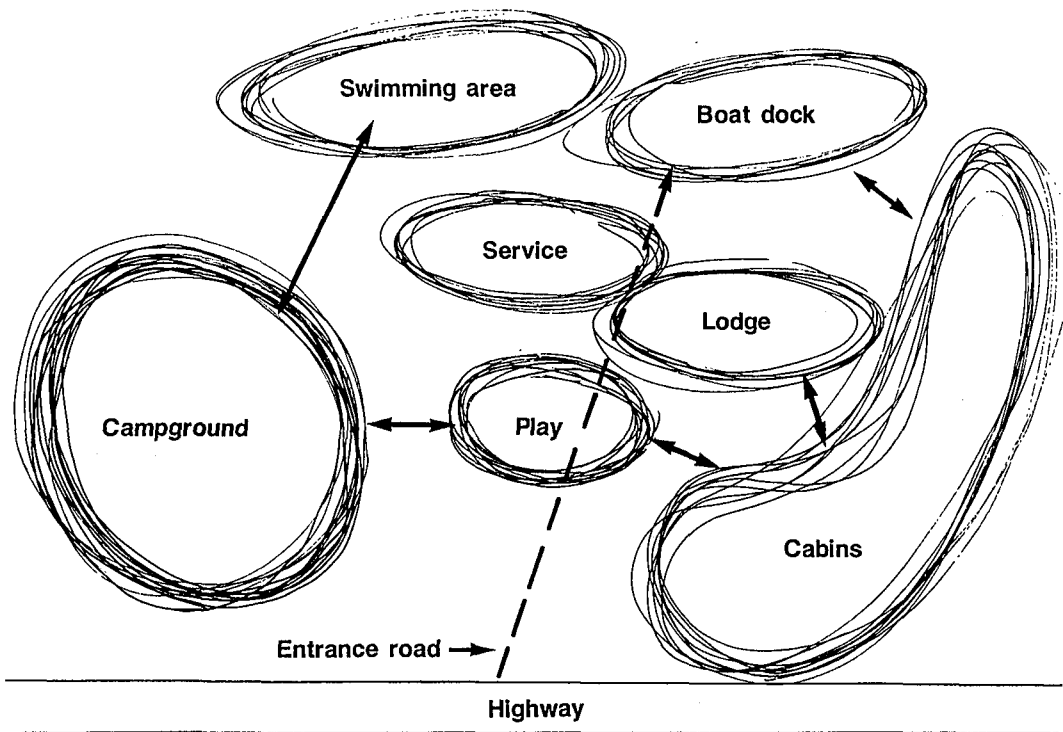


Figure 2. Example of bubble diagram.

After you have analyzed the situation at your resort, draw up a list of the grounds management options you are considering. Include possible variations. For example, in deciding whether to construct a campground, you might prepare alternatives based on size (15 versus 25 units) and configuration of the individual sites (spacing between each). By exploring variations, you might be able to pull together the best parts of each option.

6. Estimate the Effects of Each Alternative

For each option, ask yourself: what will happen if I undertake this project on my property? Make a list of the effects, using the criteria established in step two as a basis for making your estimates. For example, if one of your criteria is "compliance with local ordinances," consider whether the project requires changes in the zoning rules.

Your list of estimated effects can be quite general, although in some cases you may need to be specific. For example, financial data should be very specific, but aesthetic changes might simply be described as "add to/detract from the setting," and comments on maintenance work might be limited to "easier/more difficult."

In estimating financial effects, you may wish to make use of computer programs that calculate fiscal data for various projection options. Contact your County Extension Agent for details.

7. Evaluate the Alternatives

There is a difference between estimation and evaluation. Estimation is judging what the effects will be; evaluation is judging how important those effects are.

To evaluate the alternatives, review your list of estimated effects and, using the decision-making criteria in step 2, rank the importance of each effect. You should end up with a list of projects ranked according to their desirable effects.

8. Select and Implement an Alternative

Based on your evaluation, select an alternative that most closely meets your management objectives. It is unlikely that any one option will emerge as the obvious choice. Nor will one alternative be the best solution for all criteria. You will most likely have to make a tradeoff in order to come the closest to your business goals.

Having gone through all the preliminary planning steps, you are now ready to put your plan into action. Some suggestions for specific grounds management improvements are given in the next section of this manual.

9. Monitor and Evaluate the Project

Planning is continuous. It does not end after you have selected a plan of action. The new project may interact with existing facilities in ways that were unanticipated, and adjustments may be required. The alternative chosen simply may not work, or it may create additional opportunities. In short, the resort environment is dynamic, and the resorter should continually track its operation for clues to improved service and more efficient operation.

CASE STUDY AT LAKE CHAOS

Paul Fjare*

We all agree that the resort industry is in an era of significant change and stress. These shifts have the potential to radically alter the nature of the traditional resort experience. These shifts also place different pressures on how a resort property is used by guests. There are two ways to handle this changing environment -- by reacting and by planning. You can respond to changes you see as they occur. In fact, however, this strategy lets guests and outside forces control your resort operations. Or you can look ahead and anticipate changes by developing a plan.

To demonstrate grounds planning principles, a hypothetical resort at Lake Chaos has been created. It represents a combination of features and design common to many resort properties. This information is presented in Figure 1. Possible site improvements are shown in Figure 2. These proposed changes represent an ideal plan that could be carried out if there were no time and budget constraints. Following this case study, some general guidelines for site improvements and new constructions are outlined.

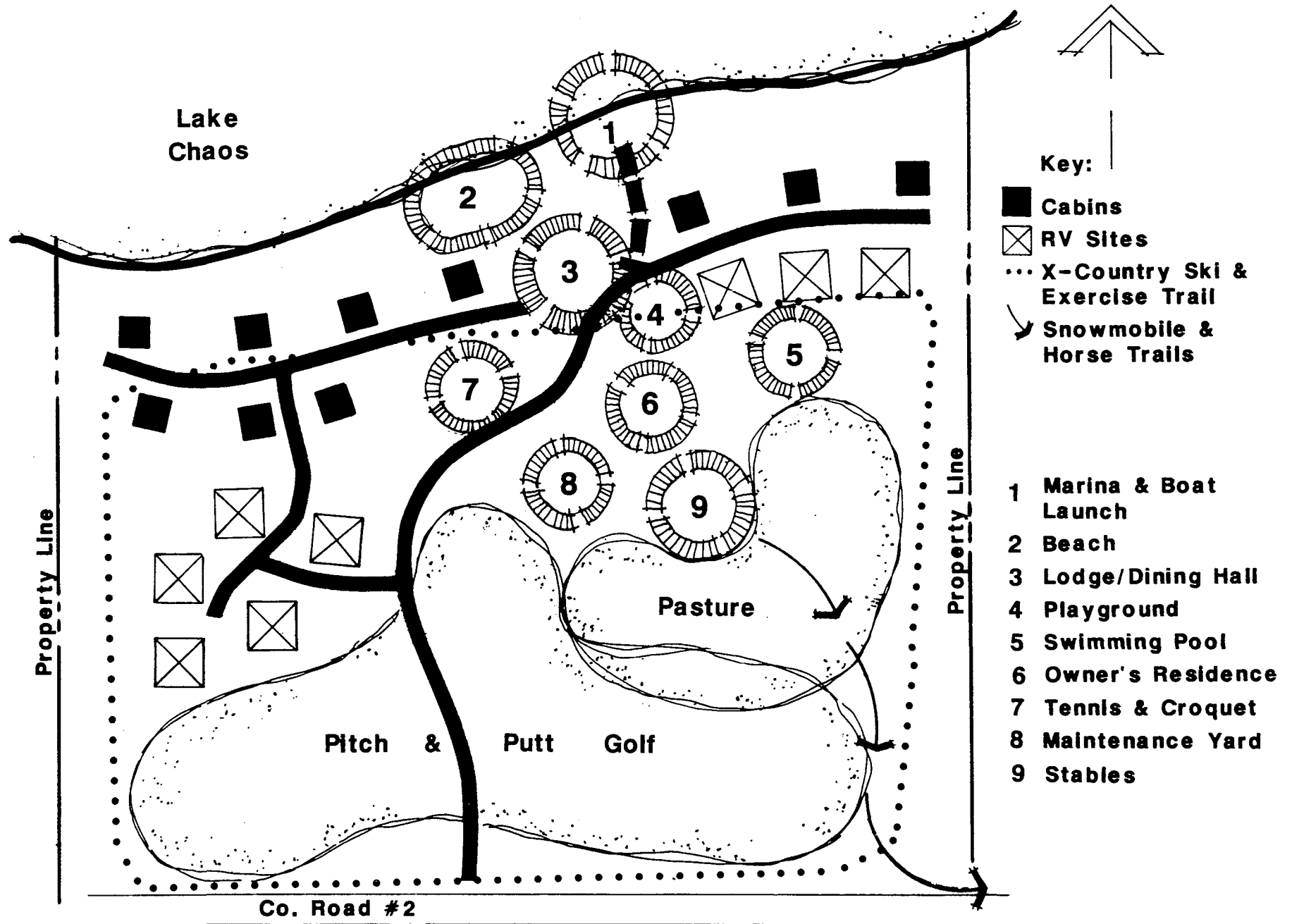
The proposed changes would vary depending on the long-range goals established for the facility. Always write down these goals, supported by specific objectives that outline action. Before you make any decisions on site changes, do an overall cost estimate for the ultimate level of development you envision. Only then will you be able to set priorities and identify individual projects that assure orderly development.

Existing Conditions at Lake Chaos

Lake Chaos Resort is a 10-cabin family resort with eight camping sites for recreational vehicles. Onsite services and activities include a marina, beach, swimming pool, tennis courts, horseback riding, a pitch and putt golf course, and a children's play area. The resort is open during the summer season, and the advertising emphasizes a "natural north woods environment."

The initial step in the grounds planning process is to analyze existing conditions as sketched on the base map (Figure 1). The five issues that emerge are concerned with the view, traffic patterns, safety, separation of uses, and privacy.

* Paul S. Fjare is President of Brauer and Associates Ltd., a land use planning and design firm in Eden Prairie, Minnesota. Many thanks to Mr. Fjare for his generous contributions of time and staff on this project.



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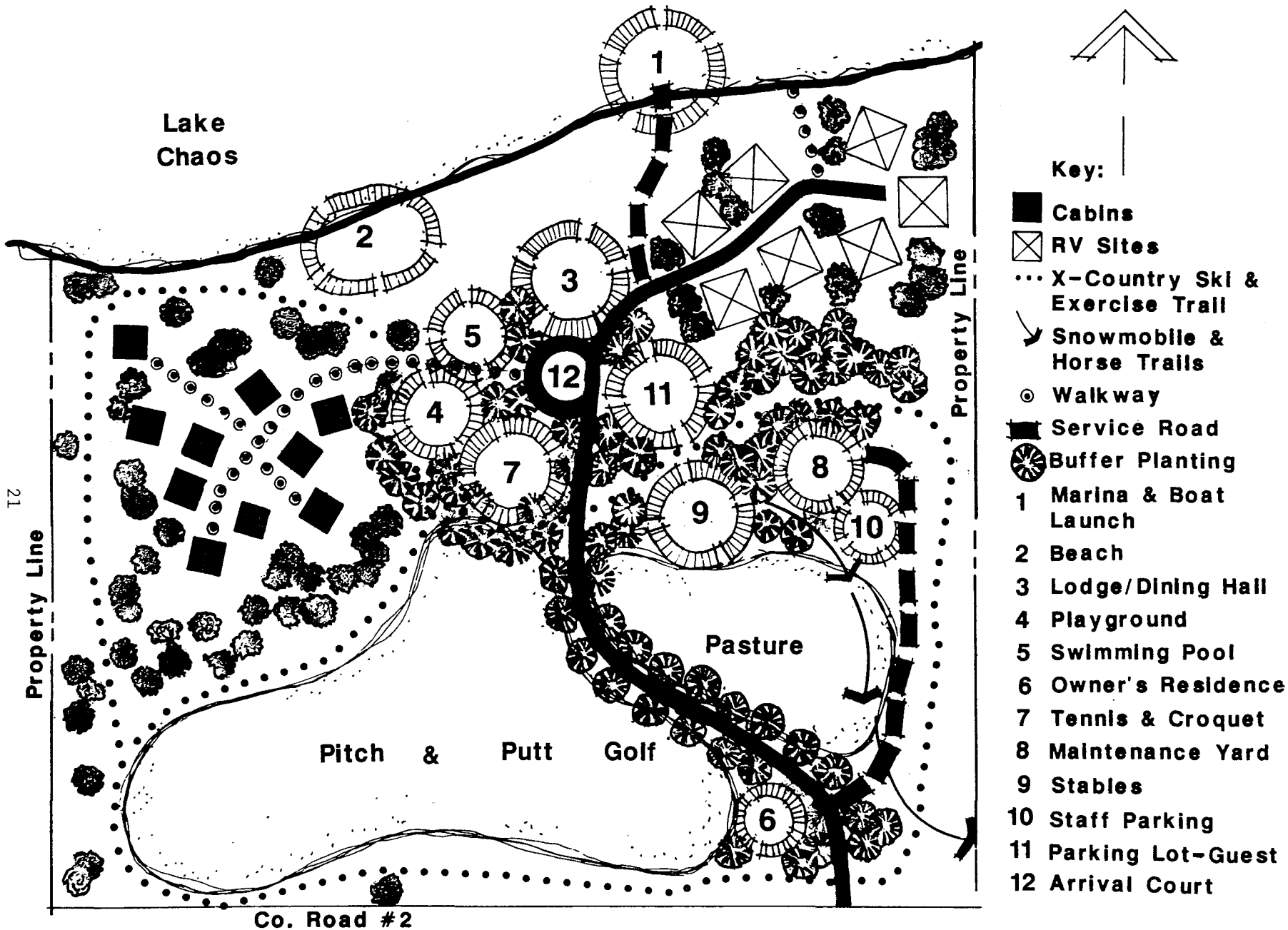
Figure 1. Lake Chaos Resort - existing conditions.

