The Land User's Handbook for the Ridge and Valley Lands of Southwest Wisconsin
This publication is the result of the cooperative effort between the UW-Environmental Awareness Center, the Dane County Regional Planning Commission, and the Town of Vermont in Dane County.
The Land User's Handbook
for the Ridge and Valley Lands of Southwest Wisconsin

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January, 1979
COMMENTS ARE INVITED

This handbook represents the ideas and observations of those who participated in its preparation. If you have different or additional ideas or observations about land use in southwest Wisconsin, we would like to hear from you.

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Additional copies of the handbook may be obtained by sending one dollar plus fifty cents for postage and handling to the above address.
Contents

INTRODUCTION, 1

THE LAY OF THE LAND, 3
Soils and Geology, 3
Water Resources, 6
Vegetation, 7
People Are Part of the Ecological System, 10

CHANGING WITHOUT DESTROYING, 11
Areas Which Should Not Be Altered, 11
Dividing Land, 12
Home and Driveway Construction, 12
Around the Home, 14
The Rest of Your Land, 14

PLANNING YOUR SITE FOR ENERGY CONSERVATION, 15
The Region's Climate, 15
Microclimate: A Climate Within a Climate, 17
The Sun, 17
The Wind, 19
Landform, 19
Vegetation, 21
Conclusion, 23

WORKING TOWARD SELF-SUFFICIENCY AND A STRONG LOCAL ECONOMY, 27
The Small Dairy Farm, 27
Other Crop and Livestock Opportunities, 28
Woodlot Management and Forest Products, 32
Fitting Agricultural Activities to the Land, 34
Before You Decide, 36
When You Decide, 36
If You Choose to Rent Out Your Land, 36

TEN STEPS TO KNOWING YOUR LAND, 37
1. Deciding What You Want To Do, 38
2. Topography and Drainage, 38
3. Soils, 38
4. Vegetation and Site Features, 39
5. Energy Considerations, 40
6. Services and Utilities, 40
7. Your Site's Relationship to the Surrounding Area, 40
8. Putting It All Together: The Problems and Opportunities Map, 41
9. Comparing Your Earlier Expectations With Your New Knowledge, 42
10. The Learning Never Stops, 42

RESPECTING LOCAL VALUES, 24

ADDITIONAL SOURCES OF INFORMATION AND ASSISTANCE, 43
To the readers of this handbook:

Early in the development of the land use master plan for Vermont Township it was brought out that certain geologic features make our township different from any other in Dane County although similar to many areas to the west of us. We felt there was a need to help residents and prospective residents understand the special problems they face when building a home in this area.

We wanted a brochure or booklet that would explain the problems and then suggest some solutions, and most important list sources where a person could go for help. We feel that the more knowledge we can give the residents the better able they will be to make proper use of the land. Also, this knowledge will lead to support of township land use policies.

We were fortunate to get assistance from the Regional Planning Commission and the Environmental Awareness Center of the University of Wisconsin. This booklet is the result of the cooperation of the three of us.

Sincerely,

Vermont Township Planning Committee
Master Plan Committee

Vermont Township Planning Commission
Earl Krueger, Chrm.
Bill Aeschlimann
Rog Blackmore
Dixie Curkeet
Joe Dybdahl
Dave Haugen
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Introduction

This handbook was developed to help landowners and prospective land buyers make informed decisions about the use of land within the ridge and valley lands of southwest Wisconsin. Much of the information also should be useful when looking at other areas with similar topography. The handbook is not intended to encourage people to move into rural areas of the region, but to serve as a guide for those who have already made a commitment to purchase land and settle there.

The ridge and valley lands have much to offer to their residents. The main objective of this handbook is to help show how to provide a better "fit" between what these people want from the land and what the land can offer. Behind this objective lies the assumption that along with the rights of property owners to use their land comes the responsibility to use it in a way that shows respect for neighbors, the community, the environment, and future landowners.

The principles discussed in this handbook should be used within the context of county and town land use plans. Local plans and ordinances are expressions of local interest in wise land use and therefore should be supported.

Also, when making your own plans, be sure to take into account the likes and dislikes of all family members. Such things as cultural advantages (or disadvantages), personal fears, school systems, the realities of remote living, traditions, distance from other family members, and climate all carry different degrees of importance to different people.

This handbook first gives a description of the lay of the land, which includes a brief overview of the physical and natural characteristics of the region. Then, the following four sets of settlement principles are discussed:

1. Changing Without Destroying—Many people are attracted to southwest Wisconsin by the sights, sounds, and patterns of nature. We all have a part to play in preserving those resources which attracted us to the region in the first place.

2. Planning Your Site for Energy Conservation—With increasingly high energy costs, it's essential that we look at the landscape for ways to help minimize our energy needs.

3. Respecting Local Values—Local values demand respect because they give meaning to daily life and help the community run smoothly.

4. Working Toward Self-sufficiency and a Strong Local Economy—By producing your income locally you are helping to strengthen the local economy, which benefits everyone in the community. The land is southwest Wisconsin's greatest resource and therefore offers the best long-term economic opportunities.

The next section of the handbook, Ten Steps to Knowing Your Land, will show you how to apply these land settlement principles to a particular piece of land. The final section of the handbook contains additional sources of information.
SOUTHWESTERN WISCONSIN IS CHARACTERIZED BY THREE TYPES OF LANDSCAPE.
The Lay of the Land

Within the ridge and valley lands of southwest Wisconsin are some of the most beautiful landscapes in the state. The region abounds in impressive views of steep forested bluffs, cropped fields, and pleasing patterns of valley floors.

Overlapping much of the state’s “Driftless Area” which was untouched by the more recent glaciers that smoothed out the rest of Wisconsin, the region’s landscape surface is estimated to be at least 250,000 years old—more than ten times older than the rest of the state’s surface. Over this long period, harsh weather and flowing water have had time to wear down the landscape, producing high ridge tops, steep slopes, and deep valley bottoms.

The region’s ridge tops rise as high as several hundred feet above its valley bottoms. Slopes are gentle to moderate. The steep slopes which join the ridge tops and valley bottoms can be as steep as 100 percent (45° from horizontal). Their shapes are flat, concave, or convex, depending on the underlying bedrock and the processes that formed them. Aspect of slope is usually expressed as north-, south-, east-, or west-facing. Hence slopes may be colder (north), warmer (south), windier (west), or calmer (east) than the ridge tops above them.

Valley floors are the lowest topographical areas in the region. Generally nearly flat, they sometimes are marked by raised terraces near the bottom of adjacent slopes. Valley floors slope downstream, following the fall of the streams and rivers which dissect them. Since cold, heavy air flows off the ridge tops and slopes, these lowlands often have later frosts in the spring and earlier frosts in the fall than do other areas in the region.

When looking at the lay of the land in southwest Wisconsin, it’s convenient to think in terms of three different landscape areas: the ridge tops, the steep slopes, and the valley bottoms. In addition to having different climatic conditions, each of these landscape areas has different soil types, geologic patterns, water resources, and vegetation. By understanding the characteristics of each area, we can better understand how to match our needs with the land.

SOILS AND GEOLOGY

The ridge and valley lands of southwest Wisconsin include those portions of the state in which landscape of considerable relief has developed on limestone and sandstone bedrock. Relief amounts to as much as 600 feet; bluffs along the Wisconsin River valley are commonly 200 to 400 feet high. Crossed by major rivers including the Wisconsin, Black, and Chippewa, the region is also strongly dissected by a dendritic (tree-like) system of smaller rivers, like the LaCrosse and Kickapoo. Within the major landforms of the region are smaller ones, including coulees, spurs, and coves.
The east-west route of State Highway 18 runs along the crest of the Military Ridge. Along and south of the ridge, the upland ridge tops tend to be broader and more gently rolling than in the rest of the region. Slopes are also rounder and valley walls steeper. North of the ridge, the landscape is more dissected and worn-down as reflected by narrower ridge tops, steeper and rockier slopes, and deep valleys with some wide, flat floors.

Soils of the region are well drained, with only five percent of the area occupied by wet soils that are concentrated in marshes, poorly drained river bottoms, and at an occasional seepage spot or spring on a foot slope. Droughty conditions prevail where bedrock comes close to the surface at the borders of the ridge tops and on the deep sands that were distributed by water and by winds over valley floors and against foot slopes many centuries ago.

On the ridge tops, soils have formed primarily from windblown silt, called loess, which overlays red clay produced by the limestone bedrock below. The soils of the steeper slope areas were generally formed over sandstone bedrock. Loess, coarser in texture than clay, is also found on valley benches and natural terraces that often stand 20 feet or more above valley flood plains. The loess is not of uniform thickness within the region, and thins from ridge crests toward valley slopes. Its depth across the region varies from an average of eight to 16 feet near its major source, the Mississippi River Valley, to two to four feet along the eastern edge of the region.
Soils of the valley bottoms consist of either waterborne (alluvial) sediments or glacial outwash (sands and gravels deposited by glacial streams). The alluvial soils, if well drained and not subject to frequent flooding, are some of the most productive soils in the state. The glacial outwash soils, occurring largely in the Mississippi, Wisconsin, and Chippewa river valleys, are generally sandy and therefore droughty. Valley bottoms also contain useful deposits of gravel, formed by the sorting action of flowing water.

Because of the region's steep topography, soil erosion is a major concern. Despite intensive conservation efforts, many areas are still losing soil at rates faster than those of soil renewal. Studies of the region reveal that surface storm runoff are three to five times greater in volume and speed than in pre-settlement times. Nearly four-fifths of the land in the region has been cultivated at least once. The average slope of cultivated land is 12 percent. Modern soil surveys show that soils of about half the area of the region are eroded, most of them (about 45 percent by area) moderately so, but some (about 5 percent) severely. As a result, some valley soils have about three feet of light-colored eroded soil materials overlying the nearly black original soil surface that was formed before European settlers came to the area.
WATER RESOURCES

Southwest Wisconsin has two major types of water resources: ground water and surface water. Ground water is the chief source of drinkable water for human consumption. Surface water becomes ground water by percolating through the soil or bedrock into a "zone of saturation" where ground water is stored. Rock or soil formations that move water to springs and wells are called aquifers. The sandstone and limestone bedrock layers of the region are efficient aquifers.

Toward the middle and bottom of slopes, springs may be evident. A spring indicates a point where a shallow water table intersects with the land's surface. Springs are common in southwest Wisconsin because large elevation differences produce more areas where impermeable layers of clay or bedrock move water horizontally to the surface. Generally, the area of land which supplies the water for a particular spring may be as small as a few acres. Springs, then, are susceptible to pollution from nearby hills.

Wells are generally very deep in the ridge top areas of the region, often reaching down several hundred feet. Artesian wells are sometimes found on lower slopes and valleys where the top of the well is below the level of the water table in the aquifer located up the valley slope. Wells in valley areas are generally much shallower than in uplands.

Virtually all the available surface water in the region is located in valleys. Surface runoff and springs combine to form the dendritic drainage pattern. Constantly flowing rivers and streams are found in most larger valleys. Intermittent streams, which flow during snow melt and rainy periods, are present in the smaller valleys. Where streams are spring-fed and unpolluted by runoff or other forms of pollution, they provide excellent trout habitat.
The streams and rivers of the region are susceptible to flooding during periods of heavy snow melt and rain. The "100 year flood plain" is the area adjacent to each stream that is statistically likely to be flooded once every 100 years. Development in this area is regulated by zoning throughout the state. Flooding causes damage to crops and property, erodes streambanks, and deposits silt and debris in stream channels. Extensive development and unwise agricultural practices contribute to flooding problems by accelerating the flow of water off the uplands. During periods of high water, wetlands help increase the flood storage area. During dry periods, some wetlands help recharge the ground water and maintain stream flow.