- * There is a good view for arriving guests and passersby with the pitch and putt golf course at the entrance.
- * Maintenance, service, and storage facilities are visible from the road or when walking on the grounds.
- * Resort entrance is used by both guest and service traffic.
- * There are some safety concerns with an entrance through a golf course.
- * Pedestrian and vehicle traffic are in conflict on the property.
- * Onsite loop road chops the property into little pieces and encourages excessive traffic.
- * There is uncontrolled vehicle access to and parking at all cabins.
- * Guests at "landside" cabins are forced to cross the road for access to lakefront.
- * Owner/manager residence lacks privacy.
- * Active and passive activity areas are scattered and mixed.
- * Cross-country ski and exercise trail puts wooded areas to good use.
- * Cabins adjacent to lodge and high use areas lack privacy.
- * Proximity of beach and marina may be a safety hazard.
- * Boat launch traffic conflicts with foot traffic in the area.
- * Proximity of swimming pool and stable/pasture may be both an odor and a health problem.
- * Playground is adjacent to service entrance for lodge. Vehicle traffic will be constant.
- * RV sites directly behind cabins don't have a view of lakeshore, and there is limited privacy for cabin guests as foot traffic passes by.
- * Entire lakeshore is developed, leaving no common areas for use by all guests.

Lake Chaos Development Plan

Given the above conditions, an overall concept was mapped out (Figure 2). This plan represents one landscape architect's perspective on improvements that would make the resort more attractive and functional. Actions proposed to enhance the guests' experience and to make management easier include:

- * Relocate the entrance road to eliminate golf course hazards. This also puts the pitch and putt golf course back together as one unit.
- * Separate the maintenance and service road from the main road. It has been relocated as a spur road off the main entrance.
- * Maintain a view of the golf course as guests arrive, with added variety from the pasture.
- * Develop an arrival court near the lodge for guests. The resort layout makes it obvious that this is where they register, meet the owner, and unload luggage.
- * Provide walkways only to the cabins, thus reducing unnecessary, unsightly, noisy, and dangerous auto traffic on the property. Consider using a golf cart to distribute luggage for your guests.
- * If cars are not allowed to drive up to cabins, provide a guest parking lot on the other side of the main entrance road.
- * Similarly, create a staff parking area off of the maintenance road to avoid conflict with guest traffic.
- * Establish buffer plantings to screen the stable and maintenance yard.



- Key:**
- Cabins
 - ⊠ RV Sites
 - ... X-Country Ski & Exercise Trail
 - ↪ Snowmobile & Horse Trails
 - ⊙ Walkway
 - Service Road
 - ⊗ Buffer Planting
 - 1 Marina & Boat Launch
 - 2 Beach
 - 3 Lodge/Dining Hall
 - 4 Playground
 - 5 Swimming Pool
 - 6 Owner's Residence
 - 7 Tennis & Croquet
 - 8 Maintenance Yard
 - 9 Stables
 - 10 Staff Parking
 - 11 Parking Lot-Guest
 - 12 Arrival Court

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Figure 2. Lake Chaos Resort - development plan.

- * Relocate the owner's residence out of the immediate cabin vicinity to increase privacy.
- * Cluster activity areas (lodge, tennis, swimming pool) to enhance the view and minimize conflicts between different groups of users.
- * Place the playground in an area where parents can watch children while playing tennis or swimming.
- * Position the swimming pool so that a good view of and contact with the lake is possible.
- * Cluster cabins together, and also RV camping sites.
- * Separate the boat launch/marina and swimming beach as much as possible.
- * Keep the beachfront free by clustering the cabins so that uninterrupted foot traffic to the lakefront is possible.

Some Common Site Changes

There is probably a nagging outdoor resort project that tops each resort owner's list of things to do with "extra" time or money. Site mapping and analysis of your resort may reinforce the need to make these changes. Some general guidelines are given here for site improvements common to Minnesota resorts--changing the access/entrance, controlling vehicle use around the cabins, screening utilities, using plant materials, and easing soil erosion.

Changing the Resort Entrance or Access

The transportation plan is important because first impressions as guests drive in shape their expectations. How traffic circulates creates a certain "feel" of the resort. Minnesota resorts generally sell a relaxing north woods experience, so minimizing traffic is often consistent with the image you portray.

One of the first principles is to separate guest traffic from travel related to service and upkeep -- food delivery, maintenance crew activity, family comings and goings, etc. One way to do this is to establish two alternate access points to the resort property, or a spur road as illustrated in the case study. Check the proposed access point(s) in both directions for safe exit and entrance consistent with posted speeds, and seek appropriate permit approval.

A quality entrance sign can add appreciably to the arrival experience. The entrance road layout should capitalize on the excitement of arrival by creating a mood or feeling. In order to carry out that feeling, avoid splitting areas up unnecessarily or disrupting foot traffic patterns.

If you are considering significant redesign of the road system, make a checklist for environmental factors. Contour the land rather than leveling it. Take the soil classification types into account when working with roadway runoff design, and know average annual snowfall when preparing the roadway cross-section detail.

Controlling Vehicle Use Around Cabins

If you don't allow cars to drive up to the cabin, you can sell your guests a safer, quieter, and less cluttered environment. The system used in the Lake Chaos case study is widely applicable: prepare an arrival court where guests initially park for registration and unloading. Then provide an efficient and clean method of getting your guests and their luggage to the cabin. Most likely you or your staff would perform this service. Provide a guest parking lot that is well-lighted and controlled. This frees the space around cabins so you can improve the view with some landscaping and the introduction of grass and other plant materials (Figure 3).

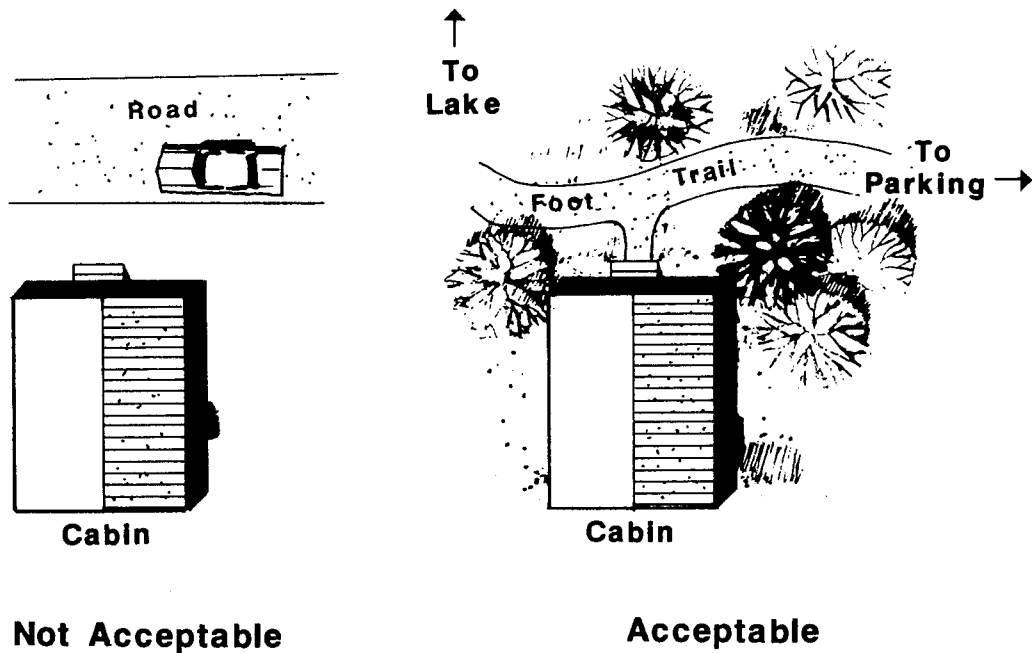


Figure 3. Controlling vehicle use around cabins.

Screening Utilities to Improve the Appearance of the Resort

Utility placement, use of waste receptacles, and outdoor lighting are all some options to improve site appearance. One of the best ways is to place utilities underground. Utilities in the open, especially electricity, can be both unsightly and a serious safety hazard during a storm. Ultimately, buried utilities will cost less to maintain.

Position waste receptacles in easily accessible spaces near walkways. Use a color scheme that doesn't detract from the outdoor environment. Develop fenced enclosures for larger dumpsters near the lodge or maintenance barn. Figure 4 below incorporates a concrete slab to allow for effective cleanup. Propane tanks can be screened with plant materials.

Consider subdued outdoor lighting to outline a walkway or highlight a special tree or flower bed (Figure 5).

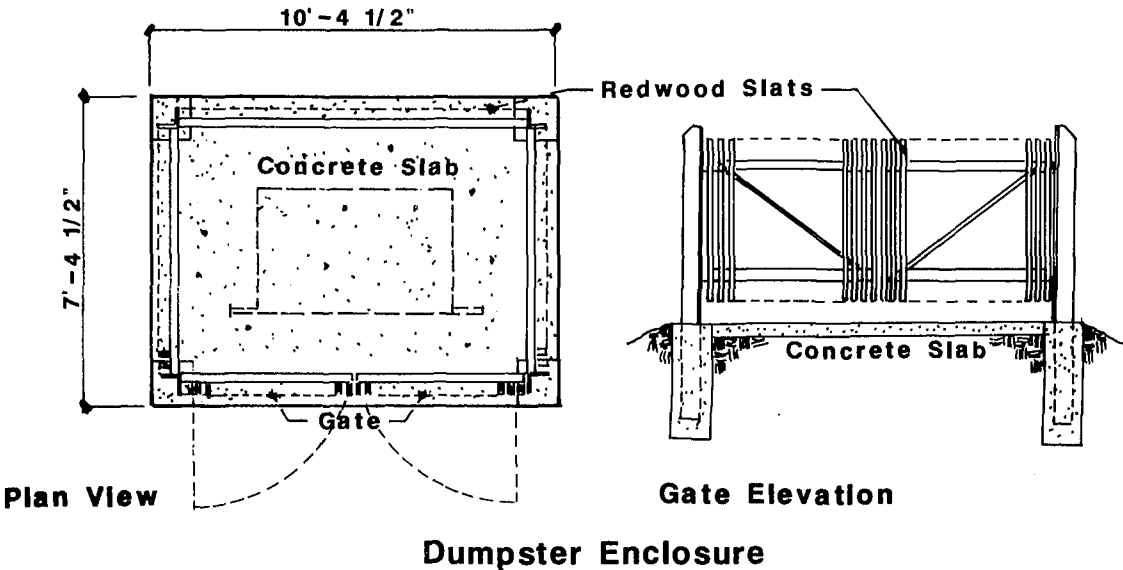


Figure 4. Construction plan for a dumpster enclosure.

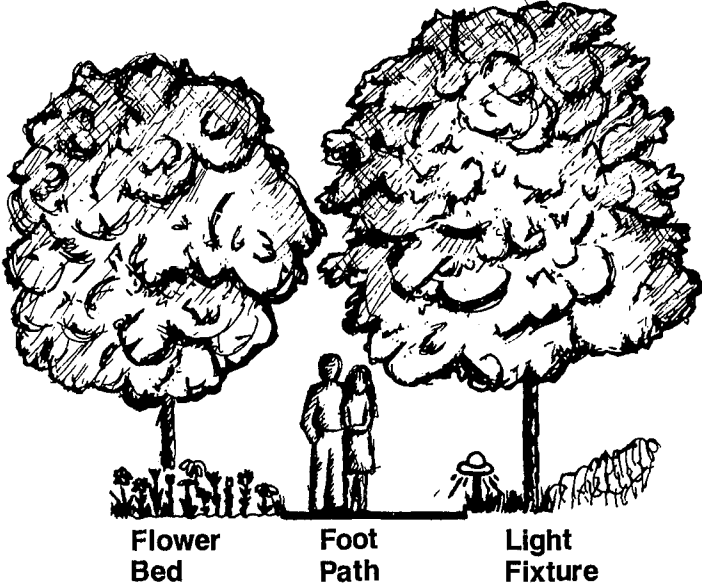


Figure 5. Subdued outdoor lighting.

Using Plant Materials

In addition to a regular tree and shrub maintenance schedule, replace dead or dying trees annually. For the most part, use native species that reflect the north woods environment. The introduction of lots of exotic transplants can detract from the setting. Check with your local county extension agent for horticulture publications on matching species to the site. One of the best books on landscaping for the homeowner is The Victory Garden Landscape Guide (1984) by Thomas Wirth.

It's very rare to see flower beds at Minnesota resorts, but plantings can add an accent and a touch of color if used in the right places. Some locations might be under the resort sign at the highway entrance, near the lodge reception area, on the deck in planters, and in front of individual cabins.