VEGETATION

Most of the area was originally oak savanna, areas of prairie vegetation interspersed with widely-spaced burr and white oak trees. Before Europeans settled the area, fires were a frequent occurrence on the prairie that kept trees and shrubs from invading the grasslands. Hence prairie vegetation dominated the broad ridge tops. Dry prairies, so-called goat prairies, occupied the south- and southwest-facing slopes that are now dotted with bushy juniper trees. A large body of sugar maple trees and basswood forests were centered in Richland County, perhaps favored by fertile bedrock and natural fire breaks. Many areas of the Mississippi, Chippewa, and Wisconsin river bottoms were covered with lowland species, including willow trees, soft maples, and ash.

When the European settlers started controlling the prairie fires, the open areas began to fill in with woody vegetation. Consequently these areas are far less open today. The broader ridge tops are now cultivated and the steeper slopes are now devoted to forage crops and pasture. Where fields or pastures have been abandoned, the natural process of succession has taken over. When succession occurs, dif-
Different groupings of plants and animals are replaced by others over a period of time until a final or climax stage is reached in which the same kinds of plants and animals replace each other. In southwest Wisconsin this climax stage is a maple/basswood forest.

The steepest slopes of the region are primarily wooded with oak, birch, aspen, and black cherry widely in evidence. The steep, wooded slopes play an important role in maintaining wildlife in the region. Because they are often interconnected, the wooded slopes provide extensive areas for wildlife to travel for food and water without interference from human activity. Vegetation on the slopes also plays a strong role in preventing erosion. Leaves, branches, and grasses moderate the impact of water while roots serve to stabilize soil structure. Generally, the more vegetative cover that can be maintained on a slope, the
less soil erosion and runoff will occur. However, a forest is especially vulnerable if runoff from ridge tops is allowed to enter it down the slopes.

The few wetland areas located in the valley bottoms are important wildlife areas. Vegetation along the smaller rivers and streams provide cover and food for wildlife. Some uncultivated valley soils are sandy and support conifers and dry prairies on which the prickly pear cactus, the only species of cactus that grows in Wisconsin, grows amid other vegetation.

Much of the valley land is now cultivated for agricultural use. The alluvial soils of medium moisture content are very productive, although they are subject to possible flood damage. The wetter soils and those closer to streams are commonly used for pasture.

The sandier, glacial outwash soils support some crops without irrigation, but a profitable yield cannot be assured due to the limited moisture storage capability. Sandy areas
that are irrigated are very productive. Conifer windbreaks have been planted to reduce wind erosion and reduce the drying effect of winds. Many of the driest, sandiest soils have been solidly planted with conifers.

**PEOPLE ARE PART OF THE ECOLOGICAL SYSTEM**

The soils, geology, water, and living systems of the region all combine to form an interdependent ecological system. The energy for this system is supplied by the sun, which powers a complex set of interactions between plants and animals (including people) and the physical and chemical components of the environment. Many of the interactions between the elements in the system occur as parts of natural cycles, such as the water (hydrologic) cycle, the oxygen cycle, and various nutrient cycles.

Before the period of European settlement, the ecological system of the region operated in a stable state of equilibrium. Intensive human use of the land, however, has brought many changes to the system and has in some instances upset the equilibrium. In some cases, the drainage of marshes has interrupted the water cycle and caused nearby wells to dry up. In other cases, poor agricultural practices have permitted nutrients to be washed from the land (where they are needed to grow crops) into rivers and streams (where they destroy fish and wildlife habitat).

There are principles of the ecological system which, if ignored too often over too long a period of time, reduce the system's ability to function properly. When we use our land, it is to our advantage and to the advantage of future generations to see that these principles are respected. The land can indefinitely renew its productivity if not overtaxed and can recover from mistakes if given a chance.

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**WATER CYCLE**

**NUTRIENT CYCLE**
We share our land with nature which provides us with our livelihoods, food, materials for manufacturing and building, air and water, wildlife, recreation, and scenic beauty. When you build a home, grow crops, or undertake any other use of the land, you are changing nature to some extent. Along with your rights to the land, then, you have a responsibility to make alterations without destroying the long-term ability of the natural system to provide us with our basic needs.

This section provides some suggestions on how to change your land without destroying its usefulness. When you encounter a specific situation, you'll want to get more detailed information from your county Extension office, Soil Conservation Service office, or your county forester. When possible, consult several agency people since each agency has special expertise or interests not shared by the others.

AREAS WHICH SHOULD NOT BE ALTERED

Before discussing how to properly change or alter a piece of land, several areas should be mentioned where almost no change at all is advisable. These are areas where almost all land uses are inappropriate, either because of the possible hazards involved or because the areas cannot perform their natural functions unless left in an essentially natural state.

First of all, when looking for a potential home site, avoid land with soil incapable of absorbing sewage effluent. Too many land purchasers in southwest Wisconsin have acquired and enjoyed a piece of land for picnic and camping purposes only to discover later, when thinking of building a house on the property, that the soils could not accept sewage effluent from a septic system, as required by law. Avoid this problem by determining, with the help of soils specialists, that the parcel of land you are considering buying does, in fact, have soils suitable for a sewage disposal system.

Because ridge tops are one of the region's important ground water recharge areas, landfill sites, truck yards, and other concentrated sources of pollution should not be placed over shallow or coarse-grained soil overlying fractured bedrock. Doing so could allow pollutants to reach the groundwater without sufficient filtration.

Steep slopes should be avoided for building sites because they are valuable scenic resources and wildlife areas and because they are difficult to revegetate after construction. Besides, steep slopes usually require expensive foundations, roads, utilities, and sanitary systems.

Another type of area to avoid for building sites is the natural drainage way. Almost every piece of property has an area that carries rainwater downslope to the next piece of property. Keep structures out of the way of these drainage ways and be sure that properly sized culverts are located where drainage ways intersect with new driveways. Be certain, too, that you don't alter the drainage or your site in such a way that it causes flooding or soil erosion on your neighbor's land.

The region's flat valley bottoms, with shallow well depths, soils suitable for septic tank systems, and minimal need for site grading, are often attractive housing sites. At the same time, however, many of these valley lands contain highly productive and irreplaceable agricultural soils. Care therefore should be taken to place structures on the least productive valley soils.

In valleys, stream channels should not be altered. Stream meanders serve to slow normal and flood stage stream flow, reducing stream bank erosion and providing more flood storage capacity than if the stream were straight. Wetland areas should not be filled or drained as they serve many useful natural functions. They should be protected from runoff pollution, as should all surface waters.

Flood plain areas along rivers and streams should be left unaltered. Structures should not be built within flood plain areas because of potential harm to people and property. The addition of fill to a floodplain should be discouraged because it will displace floodwater storage area. This causes flood waters to go elsewhere, which widens the flood plain. Structures should be placed on sites outside the floodplain where a sufficient depth to ground water (about six feet) exists to prevent basement flooding and pollution of the groundwater.
Finally, healthy woodland areas should be left intact. By building adjacent to, instead of in the middle of woodlands, you can enjoy woodlands while preserving wildlife habitat areas of adequate size for many species of birds and mammals. Understand, however, that even building adjacent to wildlife areas will have some negative effects on wildlife.

DIVIDING LAND

The manner in which a piece of land is divided has an effect on how the land can be used. A good piece of land, if divided into inappropriate sizes or shapes, can lose much of its usefulness. When dividing your land, consider natural boundaries, such as hills and woods. Many awkward land management and use problems are created by either ignoring the topography or by splitting up good farm fields or tracts of woods. When small parcels are carved out of good farm fields, the field often becomes difficult to work, especially with today’s large machinery.

Another problem that often occurs with poor land divisions is loss of road access. When dividing a parcel from the front part of a piece of land, be careful not to cut off road access to the remaining parcel.

HOME AND DRIVEWAY CONSTRUCTION

As already stated, building in certain areas is always inappropriate. Where construction is appropriate, however, the manner in which it is done can make a world of difference in how well it “works” and how well existing resources are preserved. Whenever possible, use existing buildings. By doing so, you not only have a limited impact on the environment but also save resources and energy and preserve some of the local heritage.

If you must build, fit your home or any other building to your site by doing one of two things. Either choose a building site that requires a minimum of earth removal and grading to suit your chosen building design or find a building design that fits into the site you have chosen with a minimum of disturbance to the site. In any case, don’t “force” a building design onto an inappropriate site or vice versa. If you do, it will always feel and function like a poorly-fitted shoe. Remember, too, that driveway design is very important. Access to high elevations can require long driveways, which are expensive to build and maintain. Besides snow plowing costs, they often require regrading after heavy rainstorms. Driveways should follow the contour of the slope. This minimizes expensive cut-and-fill and results in a gentler grade for water to follow. Be sure...
that slopes and curves are gentle enough so that emergency vehicles can get to your site at all times of the year. If they can’t, you are taking a risk with your home and family and you may find it impossible to obtain fire insurance.

If you’re planning to build a new home, be sure to take proper measures to protect your site during construction. First, disturb only as much ground cover as necessary. Oftentimes much more land is scraped bare than is necessary, which causes excessive soil erosion. To further minimize erosion on your site, construct a simple water diversion upslope from your building site. Mulch bare soil and place straw bales at the downslope edge of your site to slow runoff and trap sediments. Since most earth moving is done by a contractor, these provisions should be made part of the grading contract.

Homeowners often find that the trees on their site mysteriously begin to die shortly after their home is finished. This is usually due to root compaction or diseases that attack trees damaged during construction. You can prevent these problems by fencing or roping off trees at the dripline (the outer reach of the branches), which generally corresponds to the edge of a tree’s root growth. Special measures must also be taken if you plan to raise or lower the grade around a tree. Consult a landscape architect, your county Extension office, or your county Soil Conservation Service office for proper methods.

Be sure not to place your septic system on a slope above a spring or well. You can avoid
pollution problems by keeping in mind that ground water flow is usually similar to the surface water flow directly above it. Springs, too, should be protected from surface runoff pollution. This can be accomplished by building a surface water diversion above the mouth of the spring and maintaining the area with permanent vegetation.

AROUND THE HOME

Once you have finished your home or have moved into an existing home, there are several things you can do to make your site an integral part of the land around you. When planting trees and shrubs, choose fruit-and-nut-bearing varieties that will attract wildlife. Avoid planting alien species, particularly Tatarian honeysuckle and buckthorn shrubs. These shrubs will spread quickly into surrounding woodlands and drive out natural species.

Wisconsin has numerous native trees, shrubs, and vines, many of which can be found on your land. Often these plants will return after construction and will provide plenty of seedlings and sprouts if you encourage them. For information on selecting trees and shrubs, pick up a copy of A Guide to Selecting Landscape Plants for Wisconsin (publication A2865) at your county Extension office.

Throughout Wisconsin, many homeowners are looking to native prairie and woodland plantings as an alternative to the traditional, closely-clipped bluegrass lawn. These native plantings provide aesthetic beauty, attract wildlife, and require lower energy and maintenance costs. A growing number of local sources now sell seeds and plants adapted to Wisconsin conditions. Several of these sources are listed at the end of this handbook.

THE REST OF YOUR LAND

As stated at the beginning of this section, you share your land with nature. After you have chosen an appropriate site on your land for a home, driveway, or other land use, you can ensure that the natural system on the rest of your land is kept in balance through good woodlot management and marsh and stream protection. The careful use of agricultural chemicals and the use of agricultural soil conservation measures are also important.