Solving Soil Erosion Problems

During your site inventory, you may have noticed areas of soil deterioration where there is no vegetative cover, or locations with actual soil loss. The strategy is to first stabilize the site, and then to revegetate it. If there is soil removal, potential corrective measures depend on soil characteristics:

- * Develop a series of holding basins (small depressions) along the slope to slow the movement of water. You want to decrease the volume of water flow and velocity. Depending on design, holding basins will collect silt that would otherwise go into the lake, so they must be maintained.
- * Place rip-rap along culverts and drainageways or at the lake shoreline if there is little use.
- * Construct a storm sewer underdrainage system where the water collected goes underground through a piping system. The natural drainage must flow towards the pipe; otherwise change drainage patterns in that direction.
- * Build a series of steps and platforms to eliminate unwanted foot traffic from the slope.

Once the site is stabilized, replace the topsoil. Then mulch and reseed, or stake new sod in place. When soil is bare during construction or while working to correct a problem, staked haybales will prevent soil from eroding into the lake. Silt fencing, a cheesecloth-like fabric, also traps sediment.

If the site is deteriorating, run a soil test to determine nutrient levels. Begin mechanical or chemical means to restore nutrient levels and get some vegetative cover back. Retire the area from active use for a period of time to allow faster recovery. Periodic soil tests will help you make decisions about seeding and fertilization.

New Facility Construction

A growing market segment is composed of guests who want full-service resorts with a wide variety of amenities. Some of the more common improvements that resorts have made include tennis courts, swimming pools and changes to the waterfront. The following sections provide some design guidelines for placement and construction of these facilities. Some of the specifications might cost more money at initial stages, but in the long run it pays to do it right the first time and save dollars later.

Tennis Courts

Place a tennis court in a more passive area of the resort. Avoid locations that position vehicle traffic either next to or behind the courts. Consider excessive or too little wind in your siting decision. If the court is lighted at night, be sure that the illumination or noise will not disrupt other resort activities.

Results of the soil analysis will influence the choice of base construction materials. Generally maintain a north-south orientation to minimize glare from the sun. Avoid drainage from other resort areas onto the tennis courts, and allow for easy runoff from the court surface.

Swimming Pool

Position the pool in a location that is physically and visually accessible. It should be some distance from adjacent living spaces in a more active area of the resort to avoid noise conflicts. There should be a visual tie to the lakefront.

Perform an analysis to determine soil characteristics prior to construction, and make sure that immediate surface drainage is away from the pool. The design should be consistent with local and state boards of health regulations. Allow adequate space to build side decks for lounging and sun bathing at the pool.

Minimize your liability insurance risk by fencing the pool area. Light the pool, deck area, and immediate vicinity. Be aware that only five percent of swimmers use a diving board, but that a diving area will account for 95 percent of pool accidents. Finally, post the pool rules and enforce them strictly.

Waterfront Improvements

One of the focal points at resorts is the waterfront. In addition to maintaining environmental quality, one of the objectives is to control safety hazards. Before making any major modifications, check for appropriate permits with state agencies. Know slope guidelines for vehicle traffic using boat ramps. Separate boat launches from pedestrian traffic on the beach to avoid disrupting other waterfront activity.

Figure 6 illustrates how prevailing wind direction influences placement of a dock and swimming beach. A stalled or loose boat is a significant safety hazard in a swimming beach. Use buoys to identify the swimming area, and have regulations and lifesaving gear in full view for all waterfront users.

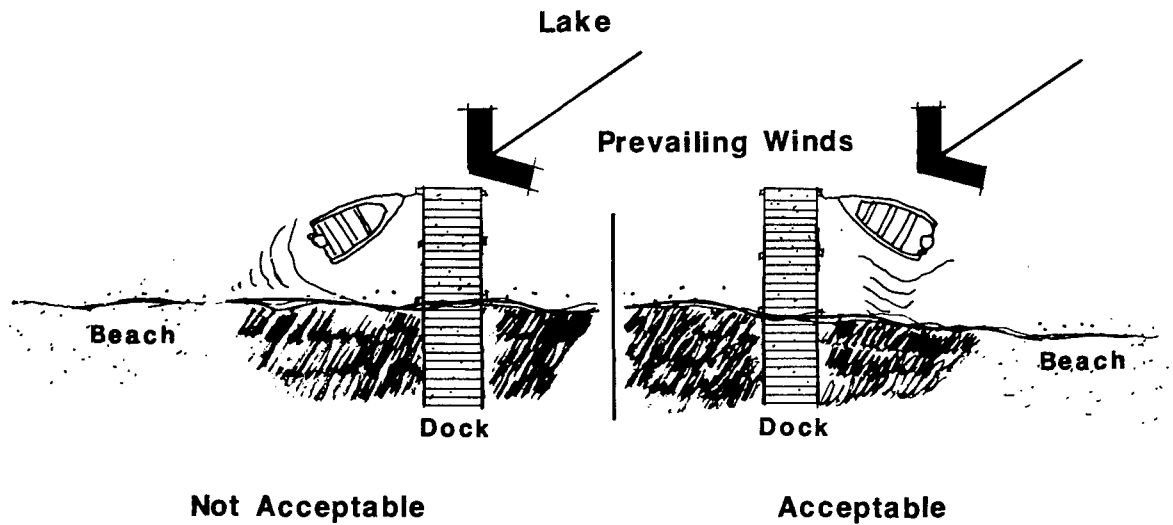


Figure 6. Placement of dock and beach.

The Challenge

Comments that my colleague Donald Brauer made in a 1970 Resort Magazine article, "Map Your Resort's Future Through Good Land Logic," still apply today:

Most resorts, like most cities, "grew like topsy" as a result of a series of individual decisions, quite logical on their own merits, but often lacking strong ties to an overall purpose or a comprehensive plan. Sound and profitable *long-range* decisions are seldom made in the midst of each specific (often near-crisis) development project. Good land logic is the result of careful, deliberate, consistent, and effective planning.

ELECTRICAL SYSTEM - FRIEND OR FOE?

Leslie Mattfield*

Your electrical system is your foe when:

- * You constantly reset breakers or replace fuses.
- * The picture on your TV doesn't fill the screen.
- * The lights dim when a pump or heating element starts up.
- * A motor strains for a long time before getting up to speed.

These symptoms of low voltage are signs that your electrical system is collapsing. An inadequate electrical system means extra money spent for electricity. It generally isn't much, but any little bit does add up over time.

Like other grounds features on your resort, the electrical system needs to be maintained and updated. Before remodeling, however, determine the present condition and assess what changes are necessary to serve your future plans. Planning ahead saves aggravation and money.

For a reliable electrical system, you'll need to plan for the next 10 to 15 years. On the average, demand on an electrical system doubles in that time. Look back on your records. Has consumption doubled in 10 years? If you have waited until you are in trouble with existing service, use a 20- or 30-year plan. This enables you to catch up a bit.

Updating Your Electrical System

Getting Started

You may want to call in outside help to update your system. Someone from your electric utility or your electrician should have the skills you're looking for. If you plan to go it alone, assemble the following tools:

- * the National Electric Code
- * a slide rule or chart showing voltage drop
- * a wire size gauge
- * a tape measure

* Leslie Mattfield is Member Services Director, Dairyland Electric Coop, Grand Rapids.

- * a distance finder similar to one on a camera, an excellent tool for an overhead system.

Begin by drawing your resort, showing cabin size and location. Next, sketch the wiring, noting size and location. If the electrical system is overhead, don't forget to mark down pole size, height, location, and condition.

Review the sketch. What cabins do you plan to remodel or remove in the next 10 to 20 years? While it is impossible to know how much electricity your guests will use 10 years down the road, you can estimate based on past history. Remember, load generally doubles in 10 to 15 years.

Determining Wire Size

My advice is to install at least a 100 amp panel in each cabin that you plan to change. This does not mean, though, that 10 cabins with 100 amp panels located on the same feeder is a 1,000 amp load. Your code book explains how to calculate load diversity.

To determine wire size, start with the month that had the highest kwh usage last year. For example, let's say August was highest with 10,000 kwh. Next, find the 100 percent load factor and determine the maximum amperage usage for a one-hour period. Resorts average a 20 percent load factor; 10,000 kwh is 20 percent of 50,000 kwh. August is a 31-day month (744 hours). Dividing 50,000 kwh by 744 hours gives us 67.2 kw per hour. In order to use the code book, convert 67.2 kw into amps. Dividing 67,200 watts by 240 volts equals 280 amperes.

Therefore, the meter loop should be capable of carrying 280 amps. If you have two feeder circuits, each one will need to carry 140 amps. According to the code book, 3/0 aluminum will handle this load on an underground system.

To review the procedure to determine wire size:

1. Find the month last year that had the highest kwh usage.
2. Determine 100 percent load factor.
3. Calculate maximum amperage usage for a one-hour period: divide the 100 percent load factor by the hours in the month.
4. Convert this figure to amperes by dividing watts by volts.

Note that the code book does not advise on adjustments necessary because of distance. There is a certain amount of voltage drop allowed on the feeder and branch circuits, the combined drop not to exceed five percent. The feeder circuit itself should not drop more than three percent. For example, the national electric code tables show #2 use aluminum in conduit or underground can carry 90 amperes. This is fine if the feeder circuit is less than 300 feet long. But, if the feeder circuit is 350 feet long, the voltage drop is greater than the code allows. A slide rule and other tables will help you determine proper wire size according to distance.

Underground Versus Overhead

Underground electrical systems make a modern appearance for a resort, solve problems with growing trees, ... and expose you to a whole new group of problems. When a tree grows into an overhead line, you are aware of it. But underground problems are not always as apparent. This summer you accidentally nick the insulation on the underground wire when driving a stake into the ground. Next summer, the line goes dead. How do you locate the problem? Before installing an underground system, check to see if your electrician has an underground fault locator. If not, perhaps your electric supplier has one available for your use.

Furthermore, know who has underground splices available for your wire sizes. Locating and repairing an underground fault takes long enough without additional delays in getting equipment and materials.

Overhead systems are not trouble-free either. In addition to trees, clearances are of prime concern when redoing systems. Actual clearance requirements are easy; they're found in the code book. Ongoing compliance with those requirements gets complicated.

Sag charts and pole loading graphs are a must when installing an overhead system. Ice and wire weight are two factors to keep in mind when designing the configuration.

Electric Utility Planning

As you look at these many considerations, you can see how expensive it can be to totally redo an electrical system. But you may be able to update your system gradually. A short-term solution could be a new meter loop and an additional feeder line to solve this year's problems. Plan your changes wisely, after evaluating your resort's future in the marketplace. Make adjustments to accommodate these shifts.

Remember, a good electrical system is your friend. It keeps you freed up for other activities. It keeps your guests happy. Satisfied customers are your best advertising allies.

HINTS FOR UNDERGROUND INSTALLATIONS

Frank W. Hansen*

I have one suggestion which emerges from our experience.

Whenever anything is buried underground the location of the pipes, cables, etc. should be carefully noted on a site plan.

Use a 100 foot tape measure with references for the measurements based on building corners, etc.

Take color photos of all ditches with the pipes, cables, etc. installed. This not only gives a picture of the location but also the location of joints, splices, size of pipe used, cable(s), etc.

The photos would be at least 5 by 7 inches. Each photo should have noted on the back all the important items listed above such as size of cables or pipes, the measurements and any other features necessary to remember.

Take photos of the ditches both directions, i.e. if North to South also do it South to North. It helps in showing elevation changes and in the overall orientation of the system.

File the photos in a safe and logical place so you do not have to run around looking for them while a backhoe is waiting to start digging at \$45.00 or more per hour.

* Frank W. Hansen is owner Sawbill Canoe Outfitters, Inc.,
Tofte, Minnesota.

CAMPGROUND DEVELOPMENT

Larry R. Simonson*

Campgrounds in Minnesota

Before the 1960s, most camping was offered by public agencies such as the U.S. Forest Service, Minnesota Department of Natural Resources, municipalities, or other local units of government. In the 1960s there was an upsurge of interest in campgrounds. In addition to new public campgrounds, many private campgrounds were built, including ones added to existing resorts. There was also a growth in the number of franchise campgrounds. At one time Minnesota had franchises for several networks, but only K.O.A. (Kampgrounds of America) has a major presence in the state at this time.

One difficulty for private campgrounds is that public campgrounds have been able to charge less. However, over time there has been a substantial increase in rates at major public facilities, which has helped alleviate the problem of "unfair competition." Progressive private campground owners have increased the quality of their facilities and services and engaged in successful marketing as a way of outdistancing the pricing competition.

A sample of public campground rates (1987) follows:

<u>Public Agency</u>	<u>Type of Facility</u>	<u>Typical Daily Rate</u>
City of Two Harbors	Primitive site	\$ 7.50
	Full hookup	9.50
City of Worthington	Partial hookup	6.00
	Indian Point - Duluth	Showers/toilets
Kandiyohi County	Elec. hookup sites	8.50
	Rustic	5.00
	Full hookups, showers	12.00
DNR - Forestry	Rustic	5.00
	State Parks	Rustic
		(+ entrance fee)
	Semi-modern	6.00 + 1.50
		elec. hookup
		(+ entrance fee)
U.S. Forest Service	Tent site	3.00-4.00
	No hookups, showers	6.00
	No hookups, showers	7.00 (+ wood charge
	(high use areas)	& dump station charge)

*Larry R. Simonson is Extension Specialist, Tourist Service, Minnesota Extension Service, and the Tourism Center Staff, University of Minnesota.