Southwest Wisconsin is famous among biologists for its steep, wild country with varied microclimates and numerous streams. These support the richest flora and fauna in the entire Midwest. You should quite easily be able, for example, to find 400 kinds of wild flowering plants in a single square mile and sometimes on as little as 100 acres. Besides being home to a few dozen plants and small animals found nowhere else in the world, the region boasts an assemblage of species more characteristic of areas to the far north, south, east, and west. In addition, low intensity land use in the steep terrain or poor soils have made the region the last refuge for many nearly extinct species of reptiles, lizards, snakes, and turtles. Some rare plants persist despite over-collecting (like ginseng) while some animals, like the wild turkey, are being restored in the region. Whether or not the wild plants, wildlife, game, or fish are of importance to you, they are certain to be valued by some of your neighbors.

Since what you do on your land can cause some of these animals and plants to disappear or become more abundant, they must be considered in your plans. Removing all dead trees, fallen logs, and hollow trees on your property, for example, could eliminate the pileated woodpecker, ruffed grouse (partridge), and many other birds and mammals who may live there. The placement of a single new road on your property could protect or eliminate a population of frogs, toads, salamanders, turtles, or snakes because these small animals are easily destroyed by even occasional traffic and sometimes are attracted to roads for basking, feeding, and, in the case of turtles, egg laying purposes.

Many people are attracted to southwest Wisconsin by its sights, sounds, and patterns of nature. We all should play an active part in preserving those things which attracted us to the region in the first place. Consider the use and management of your land as a personal statement of your values and principles. And until you know the full impact of any changes to your land you are contemplating, do not undertake them. Make your land your hobby. It can be more gratifying than many other hobbies you might choose.
Southwest Wisconsin's early settlers had at least one thing in common with the region's current inhabitants: they paid a dear price for their energy. That high price was paid not in dollars but in hard physical labor. It took them many days of chopping, hauling, splitting, and stacking cordwood to ensure a warm winter home.

Through hard experience, the settlers learned that by building their homes in the right places, they could reduce their woodcutting chores. In addition, they found that planning their farm's buildings, fields, and pastures with respect to the natural elements could positively affect the vitality of their crops and livestock.

The region's early settlers were, by necessity, energy conservers. They quickly learned that failure to take advantage of all available natural, physical, and human resources spelled disaster.

Today, the circle is closing back around us. Like our forefathers, we are paying an increasingly high price for our energy. So when we plan our homes and farms, it's essential that we look at the landscape for ways to help minimize our energy needs. Sun, wind, landform, and vegetation can—when properly understood—all work to our advantage. It's up to us to understand how to use them advantageously.

The region's climate

Southwest Wisconsin is located near the border of the nation's temperate and cool climatic regions. Its winters are not as long and cold as those of its northern neighbors. Nevertheless, with its deep frosts, strong winds, and sudden changes in temperature, the winters are severe for people, plants, and animals.

To temper the living environment, we use energy, mostly from oil, gas, and coal. But we also have the alternative of partially tempering our environment with knowledge of the land on which we live.
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- 70 - 79.9
- 80 & OVER

AVERAGE SEASONAL SNOWFALL

MEAN TEMPERATURE (°F)

FROST FREE DAYS

MADISON
- APR 16...OCT 19: 177 DAYS
- MAY 1...OCT 8: 161 DAYS

LA CROSSE
- APR 19...OCT 12: 164 DAYS
- APR 14...OCT 12: 164 DAYS

MINNEAPOLIS
- APR 20...OCT 13: 164 DAYS

DUBUQUE
- APR 19...OCT 12: 164 DAYS

MEAN ANNUAL PRECIPITATION

HEATING DEGREE DAYS (BASE OF 65°F)

DEGREE DAYS
- UNDER 7000
- 7000-7999
- 8000-8999
- 9000-9999
- 10000 & OVER
MICROCLIMATE: A CLIMATE WITHIN A CLIMATE

Knowing what climatic region you live in won't help you much when it comes time to plan your site for energy conservation and comfort. To do this, you must discover your microclimate, that is, the climate of your individual site. Your microclimate is determined by the sun and wind pattern interactions with the slope, elevation, and vegetation of your site.

For example, a northern slope will get little sun and be exposed to cold winter winds. It therefore requires far more energy to keep it warm than a nearby southern slope. Similarly, barren uplands have a harsher climate than uplands covered with trees and shrubs that provide shade in summer and protection from wind in the winter.

There are four major elements to energy site planning: sun, wind, landform, and vegetation. In a sense, their combination on your site is the plan, so your planning job is done for you. What you must do is discover that plan and mesh it with your needs and desires.

THE SUN

The sun is the most consistent climatic element. Its appearance, intensity, and angle are as predictable as clockwork. For these reasons, there's a lot of talk today about harnessing the sun's energy. This generally involves the use of solar panels to produce hot water or to supplement central heating systems. These are called active solar systems.

While current cost of active solar systems puts them beyond the reach of the average homeowner, prices are expected to be lower in the future. Therefore, if you're building a house and cannot now afford an active solar system, you would be wise to design it so you could install a solar system when the costs come down. The Wisconsin Alternative...
Energy System Tax Credit Program currently offers tax incentives to property owners who install alternative energy systems.

But before you think about installing an active solar system, you should do everything you can to encourage passive solar heating. Passive solar heating involves doing all you can to trap the sun's energy through siting and house design. Economically, it makes no sense to think about active solar systems until you've taken advantage of all available passive solar heating opportunities.

The intensity and angle at which the sun's rays strike the earth vary according to the season. In southwestern Wisconsin, a south-southeastern orientation is considered best for maintaining a balance between the overheat­ed and underheated periods of the day.
THE WIND

Wind speed and direction affect the microclimate of your site. Summer breezes can be directed to provide summer cooling and reduce humidity and insect problems. Winter winds and cold air flow can be obstructed or deflected to reduce heat loss.

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<thead>
<tr>
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<tr>
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PREVAILING WINDS | MADISON STATION

LANDFORM

Major landforms, like hills and valleys, control air flow by channeling wind direction and affecting wind speed by deflection, restriction, and obstruction. Warm air tends to flow up valleys during the daytime while cold, damp air masses move downhill and settle in valleys at night. Val-
leys often form heat pockets during the day and then become cold during the night. By accentuating extremes in temperature, they affect human and livestock comfort and crop growth.

To better understand the microclimate of your site and how you can alter it, keep note of the movement of air over and around landforms. Anticipate the effects and directions of winter winds, summer breezes, and daily cycles of air movement.

Landform plays a vital role in energy efficient site planning. It can modify the effects of both sun and wind. Slopes that face away from the sun should be avoided. They receive little solar radiation, are exposed to harsh winter winds, and obstruct summer breezes. Such slopes are called cold slopes and face the west, northwest, north, and northeast. On the other hand, warm south, southwestern, southeastern, and eastern slopes should be taken advantage of.
of when siting a building. A warm slope can obstruct or deflect winter wind and contain cooling upslope summer breezes. A location part way up a gentle south-southeastern facing slope takes best advantage of the climatic factors influencing energy conservation.

VEGETATION

Trees and shrubs can be used to direct, deflect, or restrict wind patterns. They direct the wind to provide cool summer breezes and deflect cold winter winds.

Deciduous trees and shrubs (those that lose

LANDFORM & VEGETATION CAN WORK TOGETHER TO REDUCE HEAT LOSS DUE TO WINTER WINDS.

ORIENT PLANTED CORRIDORS OF TREES TO PROVIDE VENTILATION DURING THE SUMMER MONTHS.
their leaves in winter) can screen out unwanted summer sun while allowing the sun's warmth to pass through during the winter. Since trees and shrubs take time to mature, it helps if you can take advantage of the existing vegetation on your site.

Windbreaks, consisting of rows of evergreen and dense understory plants, are often used to channel or block winter winds. The height, density orientation, and form of a windbreak determine how well it will work. Windbreaks should be carefully designed. If poorly located, they can cause frost pockets or turbulent wind in unwanted places.

Windbreaks can be used to moderate winter winds.

North facing slopes receive little sunlight and are damp.

Uplands are exposed to the hot summer sun.

Deciduous trees located to the south of a building provide cooling summer shade and can direct summer breezes.

Valleys are subject to temperature extremes.
CONCLUSION

Few sites will contain all the elements necessary for an energy-efficient microclimate. Take advantage of those things your site does offer, and use building design and vegetation to overcome its shortcomings.
Respecting Local Values

Local values are reflected in the history, customs, and rules of a local community. Although sometimes difficult for the newcomer to recognize and understand, these values should be respected, for they give meaning to daily life and help the community run smoothly.

Local values are expressed by people through their social functions, such as town picnics or church suppers. Newcomers to an area can learn a lot about the community in which they are living by participating in these functions.

Part of living in any community is getting to know your neighbors and being able to freely share ideas with them. Neighbors can be exceedingly helpful, and by maintaining communication, many potential conflicts can be avoided.

When you first move into an area, you may be considered an "outsider" and viewed with some suspicion. And you may remain an outsider to some residents even after you make an effort to be friendly and helpful. But once you are accepted, you may find a warmth and a cooperative spirit. Being relaxed and able to stop work and talk for a while is part of the rural way of life. Learn to respect the values and knowledge of the older residents of your area. They are an invaluable source of information about the land and local history and culture.

A more subtle but very important reflection of local values is apparent in the visual character of an area. This includes the architectural style of buildings, the types of farms, and the natural landscape. All these features contribute to the character of an area and should be respected and, when possible, retained even when land uses are changed.

Blending in with your surroundings is important when changing the use of land. If you plan to build a house in a beautiful natural setting, you should design it to blend into the setting. This can be effectively done by first siting the house and driveway to ensure that you don’t create noticeable changes in the landscape. Then, when building your house, you should use native materials (stone, wood, etc.) and natural colors. Homes built on the very top of a hill are visible for many miles and can destroy the appearance of a natural horizon for many other people. Therefore it’s best to place a home on the rim or just below the top of a hill, where it is less noticeable.
The history and heritage of an area are expressed by older buildings and other features. These historical features should be preserved whenever practical. When a new building is constructed near a structure of historical interest or when an old structure is remodeled, every effort should be made to maintain a harmony with the original architectural style. Preserving visible signs of the past greatly enhances the character of an area.

Respecting local values also means respecting the rights of others. With property ownership you are given certain rights to use your land as you desire. Along with those rights, however, comes the responsibility to use the land in a way that does not infringe on the rights of others.

One common way that rights of different landowners come into conflict occurs when housing is built on good agricultural land or too close to agricultural operations. Decisions to build houses in agricultural areas can destroy productive land and can cause long term conflict for both farmer and homeowner.

Another potential area of conflict is hunting. You can maintain wildlife and rapport with hunting neighbors by permitting a moderate amount of hunting. Ask that permission first be granted for each person using the land. While you may not like the idea of hunting, in the absence of predatory animals some game tends to become overabundant. When practiced ethically, hunting has a significant value. You, then, need only to prevent overhunting and eliminate careless or unqualified sportsmen (often inexperienced youths). Of course, on small parcels, near the house, and areas where children play, adequate signs are needed to prohibit shooting. Deer hunting with rifles is the one really dangerous form of hunting; if your county permits it, posting precautions may be needed.
You should be aware that Wisconsin law will not uphold the posting of signs banning or restricting hunting since all game is considered to be under the jurisdiction of the Wisconsin Department of Natural Resources and not individual landowners. Hence “no trespass” signs are erected by farmers to legally prevent indiscriminate hunting and danger to livestock which are sometimes mistaken for game. A “no trespass” sign will hold up in court only if the owner or tenant personally signs each sign. It’s a good idea to consult the local DNR game warden to determine how to best control hunting and avert danger. The game warden’s job is one of mediating disputes as well as enforcing the law.

Good neighbor policy involves both requesting and requiring permission for hunting.

Local government works to balance the rights of landowners and the community at large by developing plans and rules to protect valuable resources and important values. Many towns and counties have developed land use plans or community plans that can serve to point out certain local values to the newcomer. Rules, such as zoning and land division ordinances, often are adapted to carry out long-term plans. Therefore it is important for landowners to work with local township and county officials prior to changing the use of any land. It’s also wise to understand the plans and regulations of the community and to deal openly with the local governing body.