The increase in campgrounds since 1960 led to the formation of the Minnesota Association of Campground Operators (MACO). This statewide organization, with headquarters in Burnsville, has about 140 members, most of them private campground owners. MACO assists campgrounds in quality development and improved marketing. Campgrounds are identified as MACO members in the state campground directory published by the association in cooperation with the Minnesota Office of Tourism.

Another indication of the interest in campgrounds is the advent of national guides such as Woodall's and Trailer Life. These can prove to be useful marketing tools, but before making the investment to "buy in," check with your association leaders and successful Minnesota campgrounds listed in these guides as to their effectiveness.

Development Guidelines

Do a Situation Analysis

Analyze your site, location, and competition. Look first at the land (and water) resource you have available. Is it large enough to be managed as a profitable economic unit? Minimum lot size required by the Minnesota Department of Health is 2,000 square feet. But as much as 5,000 square feet average per site may be desirable for a quality camping experience, depending on the type of camper you wish to attract. If over-the-road transients are your target market, the land and amenity base will be quite different than if you seek destination campers in a resort setting.

Take an inventory of all other camping facilities within an hour's drive. Find out as much as you can about rates charged, dates of operation, occupancy levels over the season (do not rely on a few "peak periods" to estimate your potential business), and kinds of marketing efforts. You might even visit and stay at several campgrounds of the size and quality projected for your development.

Study the attraction base of the trade area. What opportunities exist to increase the flow of visitors into the area? Opening a new campground is not enough reason for people to visit. Other attractions and complementary services must be available to bring people into the area of your campground.

Investigate Zoning Regulations

Investigate your local or county zoning agency regulations, including a preliminary discussion with your county zoning administrator (or zoning commission). Discuss all aspects of your proposal so that no misunderstanding occurs when you formally seek approval. You may find considerable opposition to your project from local residents. Do your best to overcome such opposition before your application gets to any formal stage before a commission or board. When local people are aroused, it can have a powerful influence on the outcome of hearings.

The zoning administrator should be able to identify other public agencies that have jurisdiction and with which you must comply. Agencies such as D.N.R., Pollution Control Agency, U.S. Forest Service, and Coast Guard or Army Corps of Engineers may have regulations/permits you must meet prior to development.

Confer with Department of Health

Get information on health regulations from your local municipal or county health department or the Minnesota Department of Health. They are the key regulatory agencies with which you must work. A pre-development conference with the Health Department to thoroughly discuss your plan and obtain advice and requirements should help avoid surprises when you submit formal plans for approval later. Health regulations consider spacing between sites, size of sites, water supply, sewage treatment and disposal, including holding tanks, garbage handling, grounds lighting, guest registrations, setback from the water's edge, fish cleaning residue disposal, road requirements and traffic control, fire control and equipment, swimming beach or pool regulation, and others.

Plan Campground Layout

Various aspects of campsite design are discussed in the section following these general guidelines. Once you have decided on the desirable features for your campground and have a good understanding of the requirements, your next step is to translate all this information to your site plan.

You may want to seek help from the Soil Conservation Service or professional foresters in evaluating soils and drainage problems and the tree cover (or lack of it) at the site. You may wish to employ the services of a professional engineering firm or site planners, in particular, if the project is going to be large. At the very least you need to develop a plan to submit to the Department of Health and zoning interests that have jurisdiction in your area. This plan should be drawn to scale and indicate all significant features.

Develop a Financial Estimate

Once you have your plans firmly in hand it is time to get estimates of the investment necessary to develop and operate the facility. Use your preliminary plan to get estimates of costs from suppliers and contractors. (Once the final decision is made, you may wish to get firm estimates or bids from several contractors/suppliers before proceeding.) With the basic cost estimates in hand, you then should determine what sources of funds can be applied to construction and development. If you are seeking a finance package that includes operating costs, you will likely need to estimate your income and expenses for several years to satisfy your lender that the idea is feasible. A sample of a pro-forma profit and loss statement is included at the end of this article. This can be used for month-by-month estimating or for longer periods. The basic requirement for these estimates is that they be

realistic and conservative. A common error in campground projection is that annual occupancy is estimated too high and price too low. Pricing estimates should be based on costs incurred in operation and expected returns for your own labor and equity. An example of a simplified pricing strategy is also included at the end of this article.

Investigate and plan to purchase an accounting system that can meet all legal reporting requirements and at the same time provide you with adequate records to analyze your business and monitor market information from your guests.

Submit Plans

Submit final plans to the appropriate department of health, local zoning administrator, and all other applicable agencies. When all approvals are given, you are ready to begin construction.

Develop a Marketing Strategy

Well in advance of opening your gates to campers, you need to put in place a marketing strategy. Detailed suggestions for a marketing plan are found in the marketing section of the notebook, Managing Small Resorts for Profit. Although written for resorts, much of the information applies equally well to campgrounds. In general, the recommended steps are:

1. Become a member of key marketing development groups: your local chamber of commerce or visitor convention bureau, the Minnesota Association of Campground Operators, and the Regional Tourism Association (if individual memberships are in order).
2. Develop your brochure if needed. Start early as it will take time to accumulate photos (or art work), arrange for printing, and distribute brochures.
3. Plan and arrange for sport and travel show participation well in advance (if this method is to be used). Get names and addresses of show circuits from your regional tourism organization, local chambers of commerce, the Campground Owners Association, or the Minnesota Office of Tourism.
4. Plan your media campaign by linking with "banner program", regional promotions, local chambers of commerce, or media events of the Campground Owners Association and arrange for ads in campground and other travel directories.
5. Conduct an open house of your new facility for the community around you so that the community knows who you are and what facilities and services you offer for visitors. Invite both owners and employees of firms who will be meeting or serving your clientele to tour your grounds, enjoy your facilities, and have refreshments.
6. Conduct an ongoing evaluation of your market by keeping records of your guests. Find out as much as you can about who has come, from where, why they came, how they found out about your place, their likes and dislikes while in camp, and more. These answers will help you improve both your campground and your market strategy.

Campground Site Planning

(Adapted from a 1971 report prepared by Dayton Larsen, former Area Extension Agent, Forestry and Recreation, for Minnesota Tourist Travel Notes.)

Over time, many requests for information on campground development have been received by the Minnesota Extension Service. These come from local units of government, resort operators, and those wishing to develop or expand free-standing campgrounds.

Some of the more important aspects of campground development are discussed below: access and circulation roads, individual camping units, toilet facilities, water supply, electricity, garbage disposal, registration system, signing system, foot trails, and a sewage system.

It is essential to consult Minnesota Department of Health or county/municipal health departments, whichever applies, on final design criteria.

For an information packet for prospective mobile home park or recreational camping area owners, write to: Minnesota Department of Health, Section of Hotels, Resorts, and Restaurants, 717 Delaware St. S.E., Minneapolis, MN 55440.

Access and Circulation Roads

If at all possible, provide a single entrance to the campground. A one-way road that circles through the entire camping area would provide the best overall control of traffic. Try to design this road so it will provide an atmosphere of privacy, eliminate accidents, reduce the nuisance of dust and noise, and conserve the trees and shrubs. Avoid steep grades and sharp turns. Gravel or some type of permanent road surfacing will help eliminate dust and mud problems.

If it is necessary to have two-way traffic in the campground, the road should be at least 20 feet wide. One-way traffic roads should be about 14 feet wide. All roads should be crowned in the middle to provide for quick water drainage. Ditches and culverts might be needed in certain soil and terrain conditions.

Individual Camping Units

Each campsite should be a private living unit by itself. It should contain ample parking area for an automobile and boat or trailer. A sturdy picnic table and some kind of a fireplace also should be provided. Most campers no longer cook over open fires, but they still want them for other purposes.

The campsite should be located on well-drained ground and take advantage of some shade from surrounding trees.

If possible, locate the site where it takes advantage of a view. This is an extra "plus" that will bring campers back.

Most tenting campers prefer mounds or platforms as pads on which to erect their tents. These tent bases should be raised about four inches above the existing grade and should be constructed of mixed fine gravel and clay with a

topping of fine sand. These mounds should be at least 16 feet by 16 feet. With the trend toward larger tents and extension porches, it might be advisable to make the tent bases 20 feet by 20 feet.

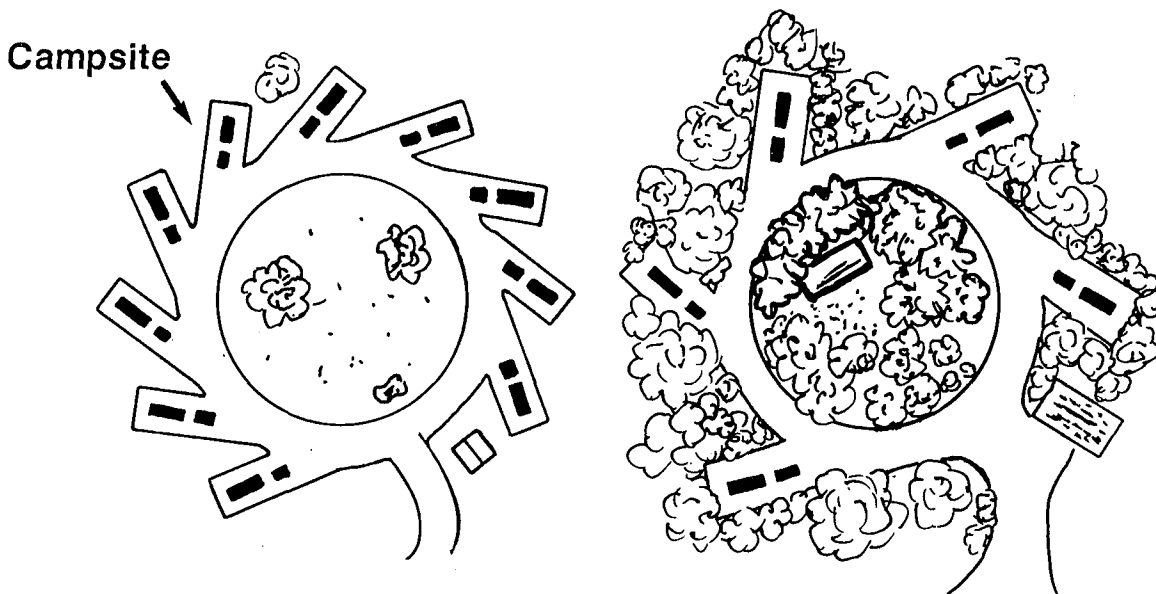
Facilities for site wastes, such as dish or hand washing water, should be constructed for each site. These may be cesspools or seepage pits with grated openings or extended tile pipes that are screened to receive only liquid wastes. Extended tile should be six inches in diameter with the bell end up. Heavy hardware cloth should be cemented into the bell to prohibit the deposit of solids.

Campsites should not be too close together. Give the campers a little elbow room. They will appreciate it.

Five sites per acre might serve as a criteria; however, this might vary according to different sites. Department of Health regulations state that a minimum of 2,000 square feet shall be provided for each recreational camping vehicle site.

In general, try to separate tent campers from trailer campers.

The layouts illustrated are aesthetically pleasing and appropriate for tent camping or small units. If full hookups (water-electric-sewage) are planned, it may be more efficient and cost effective to use more symmetrical layouts with somewhat less spacing between units.



At left is an overcrowded area without good landscaping design. At right is a preferable layout.

Toilet Facilities

Prior consultation with the Minnesota Department of Health or county health department, depending on who has jurisdiction, is an absolute necessity when planning campground toilet facilities. There are a large number of regulations pertaining to plumbing, sewage disposal, toilets, bathing, and laundry facilities that vary according to the site, size of the campground, and soil type.

Some general regulations pertaining to toilet facilities include:

- * one water closet for each 10 sites
- * one lavatory for each 10 sites
- * one shower for each 15 sites
- * not less than one complete set of fixtures for each sex
- * privies, when permitted, constructed in accordance with standards set by the Department of Health
- * privies for each sex spaced at least 15 feet apart
- * no central toilet building or privy located more than 400 feet from the farthest camping site (however, a central building with satellite privies in outlying areas may meet regulations)

Layout of water, electric, and sewage hookups must be in accordance with health department regulations.

Water Supply

Any water supply used in a campground also must meet Department of Health regulations. The department requires details of the well construction, pump setting, pump type and capacity, pressure tank location and capacity, and details of the pump house.

No well or water faucet may be more than 400 feet from the farthest campsite.

The water supply should be capable of supplying 50 gallons each day for each site that lacks individual water connections, and 100 gallons per site each day for all spaces provided with individual water connections.

The Division of Waters, State Department of Natural Resources, requires that you obtain a permit from them for any water supply for more than 25 persons.

Electricity

Most camping vehicles and trailers are equipped with electrical fixtures and outlets. Therefore, it is essential that at least part of your sites be provided with electrical hookups. Most campers are more than willing to pay the extra fee for this service.

You will need to provide lighting for certain areas in the campground, such as the water supply, toilet facilities, wooded paths, and waterfront facilities.

Consider going underground with the electrical lines. This would do much to eliminate cutting trees for overhead lines and enhance the overall appearance of the campground.

With the present trend toward larger and more sophisticated campers containing virtually all the electrical conveniences of home, be sure to provide ample power to accommodate these needs.

Most electric suppliers can assist you in planning electrical hookups to ensure adequacy and safety. The actual electrical work must be done by qualified licensed electricians for any sites serving the public.

Garbage Disposal

Supply standard garbage cans with tight-fitting lids for every four camping sites. Disposable plastic liners aid in collection and disposal, and minimize washing requirements.

Racks for your garbage cans help to prevent spillage by animals and high winds. They also facilitate handling.

Collect all garbage and refuse twice a week and more often during periods of high occupancy. The cans should be washed once a week and sprayed with an appropriate insecticide.

Registration System

State regulations require that any facility providing overnight accommodations for the public must register their guests. Good business management also dictates that a campground owner keep a record of guests. The owner can use these records for market analysis, as a mailing list, or for many other purposes.

Provide registration facilities near the entrance of the campground. Provide ample parking for large units, too.

While the guest is registering, the campground owner has an excellent opportunity to practice the art of hospitality. This starts out with a smile--whether it is early in the morning or late at night. The owner can provide directions, explain rules and regulations, offer services, and do much to create a friendly welcome.

Signing System

Signs are very essential around a campground. They help with traffic flow and point out the different facilities and services available within the campground.

If you are not a sign painter, don't attempt to make the signs yourself. Your signs are a first measure of the quality of your service. Get some routed wood signs made. The initial cost may be a little high, but they are very appropriate for a campground and will last for years. Don't be too wordy, and don't plaster the trees with signs. An appropriately placed sign on a treated post with an arrow and a word or two on the sign is usually sufficient.

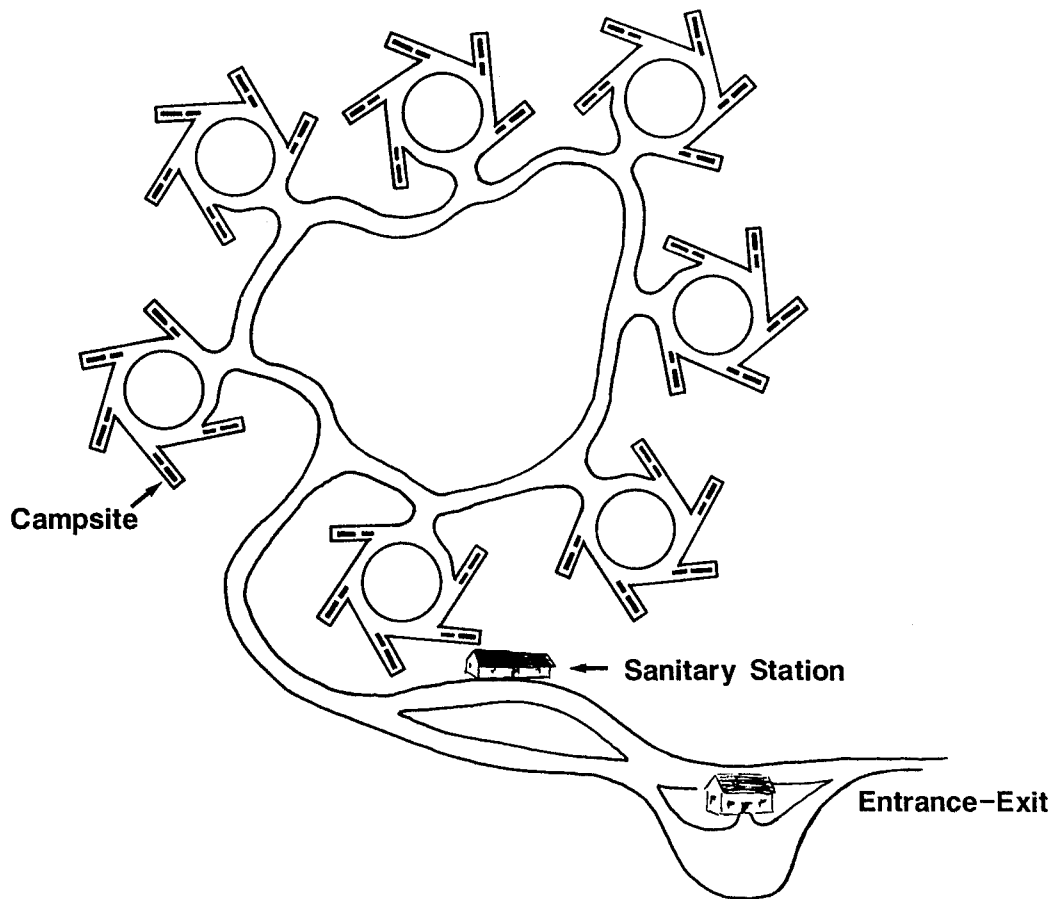
Foot Trails

The foot traffic through a heavily used campground must be controlled or, within a few years, damage to trees, shrubs, and grass will occur. The best way to control foot traffic is to make well-defined paths between areas that you know will be used heavily. Cover the paths with gravel, black-topping, or wood chips. Steer paths away from exposed tree roots, grass areas you might want to preserve, and unsightly spots. Take advantage of special scenic areas by erecting a bench where guests might rest, visit, or take pictures.

Sewage System

Here again, the state Department of Health must be consulted before you construct any sewage system. A number of regulations govern the types of sewage systems that are required for different kinds of recreational camping areas.

A sanitary dumping station is another service that needs to be provided in or near the modern-day campground. The health department can provide the specifications for constructing this facility.



This layout avoids overcrowding, has a single entrance-exit for traffic control, and a sanitary station with pullout parking.

Pro-forma Profit And Loss Analysis

Estimated Gross Sales:

	<u>High</u>	<u>Probable</u>	<u>Low</u>
Camper Fees	\$ _____ %	\$ _____ %	\$ _____ %
Groceries, Beverage Sales	\$ _____ %	\$ _____ %	\$ _____ %
Other (game room, firewood, gift shop)	\$ _____ %	\$ _____ %	\$ _____ %
Total estimated gross sales	\$ _____ %	\$ _____ %	\$ _____ %

Estimated Variable Operating Expenses:

Food & Beverage Supplies	\$ _____ %	\$ _____ %	\$ _____ %
Gift Shop and other supplies	\$ _____ %	\$ _____ %	\$ _____ %
Marketing: adver., prom., commissions	\$ _____ %	\$ _____ %	\$ _____ %
Dues	\$ _____ %	\$ _____ %	\$ _____ %
Utilities: heat, light, power, telephone	\$ _____ %	\$ _____ %	\$ _____ %
Laundry, Cleaning supplies	\$ _____ %	\$ _____ %	\$ _____ %
Repairs, maintenance	\$ _____ %	\$ _____ %	\$ _____ %
Administrative Costs: travel, auto, office	\$ _____ %	\$ _____ %	\$ _____ %
Owner, employee compensation	\$ _____ %	\$ _____ %	\$ _____ %
Other	\$ _____ %	\$ _____ %	\$ _____ %
Total estimated variable expenses	\$ _____ %	\$ _____ %	\$ _____ %

Estimated Fixed and Capital Expenses:

Taxes & Licenses	\$ _____ %	\$ _____ %	\$ _____ %
Insurance: property, liability	\$ _____ %	\$ _____ %	\$ _____ %
Interest, principal payment	\$ _____ %	\$ _____ %	\$ _____ %
Depreciation	\$ _____ %	\$ _____ %	\$ _____ %
Other (including owner equity charge)	\$ _____ %	\$ _____ %	\$ _____ %
Total estimated fixed expenses	\$ _____ %	\$ _____ %	\$ _____ %
<u>Total All Expenses</u>	\$ _____	\$ _____	\$ _____

Total Gross Sales	\$ _____	\$ _____	\$ _____
- Total Expenses	\$ _____	\$ _____	\$ _____
Estimated Gross Profit (or Loss)	\$ _____	\$ _____	\$ _____

Campsite Pricing Strategy

Assumptions: Fifty-unit campground developed new on pre-owned land. Value of land approximates \$30,000; value of improvements for campground approximately \$70,000 not including owner's labor input to construction. Owners have \$50,000 equity and bank loan of \$50,000 at 10 percent interest. Annual payment of interest/principal is \$7,500. Estimate of 30 percent occupancy for first three years on seasonal operation from May 15 to October 10 (150 days total) translates into average rental per site of 45 days. Besides campsites, operator offers gift shop, grocery sales, snacks, and wood for sale. (Figures given in example below have no relevance-- your own figures are what counts.)

<u>Variable</u>			<u>Fixed and</u>		
<u>Operating Expense</u>	<u>Example</u>	<u>Your Figures</u>	<u>Capital Expense</u>	<u>Example</u>	<u>Your Figures</u>
Supplies for sale:			Taxes & Licenses	\$1,000	_____
food, beverage,			Insurance	3,000	_____
gift shop supplies	\$5,000	_____	Interest/principal		
Marketing Costs	1,500	_____	payment	7,500	_____
Utilities	2,500	_____	Depreciation	3,000	_____
Telephone	500	_____	Other	_____	_____
Laundry, cleaning					
supplies	500	_____	Total Fixed		
Repairs, maintenance	500	_____	Costs	\$14,500	\$ _____
Administrative Costs	500	_____			
Owner & Employee			Total Variable &		
compensation	5,000	_____	Fixed Expenses	\$31,000	_____
Other & Misc.	500	_____	Less supplies		
Total Variable			sold--food, gifts,		
Costs	\$16,500	\$ _____	beverage, wood	\$9,000	_____
			TOTAL needed from		
			campsite rental	\$22,000	_____

30 percent occupancy for open season amounts to 2,250 nights occupied campsites. To calculate average rate per site:

$$\text{Average Daily Rate} = \frac{22,000}{2,250} = \$9.76 \text{ (rounded to } \$9.75)$$

Your Figures: ADR = _____ = \$ _____

Business then provides enough cash flow to pay bills, provide modest labor/management return, pay interest/principal payment. An added charge for your equity (this example: \$50,000 @ 10%) should be calculated. This brings average site rent in the example to \$12.00 (\$27,000 ÷ 2,250 = \$12.00).

Increased occupancy, extended season, higher rates, or more sales from other profit centers would all tend to reduce required rates or improve profitability of the business.

Additional Resources for Campground Owners

Minnesota Department of Health, Section of Environmental Field Services,
717 Delaware St. S.E., Minneapolis, MN 55440

- Basic health regulations

County health departments, County Courthouse

- Basic health regulations

County/municipal zoning authorities, County Courthouse or City Hall

- Zoning information

Minnesota Department of Natural Resources, 500 Lafayette Rd., St. Paul, MN
55146

- Division of Parks: design ideas
- Shoreland Management: regulations
- Fish and Game: propagation, utilization of natural stock

U.S. Coast Guard

- Applicable regulations on boating use, regulated waters

U.S. Forest Service, Cass Lake, MN 56633 or U.S. Forest Service, Federal
Building, Box 338, Duluth, MN 55801

- Use of lease land, forest roads, trail networks, land within the
forests

U.S. Army Corps of Engineers

- Harbor construction, shoreland stabilization, regulated
waters

Minnesota Office of Tourism, 375 Jackson St., 250 Skyway Level, St. Paul, MN
55101

- Marketing ideas, appropriate listings

Minnesota Association of Campground Operators, 1000 East 146 St., Suite 121G,
Burnsville, MN 55337, (612)432-2228

- Marketing, lobbying efforts, educational programs for
industry

Tourism Center, Minnesota Extension Service, University of Minnesota, 246
Coffey Hall, St. Paul, MN 55108

- Development and management advice, educational programs
for industry

Small Business Development Center, Minnesota Extension Service, 248 Classroom
Office Building, St. Paul, MN 55108

- Brochure critique service - no charge

CROSS-COUNTRY SKI TRAILS

Tim B. Knopp*

Cross-country skiing has been the fastest growing form of winter recreation in the nation. In Minnesota, a 1983 survey of Twin Cities metro residents showed that 39 percent of those 18 years of age or older were interested in cross-country skiing (over twice the number interested in snowmobiling). A 1984 statewide survey showed that 44 percent of Minnesota households wanted more cross-country ski trails.

Minnesota has just begun to provide for cross-country skiing opportunities. The success of creative packages such as the resort "ski-thru" program demonstrates the potential of this resource. Probably no other state, outside of Alaska, has as vast an expanse of relatively barrier-free, snow-covered terrain. This land base presents an opportunity to develop a comprehensive network of trails that would rival those of Norway and Finland. The resort industry is a critical factor in this development.

Few other forms of outdoor recreation are as dependent on the accommodations provided by resorts, motels, and similar facilities as is cross-country skiing. Even those relatively few skiers who enjoy camping or trekking through undeveloped wilderness will often use lodging facilities as staging areas or destination and rest areas. This overview focuses on what it takes to attract cross-country skiers to a region and to a particular resort. A "breakeven" economic analysis will determine if your resort can successfully tap into this market.