One common rule shared by all Wisconsin counties and towns in the ridge and valley lands involves the legal responsibility for maintaining farm fences. If you buy land that adjoins a pasture or field and a fence runs along the property line, you are responsible for maintaining half of that fence whether or not you personally need it.

Another very important consideration in respecting local values and neighbor needs is understanding the effect on land valuation of your purchase of rural land. Taxes on real estate are determined, in large part, on recent sale prices. If you pay too much for land or buildings, you’ll raise the valuation of all similar property nearby which, in turn, raises property taxes on that property. Even though the total price you pay for some real estate may seem reasonable to you, it may be more than a farmer can afford to pay for farming purposes. To protect your neighbors and yourself from excessive land speculation, find out what good farmland, poor land, and buildings are selling for in the area before you buy. County and town tax assessors may help you with this. An owner or agent may be asking too much with the expectation that you’ll make a lower offer. This may be part of the buy and sell game that you must learn to play.

Becoming aware of and respecting local values is extremely important in maintaining the quality of community life for longtime residents, for you as a newcomer to the area, and for future residents.
Working Toward Self-Sufficiency and a Strong Local Economy

If you’re planning to make southwest Wisconsin your permanent home, you should also consider producing your income locally by taking advantage of the region’s resources and opportunities. By producing your income locally, you help to strengthen the local economy, which in turn benefits everyone in the community.

There are few major employment centers in southwestern Wisconsin. The land is the region’s greatest resource, and therefore offers the most long-term economic opportunities. This section describes some of those opportunities. For the most part, they are agricultural activities. There are other opportunities, such as food processing and wood product manufacturing. In the future, recreation promises to play an increasingly important part in the region’s economy.

Numerous artists and craftsmen, drawn by the region’s inspiring landscape, have made southwestern Wisconsin their home. In doing so, they have contributed to the region’s rich culture. At the same time, however, many young and talented people who grew up in the region have left in search of better opportunities elsewhere. If you are bringing some professional or technical skills into the region, they can be put to good use in the local community.

Many people who talk about “getting back to the land” have unrealistic notions about what is involved. While farming can be a very fulfilling way of life, it is also a competitive business which requires a high degree of business and production management skills. Hard physical labor and undesirable hours are all part of farming. Drought, hail, frost, disease, and market fluctuations can make farming a risky business. If you raise livestock, they must be tended routinely every day. In sum, if you decide to go into farming, realize that you are making a big commitment.

Should you decide to raise crops and livestock for your own use, it’s best to diversify your activities and grow those products that you can raise more cheaply than you can buy. If you decide to farm for profit, however, it’s generally best to specialize in one or two activities. By specializing, you can make better use of your management skills, equipment, buildings, and labor.

Don’t make a big commitment to any activity until you have enough knowledge, experience, and resources to do so. If you are undertaking something for the first time, start small and learn from your mistakes. Better yet, hire yourself out or volunteer to work for a nearby farmer who grows the crop or livestock in which you are interested.

THE SMALL DAIRY FARM

In 1952 Wisconsin had 132,000 dairy farms. Today there are 47,000 in the state. While the number of cows has stayed about the same, herd size and the production per cow has increased greatly.

In the ridge and valley lands of southwest Wisconsin, dairy farming traditionally has been the chief method of taking advantage of the region’s resources. While it’s still possible to make a living with a dairy herd if you are a good manager, the pressures are numerous. Today’s dairy farmer must strive for very high production to compete and stay ahead of debt commitments. Poor cows don’t make money—they cost money. So, to be a farmer at all today, you have to be a very good farmer, especially if you have to borrow considerable capital to get started.

In order to make a living from a dairy herd, you would need a minimum herd size of about 35 cows. To maintain this herd, you’d need three to four acres of tillable land per cow, or 110 to 140 acres for a 35-cow herd, plus pasture.

At current prices, this herd should gross about $40,000 per year. After operating expenses (excluding interest) are deducted, about $18,000 will be left. Of this $18,000, a farmer can expect to pay about $3,000 for replacement of capital goods. If a farmer had a $65,000 loan for a 30 year term at eight percent interest, he or she would have to pay another $5,000 in debt service. This would leave a net cash amount of about $10,000, plus the income tax advantages of operating a dairy farm. Higher debt requirements at a higher rate of interest would substantially reduce this return. Your housing and part of your other living expenses also can be included in the operating costs.

Of course, this is only an example, but it does illustrate some basic facts on the economics of today’s dairy farm.
OTHER CROP AND LIVESTOCK OPPORTUNITIES

Old farm management textbooks stressed diversification of livestock production on the individual farm. Today, with high management requirements and investment costs, it's become increasingly necessary to concentrate on a single type of livestock. Modern buildings, costly and complicated equipment, and a high level of knowledge are required for each livestock type. Consequently, on the average-sized family farm, investments in buildings and equipment are generally too high to raise several kinds of livestock and few individual farmers can efficiently raise more than one livestock type.

You can, however, diversify with crops on a livestock operation since some similar equipment can be used for different crops and you can trade in machinery where you can't trade buildings. Also, labor demands are more spread out over the year between crops and livestock. You may want to augment your dairy operation with the sale of cash or canning crops. This would require more land or more intensive use of the land.

In addition to dairy farming, there are a variety of other farming activities that can be very successful in southwestern Wisconsin. Different activities are available to suit different off-farm job situations, types of land, and personal tastes. Whatever your needs and desires, you should be able to find an activity that will suit you.

The following includes some of the major crop and livestock opportunities available. If you choose one, be sure to take a close look at whether it truly fits your needs and your land.

Most of the crops mentioned are considered "specialty" crops. Conventional cash cropping is not discussed as a separate enterprise because in most of the region the soil and slope limitations are too severe to sustain full-time cash cropping without harming the land.