General Considerations

It is important to remember that not all cross-country skiers are alike. Some are interested primarily in the physical fitness aspects, others the sociability of the sport, and still others the opportunity it provides to enjoy the quiet, serene beauty of the winter landscape. Most resort operators should probably focus on this last group; here is where resorts have the best chance to offer a unique experience. Those who are looking only for exercise or a chance to mingle with other skiers can usually find these things closer to home. However, these should not be overlooked as contributing factors.

* Tim B. Knopp is Associate Professor, Dept. of Forest Resources, College of Forestry, University of Minnesota.

The three most important things to a cross-country skier are: trails, trails, and trails. Good and plentiful food probably comes fourth, comfortable lodging fifth, and the "extras", such as saunas and lounging areas, last. Requests for fireplaces, however, do seem to be increasing. The participants in few other forms of recreation are as focused on the activity itself. Additional amenities can be significant, but they are usually incidental to skiing itself.

Trails have two principle attributes. First, the trails themselves; that is, how they are laid out, marked, and maintained. A second, no less important attribute, is where the trails are located in relation to the environmental setting.

This second feature deserves special attention. Much of the trail development for cross-country skiing in the U.S. seems to have lost sight of this aspect. Trails, by definition, suggest a means of making it easier to get from here to there. The term "cross-country" also implies the idea of an origin and a destination or goal. Trails designed strictly as training or exercising devices needn't incorporate these concerns. Some skiers may be content to ski round and around and then head for the showers. Most skiers, however, want more. They would like to go somewhere, to experience nature--to stop and smell the pines.

A common mistake, a result of ignoring the importance of the setting, is to cram too many trails into too small an area. A glance at a map of this kind of system hardly creates the impression of "getting away from it all." The trails are simply too close to each other and offer too little promise of an opportunity to explore the countryside.

This brings us to an important reality. Few, if any, private resort operations will control a large enough land resource to provide sufficient trails on their own. Cooperation with other resort managers, private recreation facilities (for example, golf, stables, jogging trails), and public land administrators is essential. The Pine Beach ski system with spur trails to Cragun's and Kavanaugh's is an example of this partnership. Local ski clubs can also be extremely helpful; they may be better able to obtain easements over private property, and they can assist in actual trail construction.

A token trail system won't do the job of attracting skiers from a distance for extended visits. A minimum level of trail opportunities must be provided. It is difficult to come up with an exact figure. Fifty to 80 kilometers (30 to 50 miles) of trail is probably a minimum for a weekend visit; more trails will be more competitive.

It helps to know your market. The "something for everybody" operation is not always the most successful. Some managers have made the mistake of thinking that they can accommodate all types of activities with little attention to how they interact. Often the spillover from one activity will impair the experience of another--and no one is satisfied. The smaller, specialized resort has a distinct advantage. A small resort can concentrate on one or a few segments of the market, avoid user conflicts, and maximize customer satisfaction. These markets can be more than enough to keep the resort fully occupied, and you won't be competing with the big ones. The guests themselves become part of the appeal. People enjoy associating with kindred spirits; they like to talk about their recreation with others who can appreciate their enthusiasm. Remember that the Twin Cities is one of only a few markets with a sufficient number of cross-country skiers so that mass

advertising is a realistic option.

Trail Layout and Design

This outline cannot cover every detail of ski trail layout and design. The references listed at the end of this article provide more detailed information. In addition, seek out an experienced individual who can assist onsite with the actual trail design.

Three important aspects of layout and design are: patterns, standards, and sequence of operations.

Patterns

A general pattern can be considered even before you look at the terrain and the actual site. The objectives are to provide a variety of alternatives and to avoid confusion. Many problems can be avoided by not trying to put too many trails in a small area. Even with proper signing, it can be very disruptive to stop every few minutes to check one's location at a trail junction. Furthermore, it is very difficult for skiers to judge such short distances and, thus, they may not be able to determine which junction they are at. This does not mean that you should not provide one or more relatively short loops for inexperienced skiers or those who want to squeeze in some extra skiing before breakfast.

To some extent, trail patterns will be dictated by adjacent landowners and existing trails. The resort operator will, of course, want to incorporate as much as possible of the larger pre-existing system. It would be best if all those involved worked together from the very beginning.

Here, for the sake of illustration, one possible layout pattern will be described. It has a certain inherent logic, it can be developed in stages, and it can be made to fit a variety of terrain conditions. For reference, we can call it the "satellite loop system."

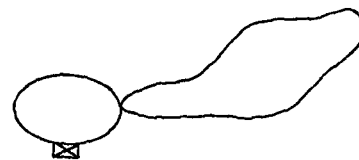
The initial development features a short (1 to 3 km; .6 to 2 miles) simple loop on easy terrain suitable for any level of ability (Phase I). A loop is then attached to the primary trail circuit (Phase II). This loop can provide variety and make use of the special features of the landscape. One possibility is for the trail to go up a valley and return on the ridge or an adjacent valley. Additional loops provide more variety and degrees of difficulty (Phase III). Remember, even those who are intimidated by hills may want to ski relatively long distances and see the countryside. Satellite loops should be separated at intervals along the primary loop in order to avoid confusion and to segregate skiers of different levels of skill. The length (out and back) of the loops can vary from 5 to 30 kilometers (3 to 18 miles). Where feasible, the outer extremities of the loops can be connected and the options multiplied (Phase IV). Connecting trails can be carried from the outer loops to other trail systems or attractive destinations (Phase V).

Many people look upon a resort stay as freedom from the automobile. Ideally, most skiers would like to park their cars at the resort and forget them until they are ready to drive home. A resort that can offer skiing from the door, or a short walk away, will be far more attractive than one that

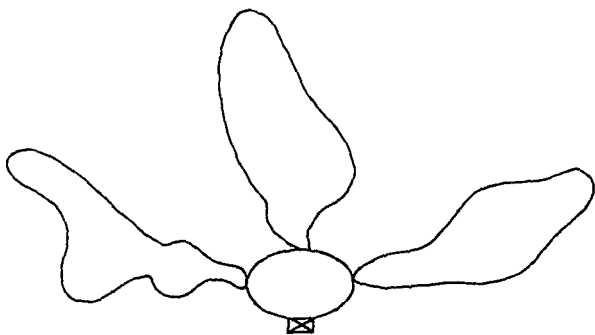
Phase I



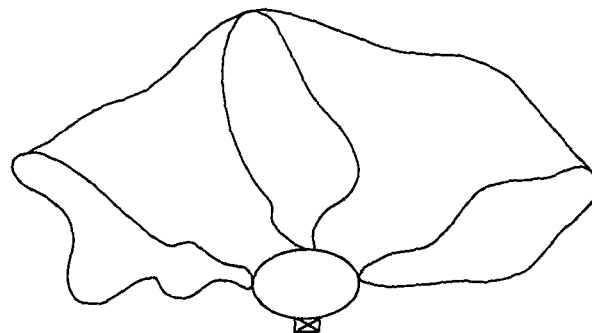
Phase II



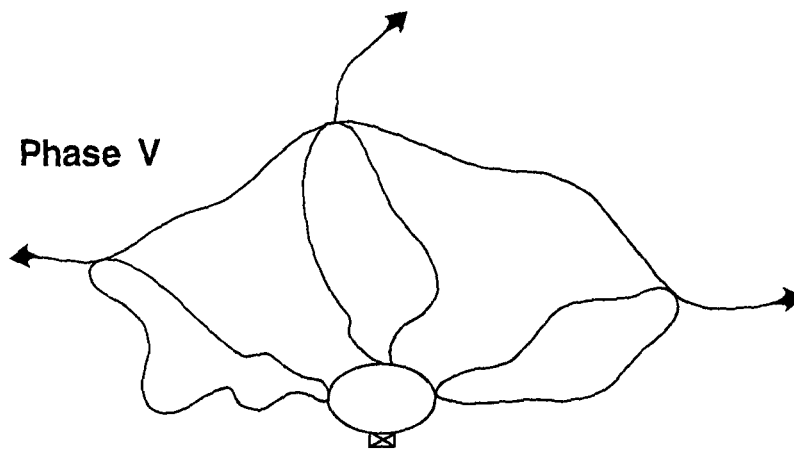
Phase III



Phase IV



Phase V



Satellite loop system.

requires skiers to drive to the trails. The "drive and park" kind of skiing is something they can often find closer to home.

Standards

By standards we mean the design criteria for the actual trail construction as well as the level of development and maintenance. Although there are differences of opinion and preference, it is reasonable to assume that all trails do not have to meet the same standard of design--there is merit in variety. However, it is important to identify and label the type of trail that is being provided; the skier can then make a rational choice.

Groomed vs. "primitive" trails. Recent developments in the sport of cross-country skiing have increased the demand for highly developed, well-groomed trails, some with tracks, and others packed and smoothed for the skating technique. Many skiers new to the activity know nothing else. But other experiences and opportunities shouldn't be forgotten. Some skiers, and possibly even more in the future, will seek out a more "primitive" kind of trail, one that provides intimate contact with the environment and that is less crowded and more challenging. Untracked snow has a unique appeal. To those skiers who don't mind breaking a track, fresh, undisturbed snow can hold the promise of adventure and more solitude. Also it is well to keep in mind the tradeoffs; more miles of trail can be provided if all the trails are not groomed. On ungroomed trails the main considerations are proper marking and the removal of major obstacles such as brush and windfalls. Bridges and gates may also be necessary.

Level of difficulty is an important element of design. This is usually a function of steepness and the sharpness of downhill curves. It is imperative that at least a portion of the trails be suitable for beginners. These trails should begin at the trailhead and require a low level of commitment relative to distance. On the other hand, a system will not attract large numbers for extended periods unless some more challenging trails are offered. A good understanding of your operation's particular market is essential.

One-way trails. Dense, heavily used trail networks are often marked "one-way" in order to reduce the effects of crowding and the danger of encounters on steep hills. One-way trails are not as appropriate on larger, resort-centered systems where trail segments tend to be longer. In the first place, one-way trails reduce the number of options for the skier. Furthermore, they can increase hazards for cross-country skiers who begin a trail, discover that it is beyond their capability, but persist rather than violate the rules. To maintain safe, two-way traffic and lessen the danger of collisions, it may be necessary to divide the route on steep segments of the trail.

Lighted trails. Winter days are relatively short. A lighted trail close to the lodge can be a significant "extra." It needn't be very long; two to four kilometers is probably enough. Many skiers will enjoy the opportunity to take a short run after dinner in order to work off that heavy feeling that comes from overindulging in good food. A lighted trail has another valuable function: as an aid to the skier who is coming in after dark from an extended trek.

Maintenance. A trail will not remain a trail if it is not maintained. New growth will move in and windfalls will obstruct passage. A regular schedule of monitoring trail conditions and clearing should be established. The fall months are usually the best for routine cutting of brush and limbs-- growth has stopped for the year and working conditions are optimum.

Sequence of Operations

Here is an outline of the steps for developing a cross-country ski trail system:

1. Obtain base maps and/or aerial photographs.
2. On a base map, locate all points that the trail must pass through.
3. Locate (as far as possible) all existing trails, unplowed roads, recreation grounds and obvious right-of-ways that could be incorporated into the trail system.
4. Locate all barriers and areas to be avoided.
5. Rough out the route on the map, taking into account steps 2, 3, and 4, and previously determined trail patterns.
6. Flag the tentative route on site, making adjustments for characteristics of terrain and vegetation.
7. Describe the treatment required for each segment of the trail.
8. Begin trail construction (usually a phased operation).
9. Draft a plan for signing the trail.
10. Make a final check of the trail and put signs in place.

This checklist should help you to proceed in a logical fashion with a minimum of backtracking.

Maps. United States geological survey maps can be obtained from the Minnesota Geological Survey, 2642 University Avenue, St. Paul, MN 55114; telephone: (612) 373-0223.

The 7.5 minute, 1:24,000 scale maps are best. Ask for an index in order to determine which maps are needed. Aerial photos can usually be borrowed or purchased through the Soil Conservation Service (USDA) or your county extension agent. A stereo viewer is useful for getting the most information from the photos.

Trail points. There are a number of obvious points the trail should pass through: the trail head, scenic viewpoints, and unique forest environments. Linkages to trails outside the immediate planning area should also be taken into account. Existing trails and potential routes (such as logging roads) can also be included; these will not necessarily be incorporated into the final plan.

Barriers. "Barrier" is a relative term. Sheer cliffs and wide, open rivers are close to absolute. Major highways are usually avoided. Gaps in a barrier, such as a highway bridge or underpass, can be noted. Barriers also include such things as marshy areas that remain unfrozen and wet a good part of the winter. Lakes can also be a problem. It is best if the system does not depend on lake crossings that may not be suitable when slush covers the ice. Open, windswept areas and southern exposures that are not as likely to hold snow needn't be avoided completely; nonetheless, these features should be taken into account. Other areas may be avoided because of adverse impact on

the environment. For example, you do not want to route a trail too close to a deer yard where animals are under stress and dependent on a local food supply.

Construction. The actual layout of a trail is more art than science. The initial flagging of the trail route can be moved--the first attempt needn't be considered final. Trails tend to evolve and improve over time. In planning for the actual construction, it is beneficial to have a description of each segment--the kind of vegetation, terrain, and special obstacles that have to be dealt with. This information will be an aid in assigning the proper crew, skills, and tools to the job.

Construction can take many different forms--from D-9 cats and chainsaws to light brushing with hand tools. Bridges, boardwalks, and gates will require special skills and materials. In some cases, almost all of the work can be done with hard labor. Power tools and heavy equipment may be necessary for the construction of high volume, heavily maintained trails.

Signs should reduce confusion to a minimum, while remaining as unobtrusive as possible. All intersections and the trails radiating from them should be identified. Reassurance markers are important wherever it is possible to stray from the trail. On long stretches of trail, it helps to have signs indicating the distance to and from the next junction.

Posting signs is the step that gives final authorization to the trail. Except for lack of snow, it should be ready for use. Additions and refinements can be accomplished over time.

Complementary Facilities

Trails and signs may not be enough. Sanitary facilities have an obvious purpose. Rest sites and shelters can enhance the attractiveness of a trail system. A shelter, especially one that is enclosed and heated, can greatly increase the range of a cross-country skier. The opportunity to rest, warm up, and dry out will entice skiers far beyond the distance that they would otherwise undertake. In the Oslomarka of Norway, Kikut Stuga, at 15 to 20 kilometers (9 to 12 miles) from the trail head is a very popular turnaround or halfway point for day skiers from the city of Oslo.

Special events can be offered at a shelter. For example, a deluxe trailside lunch is a memorable occasion that skiers will talk about and, thus, attract new customers. Overnight accommodations at a remote location, inaccessible by road, provide still another kind of experience. Hut-to-hut skiing has a long tradition in Norway and is developing in parts of the U.S. and Canada. There is no reason that it cannot be made a part of a resort package.

Onsite equipment rental is a convenience that can lure guests. A rental shop can be a major profit center if the trail system is also open for daily use by non-guests, with appropriate trail fees charged.

Marketing Suggestions

The appended booklet "Cross-Country USA Promotional Handbook" offers guidelines on developing a market plan and ideas for achieving maximum publicity. It is in a "how to" format, including sample headlines and clip art.

Two critical points: printed material is most effective if it includes a good representation of the trail system. An attractive, reasonably large-scaled, complete, and accurate map of the trails is probably the best marketing tool a resort can invest in. Maps that illustrate terrain, vegetation, and special features will be especially appealing. Second, honesty is critical. Exaggerated or misleading claims are quickly revealed, and the negative effects are long lasting.

References

- Ballman, G.E., T.B. Knopp, and L.C. Merriam. 1981. Managing the Environment for Diverse Recreation: Cross-country Skiing in Minnesota. University of Minnesota, Agricultural Experiment Station Bulletin 544; Forestry Series 39. 21 pp.
- Knopp, T.B. and J.P. Maloney. 1973. Ski Touring Trail Planner: A Guide to the Planning, Development, and Construction of Recreational Ski-touring Trail Systems. North Star Ski Touring Club of Minnesota and United States Ski Association--Central Division. 30 pp. (out of print; photo copies may be obtained from author, T.B. Knopp, College of Forestry, University of Minnesota, St. Paul, MN 55108).
- Ontario Ski Council. 1980. Cross-country Ski Trail and Facility Design Manual. Ontario Ministry of Natural Resources. 119 pp.
- Ski Industries America. 1986. Cross-country USA Operations Manual. McLean, VA. 335 pp. (available for purchase from Ski Industries America, 8377-B Greensboro Dr., McLean, VA 22101, Attn: Tim Caldwell; review copy available through Minnesota Extension Service, Attn: Barb Koth).
- Wisconsin Division of Tourism. 1978. Wisconsin Cross-country Ski Trail Development Guidelines. Madison. 29 pp.

DEVELOPING A SELF-GUIDED NATURE TRAIL

Carl D. Wegner*

Most visitors who vacation at Minnesota resorts come from an urban environment. They are unfamiliar with the many fascinating aspects of the outdoors--trees, shrubs, ground flora, wildflowers, insects, birds, and animals. Yet today, with an ever increasing interest in conservation of natural resources, pollution control, understanding of ecology, and maintaining the quality of our environment, most guests are curious to learn more about nature.

In response, many resort operators are developing self-guided nature trails. Some resorts have even hired a naturalist to lead walks. A nature trail provides guests with an opportunity to learn about the natural history of the area. In addition, it is also a source of exercise. As resort owners know, swimming, golfing, cross-country skiing, jogging, and tennis are popular outdoor activities. Recreation studies show that walking is one of the most popular leisure activities.

By allowing guests to see features in their natural setting, a nature trail offers a memorable vacation experience--a unique lure to highlight in marketing.

A self-guiding trail has several advantages. It can serve a large number of people in all seasons, yet does not require the presence and expense of an interpreter. Visitors may walk the trail when they wish and at their own pace, taking in as much or as little of the interpretation as they want. For these reasons, it is favored by those who prefer individual activities to organized group participation. The self-guiding trail is especially enjoyable for families, helping parents explain its features and allowing children the freedom to look and to question at leisure. And it is relatively economical to construct, and can be developed fairly rapidly.

Types of Self-Guided Trails

The Story or Theme Trail

A definite story or theme gives a trail unity and coherence, and gives the visitor a point of reference along the entire route. This is the most

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effective type of self-guiding trail. Examples of themes are geology, plant succession, human history, natural resource management, and specific habitats (for example, bog/swamp). This organizing strategy increases the visitor's understanding and helps one to remember more.

The General Subject Trail

This trail interprets a variety of features, but does not attempt to show any relationship between them. It is the type most commonly developed, perhaps because it is easiest to plan. Although there are some places where it is justified, the general subject trail should not be developed until careful study proves that no better interpretive opportunity exists in the area. This type of trail tends to interpret the obvious, so it often features general information about subjects common to many places. The danger here is that the visitor may be disappointed if he or she has walked similar trails.

The Nature Trail

This trail is concerned only with identification, not interpretation. The true nature trail is one where plants and other features are labeled with their common and scientific names for the purpose of study by professional and amateur naturalists.

To increase a nature trail's usefulness, some deviation from the standard planning approach may be appropriate. Why, for example, limit the number of labels, as recommended for other trails? Every plant and other natural feature in an area may be of interest to someone. Let the trail wander wherever it needs to go to reach as many features as possible and, if necessary, construct side trails or spurs. In appropriate locations, you might even develop this kind of facility as a nature study area rather than as the more common nature trail.

Locating The Trail

Any tract of woods, grassland or other relatively undisturbed site contains a wealth of information for interpretive trails. You don't necessarily need a large acreage to lay out a self-guided trail, although you probably can find more interesting features on a larger area. If you are adjacent to some state, county, federal or privately owned land, you might be able to obtain a special use permit or easement for trail expansion at little or no cost.

Length

Length depends upon size of the area, topography, and location of points of interest. Optimum length is one-half to three-fourths of a mile or 45 to 60 minutes walking time. If space is limited, you can develop a modified trail along existing paths around the resort or recreational area.

Accessibility

The trail should be easily accessible from the cabins, recreational area, or a well-marked road. Make sure the entrance is conspicuous and attractive. Post a prominent, readable sign that identifies the entrance and names the trail. The trail's exit should be close to the entrance but separate from it.

Route

Lay out the trail for one-way traffic (six to eight feet wide), and in the general form of a loop. Where sufficient area is available, a figure eight or double loop provides both short and long walks. If possible, include lowland and upland aspects plus a variety of natural features located at irregularly spaced intervals.

When laying out the trail, avoid:

- * Steep grades: these are difficult for the elderly and tend to erode easily.
- * Wet spots: bridge them if they have points of interest.
- * Monotonous, straight-line trails and sharp corners: gentle bends add to the feeling of seclusion.
- * Broad paths: these may encourage horse, car, or cycle traffic.

Selecting Points of Interest

If the trail is of standard length, 50 to 100 points may be identified. On a modified trail restricted to the resort property, as few as 25 features may be noted.

Types of Natural Features

Select features that are permanent; that is, there should be some guarantee the subject will be around for several years. Unique features mixed in with the commonplace keeps visitor interest high.

Flora. Minnesota has a great variety of trees, shrubs, herbs, ferns, mosses, lichens, and fungi. Names and special characteristics of each are commonly described. The life history of plant associations and the effect of glaciation, wildfire, and human beings' role in plant use and succession are also highlights.

Fauna. Any evidence of wildlife and their habitats is a point of interest--bird or squirrel nests, beaver lodges, muskrat houses, wood duck boxes, badger or fox dens, animal signs or tracks, woodpecker tree holes. Point out the association with evidence seen; it's not necessary for the visitor to view the animal itself.

Geology. Any formation on the earth's surface--lakes, bogs, swamps, streams, glaciated ridges, and boulders--are easily identifiable and tell a story of nature at work.

Identification

Biology teachers, foresters, park naturalists, horticulturists, wildlife specialists, and county agents give expert advice and assistance in properly identifying points of interest. Such service is not part of their regular duties, so you should expect to reimburse them. Show the consultant the general location of your trail. The consultant should point out natural features. If special features are found nearby, you might shift the trail to include these. When first planning, keep the route flexible in order to include the greatest variety of subjects.

Mark points of interest with temporary tags or flagging. Also note the consultant's remarks about each feature for later labeling. Tag some duplicates of common features, but don't label every tree, shrub, or rock along the trail.

Visit nature trails in state parks and observe methods of layout, construction, and labeling. Consult your local library for books on identification of plant and animal life, geology, and camp-craft or conservation.

Trail Construction

After you have determined the route the trail will take, walk over the trail for the final time before starting construction and tie colored plastic flagging to brush and trees along the route. Chainsaws, brush rakes, and brush cutters used in conjunction with proper safety equipment can make the job easier and safe. It will be necessary to clear out brush, side branches, and overhanging branches to a width sufficient for a walker to avoid getting wet on a damp or dewy morning. There's nothing more annoying than getting slapped in the face with a branch. Rocks and logs should be removed from the trail.

Trail surfaces should be fairly smooth but natural; sawdust or wood chips are ideal. Use cement or asphalt only if the trail is intended for the infirm. Catwalks and small bridges over wet spots add interest to the trail. Mark the trail well, but let natural objects guide visitors. Provide trash containers. On long trails, benches and a rain shelter may be desirable.

Marking Points of Interest

Signing

On the side of the trail near the identified feature, drive a treated wooden stake or post. To this, affix the label. Make the message brief, accurate, legible, and easily understood. Some may be amusing or chatty.

Shipping tags make good labels for one season. The standard 3" x 6" tag may be printed in India ink and then dipped in hot wax or sprayed with varnish or clear plastic. You can print larger, more permanent labels on heavier paper and mount them under clear plastic on wood, metal, or masonite

backgrounds. Another innovation--neat and colorful--is to use plastic tape and a label maker. These tools may be purchased from most hardware stores or ordered through mail-order houses.

Maps and Lists

If you want to use only numbers at stops, furnish a map of the area with a list of the numbered markers and several sentences on what to observe at each stop. The leaflet has souvenir value as a memento of the visit to your resort.

Final Steps

Some periodic maintenance is essential. After a storm and every spring, check to see if any trees or heavy branches have fallen across the trail. Resprouting brush may be a problem, but this can be killed back by spraying with a brush-killing herbicide. Check the path for safety features, prune overhead dead branches, chop back brush, and remove rocks and branches that could create unsure footing.

Discarded papers and cans are always offensive to visitors. Dump trash containers regularly. Watch for shortcuts or trampling of vegetation, then block travel on these areas. Repair structures promptly. Post signs encouraging woodland etiquette.

Check visitor reaction--ask for criticisms and comments. Be on the alert for innovations, special seasonal features, and methods of interpretation which will help the visitor appreciate natural resources and use them wisely.

References

Larson, Dayton. Nature Trails. University of Minnesota Extension Publication CD-BU-0489.

Sharpe, Grant W. 1976. "Self-guided trails," in Interpreting the Environment, G. W. Sharpe, ed. New York: John Wiley and Sons. p. 247-269 (available through Minnesota Extension Service, Attn: Barb Koth).

U.S. Department of Agriculture. Developing the Self-guiding Nature Trail in the National Forest. U.S. Government Printing Office, Washington, DC, 26402.

ATTRACTING WILDLIFE TO RESORTS

James R. Kitts*

Bird watching, wildlife photography, and animal observation are among the most popular outdoor activities in Minnesota. An article in the June, 1986, issue of Minnesota Monthly, "Where the Wild Things Are: Animal Watching All Around the State," is evidence of this widespread appeal, as is the broad public support for nongame (non-hunted) programs through voluntary contributions to state and private organization.

The opportunity for your guests to view animals in a natural setting could give your resort a unique way to attract visitors and offer you a competitive edge in the marketplace.

Minnesota is blessed with an abundance of interesting and attractive wild animal species. A high proportion of these are species with considerable appeal to recreationists--white-tail deer, bald eagle, timber wolf, trumpeter swan, loons, wood duck, moose, elk, and several others. Many of these can be attracted to specific locations, including your resort. However, in order to attract wildlife, you will need to engage in some wildlife habitat management.

General Considerations

All animals require four basic life elements--food, water, cover (hiding places), and living space. Together these are known as complete habitat. Absence of any one element eliminates the area from consideration as habitat. The key to successful wildlife management and successfully attracting wildlife is providing complete habitat.

Each wildlife species requires a somewhat unique blend of the life elements, although not necessarily so unique as to be exclusive. It is possible to attract a variety of species to almost any habitat. The trick is to attract the desired species, and not the unwanted animals as well. Success depends on thoroughly inventorying the resources, setting specific goals, and beginning the onsite work only after careful planning.

Minnesota is home to both resident and migratory wildlife. Focus on the desired resident species as the foundation for your project. But remember, they need the habitat 365 days a year. Add only those elements necessary to support migrant species during the season(s) they are present.

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Planning the Project

Resource Inventory

A sketch of your property prepared earlier as part of the planning process shows general grounds features. If you are considering a wildlife project, add details on all vegetation types (alive and dead), marshes, steep bare banks, and rocky cliffs. Make notes of unusual items or attractions such as wolf trees, large snags, den trees, raptor nests, rock piles, natural salt licks, etc. The more detailed the inventory is, within reason, the more useful it will be as an aid to planning habitat improvement.

Construct a list, by season, of animals seen on your land. Add to this list any species seen on adjoining property. These are the animals you can reasonably expect year after year until the habitat changes. Are there any species you would like to see and could expect to appear if habitat were provided? Are there any unwanted species present?

Set Goals and Design Project

From the completed inventory select those wildlife species you wish to assign high priority. A high priority might mean you wish to encourage the presence of a species, or that you want to remove or discourage a species. The next step is to research the habitat requirements of these priority species. Identify key habitat features to be added to or removed from your property.

Information about plants that provide food and cover throughout the year and which match the soil types in your area is particularly important. The public library, Minnesota Department of Natural Resources, Soil Conservation Service, and Minnesota Extension Service can provide this type of information. Professional foresters and wildlife managers can be very helpful in assisting to design a management plan.

Based on your research, make a drawing of the proposed plantings and cuttings necessary to attract the desired species. Use the completed sketch to estimate time and expenses for implementing the plan. Usually the implementation period spans several years. Patience is an absolute necessity. There is no way to rush the development of high quality habitat.

Some Wildlife Projects

Plantings

Some plantings will be necessary. By mixing trees, shrubs, and vines with different growth forms (tall and narrow, short and spreading) and with different growth rates, a well-stratified planting will develop. In most instances, a well-stratified planting will attract more species than a park-like one with few or no shrubs.

A useful guide to keep in mind when selecting plant species is to "follow the lead of nature." Most of the plants should be the same species as those found in the area. Use different or unusual species to highlight rather than to establish a new forest composition. Be certain any plants you purchase are proven hardy for your area. If the cost is within your budget, use container stock in preference to bare-root; growth will be considerably better.

Forest openings are important to wild animals. In heavily forested areas it might be more beneficial to create openings than to make dense plantings. Openings should comprise 10 to 20 percent of the total area. The majority of forest openings should be in the two-to-five acre size, with irregular borders. The area between plant types is called edge. Greater edge leads to better chances for attracting a wide variety of wildlife.

Snags

Dead and dying trees called snags are very useful to birds as perching, feeding, and nesting sites. A wide variety of mammals also use snags for denning. In Minnesota at least 58 wildlife species need snags as a major part of their habitat.

To be most useful, snags should be at least six inches in diameter and six feet tall. Smaller snags are valuable as perching and feeding sites for birds but are unsuitable as nest structures or den sites.

In addition, snags are classed as hard or soft depending on the stage of decay. Because of their possible commercial value (for example, firewood), hard snags are becoming increasingly scarce throughout privately owned woodlands.

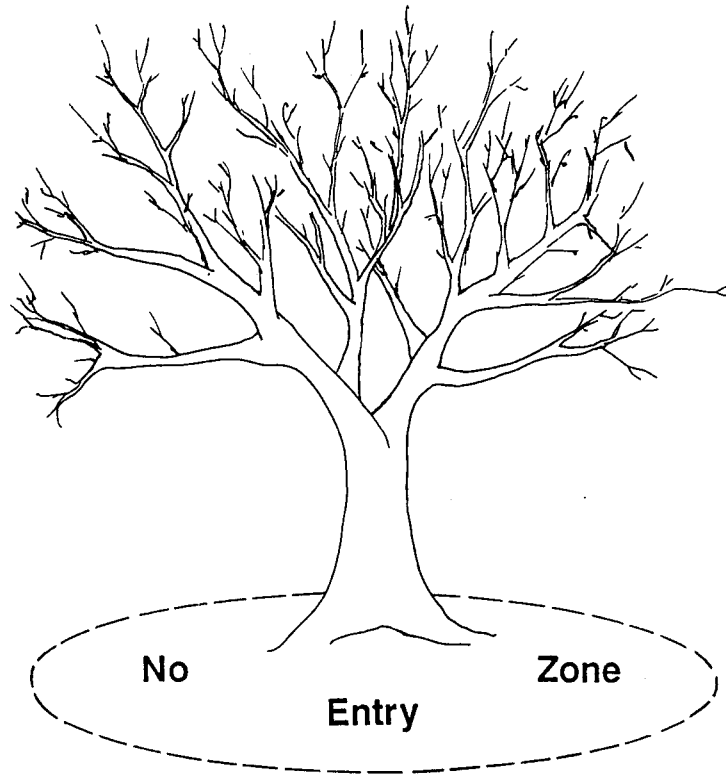
Hard snags are part of a complete habitat for woodpeckers because they nest only in hard snags. Woodpeckers also excavate the cavities in which many other animals nest or den--wood ducks, goldeneyes, flying squirrels, and pine martin.

Presence of soft snags is critical for the majority of snag-dependent wildlife. These snags, too, are becoming scarce because they develop from hard snags which seldom are left standing long enough to soften.

As a general guide to managing woodlands with a concern for snag-dependent animals, consider these recommendations:

- * Leave all soft snags.
- * When in doubt, leave the larger hard snags.
- * Leave about a 1/4 acre clump of woodland permanently uncut for every 5 acres of timber cut and regenerated.
- * Leave a permanently uncut buffer strip at least 100 feet wide on both sides of streams and around lakes, ponds, etc.
- * Consider old growth trees a high priority for protection.

Since they are natural focal points for wildlife activity, snags can play a major role in assuring that recreationists get opportunities to observe animals. To avoid accidents, snags should be located in less-used areas of the resort rather than well-traveled areas. As a rule of thumb, never encourage or allow people closer than the maximum crown spread for human safety.



Water

Like snags, water is a natural wildlife attractant. Here in Minnesota, where we have an abundant surface supply, water can be used effectively to provide easier viewing of wildlife. Noisy areas such as waterfalls and rapids are not very suitable because few wild animals will spend time there. Pools, bays, or slow, quiet stream areas are frequented.

Locating nest boxes and preserving snags in or adjacent to water areas will attract many birds, including tree swallows, purple martin and wood ducks. Steep, bare stream banks may be used by bank swallows, kingfishers, mink, and several other species. These animals are all colorful and exciting to watch and photograph.

If it is appropriate to provide additional water at bird baths or ponds, location is important to the success of your project. Do not locate bird baths adjacent to brush piles or dense ground cover because these provide hiding places for mammalian predators. Tall shrubs or low trees surrounding a bird bath offer protection from avian predators, such as hawks or owls, and provide perching space for birds.

Ponds with surface areas less than 1/10 acre are of little value as nesting or brooding sites. On ponds 1/4 acre or larger it would be effective to install wood duck nest boxes. Loafing logs or platforms should be provided in all ponds. These can be any buoyant log 8 inches or more in diameter and 6 to 10 feet in length. Another option is to construct a 3' x 3' platform so it floats about 4 inches above the water. Cover it lightly with straw, hay or marsh vegetation.

During pond construction, take care to shape the sides with gradual slopes. Much more wildlife will use ponds where 70 percent of the surface area is in water with depths of less than five feet. Shallow impoundments have substantial water plant development that provides the food and cover needed to attract wildlife. Deep ponds and ponds with a high percentage of water over five feet deep are more open, develop less plant material, and attract fewer species of wildlife. However, these ponds are better than shallow ponds for supporting fish populations.

Nest Structures

Bird houses and nesting platforms encourage wildlife to occupy an area. For optimum use, nest boxes must be constructed and erected according to the designs for specific species. Both platforms and nest boxes require annual maintenance--sanitation, replacement of nest materials, and repairs.

Feeders

Bird feeders are an effective way to concentrate wild animals where they can be observed. For best results, match foods and feeder placement to the life requirements of the species to be attracted. For example, goldfinches feed on the oily seeds of thistle; hence niger thistle seed in a tube feeder hung in a moderately open area is excellent.

Spilled feeds attract pests. Attach spill aprons to feeders, and keep feeders a minimum of 50 feet from buildings or wood piles to avoid problems with rats and mice. House sparrows, starlings, and pigeons are attracted to spilled seeds and feeders where seed mixes using millet and cracked corn are used. It is often better to use only one type of seed at a feeding site. The seed attractive to the widest variety of birds is black (oil types) sunflower seed. This seed is also relatively unattractive to the pest bird species.

Food Plots

Plantings designed to provide ready food for wild animals can serve as "living feeders" to attract wildlife.

Like nesting structures and feeders, food plots should be designed and used for a specific purpose and specific wildlife species. The most common and easily managed food plants are corn, sunflowers, sorghum, millet, and wheat. There are also several nectar-producing plants which can be used to attract hummingbirds, butterflies, and moths, which make interesting and challenging photo targets.

There is no "right" or "wrong" design for a food plot. Good gardening practices are essential, but plants can be crowded beyond normal. Locate the plot close to the natural habitat of the species desired, yet arrange it so observation will be easy. One simple feed plot design would include three or more rows of a tall plant (sunflower) in the center. Border this with several rows of an intermediate height plant (millet) and finish with rows of low growing plants. The outside rows could be quite colorful with nectar-producing plants such as salvia, petunia, milkweed, etc. The shape of this

type of food plot is not critical. Circular plots require smaller areas, but rectangles are somewhat easier to plant.

Salt Licks

Sodium is an element essential to the diet of all mammals. Some wildlife acquire it as a trace material in their food. Others, like white-tailed deer and moose, actively seek salt deposits. Summer use of salt licks is high. Salt licks are quite useful in arranging planned encounters between humans and certain wildlife species.

Simply place a commercial salt block in good deer or moose habitat. Locate the block near signs of animal activity where travel lanes appear, or at the edge of a wooded area. The block can be placed on the ground or slightly elevated on a stand.

A "natural" salt lick can be created by filling a burlap sack about one-half full of rock salt. Suspend this where rain can leach the salt into the soil. Animals will eventually locate the salty soil and begin congregating in the area.

Drumming Logs

Ruffed grouse are common through the forested areas of North America. In the spring the males may be heard "drumming", a rapid wing movement and courtship display, as they attempt to attract females and defend their territory against other male grouse. Not many people are fortunate enough to actually see this premier wildlife display, but the use of manufactured drumming logs may make this viewing opportunity possible for some resort guests. Drumming logs without habitat will not attract ruffed grouse, but even in otherwise good habitat, drumming logs often are in short supply.

Drumming logs for ruffed grouse are made by felling or moving a log or logs into the correct position relative to other standing trees. The log on which the bird drums should be 10 to 12 inches above the ground. The actual location on the log where the grouse will stand to drum will be within three feet of a standing tree, called a guard tree. Surrounding habitat should be free of large ground litter and thick underbrush. Drumming grouse need good visibility around the log. Never place a drumming log in the vicinity of conifers. Conifers are favorite perching areas for hawks and owls and provide them with excellent camouflage.

Be patient after your drumming logs are in place. It may take several years before they are used. Once a male grouse establishes a drumming site on a log, he will use the exact spot--his stage--year after year as long as he lives.

Market Your Wildlife Attractions

Thinking about wildlife management as a part of resort operations sounds unusual at first. However, when habitat improvements make bird watching, animal observation, and wildlife photography possible, then your resort has a

special feature you can offer to your guests. Opportunities for wildlife sighting says something to potential guests about the flavor and pace of the resort they are considering.

If the wildlife resources your resort offers are truly distinctive, birders and photographers are a new (generally upscale) target market that you can tap. Because the market is still relatively small, don't rely on an expensive promotion plan. People who are interested in these outdoor activities often belong to formal organizations or read specialized publications, so these marketing channels might be most effective. A bonus of working with this clientele is that the wildlife breeding and nesting activity of greatest interest frequently takes place during the spring/fall shoulder season when resort occupancy drops.

There is no way to guarantee wildlife sightings when you do undertake these habitat improvement activities, but even the chance or opportunity can certainly make for a memorable vacation experience.

References

- Gullion, G.W. 1984. Managing Northern Forests for Wildlife. Ruffed Grouse Society, 1400 Lee Drive, Coraopolis, PA 15108.
- Henderson, C.L. 1984. Woodworking for Wildlife. Minnesota Department of Natural Resources, Nongame Wildlife Program, St. Paul, MN 55146.
- Henderson, C.L. 1987. Landscaping for Wildlife. Minnesota Department of Natural Resources, Nongame Wildlife Program, St. Paul, MN 55146.
- Kitts, J.R. 1981. Snags for Wildlife. Extension Folder 581, Minnesota Extension Service, University of Minnesota, St. Paul, MN 55108.
- Martin, A.C., H.S. Zim, and A.L. Nelson. 1951. American Wildlife and Plants: A Guide to Wildlife Food Habits. Dover Publications, Inc., New York, 500 pp.