**Beef Cattle and Heifers**

There's a very wide range of beef production systems available for southwestern Wisconsin—from purebred beef cow herds to dairy steers to feeder cattle, with many variations in between. Each production system has its own capital needs and risks, management, feed and building requirements, disease problems, and profit potential. Some are better suited to the region's high forage crops and pasture availability than others. You can, in effect, tailor your beef production system to your needs and resources. But before you do so, be sure to get plenty of expert advice before making any commitments, and keep an eye on market trends.

Raising dairy replacement heifers (heifers raised for sale to milk producers) is an operation that is similar to a beef production system. Though it requires considerable capital, it requires less initial expertise than managing a dairy herd or a beef cattle herd.

**Sheep**

Though for some reason sheep raising seems to have less status or glamor attached to it than beef cattle raising, increasing numbers of people are discovering that raising sheep can provide several advantages over raising cattle. While sheep need more management than grazing steers, there can be a faster capital turnover and a lower initial investment per unit.

In addition, sheep are easier for the beginner to handle and the economic consequences of making mistakes is probably not as large because the individual is working with a larger number of smaller animals.

The climate, the hills and valleys, and the high availability of forage make sheep production well-suited to southwestern Wisconsin. Approximately 90 percent of a ewe's annual feed intake consists of pasture and forage. Sheep are the only farm animals that can be raised to choice market grade on pasture alone. The lamb and ewe market has been strong, and good market outlets, such as the Portage and Richland Center Equity Lamb Pools, are available.

Sheep flocks permit a longer-than-usual crop rotation, favoring grassland farming and soil conservation. Given adequate pasture, sheep will not graze grass to the ground.

A good pasture will carry three ewes and eight lambs per acre for one season. Additional acreage increases management flexibility.

Labor requirements are low for sheep and expensive buildings are not required. You can get started in sheep with only a moderate investment. Flocks of 40 to 80 ewes can be profitable. Four hundred to 500 head or larger flocks make a profitable full-time specialized business for one operator.
Dairy Goats

Dairy goats, like sheep, can take good advantage of forage and pasture resources. And if you can market it, dairy goat milk brings a good price. In order to make goat dairying a full-time operation, you would need a 250 to 300 goat herd.

The major problem with goat dairying today is that the market for goat milk is not well established. In order to develop a market, or transport your milk to an existing market, you would have to form a group or cooperative. An adequate number of dairy goats and goat farmers in an area is necessary to even out production variations and deliver a constant volume of milk to processors and consumers.

Feeder Pig Production

Wisconsin exports 500,000 to 600,000 feeder pigs and breeding stock yearly, mostly to Iowa and Illinois. Hogs are produced in most Wisconsin counties, but numbers are greatest where corn is harvested for grain. Feeder pig production gives high returns per acre of land and can be a good livestock enterprise where land for grain production is limited relative to the labor supply. Therefore, feeder pig production can be a good choice on small farms with enough family labor and good management skills.

The best size for a feeder pig operation depends on the operator's efficiency. Cost per head or per acre usually declines as the size of the operation increases. With hog operations, economies of size appear at a relatively low level. With good planning, feeder pig production and sheep lambing may be done in one building. Large commercial confinement operations are generally not suited to the steep lands and limited grain production of the region.

Poultry and Small Stock

In general, poultry and small stock raising do not take advantage of the forage and pasture resources of southwestern Wisconsin to the same extent as other livestock.

The small poultry flock won't save much, if any, money over retail purchase of eggs and meat. Because large commercial operations can get volume discounts on feed and make more efficient use of automated equipment, they are hard to compete with.

A full-time egg production operation requires 20,000 to 30,000 hens. This requires an initial investment of about $200,000 (not including land, which would be minimal), and should yield a net annual income of about $16,000. If you are unwilling to make that kind of investment and better able to capitalize on available labor, a 5,000 hen flock plus an egg route might be more attractive. This sort of operation should yield about $7,000 in net annual income.

With poultry, egg, and small stock production, it is important to know if a market is available and to what degree you would be in competition with other established producers.

As with egg production, raising ducks, geese, capons, rabbits, and turkeys for profit usually requires a large operation. Limited opportunities for specialty markets do exist, however, for certain types and sizes of small stock that are not commercially produced. Then, too, there are non-monetary benefits to raising a small poultry flock or a few rabbits. You may find the idea of producing your own food appealing or find value in growing animals.
Apples

Apples are the major orchard crop in south-west Wisconsin that shows profit potential. Because it takes a fairly long time to establish an orchard, however, you'll need an outside income until your trees begin to produce. Dwarf trees take an average of five years before the first major crop. Full-size trees take twice as long.

Many apple growers are shifting to dwarf and semi-dwarf rootstocks because the trees offer a number of advantages over full-size trees. They are up to twice as productive per acre, require shorter time from planting to production, are easier to maintain (but require relatively intensive management), and are more suitable for pick-your-own operations. On the other hand, the initial capital investment per acre is about three times higher for dwarf varieties than it is for full-size trees.

For a full-time operation, you'd need a minimum of 15 acres of dwarf rootstocks or 30 acres of full-size trees.

Be aware that orchards will not thrive in low-lying areas where frost pockets are a problem.

A small, well-cared for orchard for family use will provide a bounty of fruit at a low cost. In addition to apples, pears, plums, and sour cherries can be grown in southwestern Wisconsin.

Strawberries

With good management and a favorable location, strawberries have a good profit potential. It's best to start with one acre or less until you get to know the operation. An average yield from an acre of strawberries is about 6,000 pounds, which yields an average return over cash costs of about $1,500. A full-time operation of 10 acres should yield an average net income of $15,000.

Yields vary considerably. Generally, small operations yield more pounds per acre than large operations. An overhead irrigation system is mandatory for spring frost protection and for maintenance of soil moisture during the growing season.

"Pick-your-own" operations are often more profitable than grower pick systems because of lower labor costs. In this case it's best to be near a city or a major highway. It also helps to provide picnic or other recreation areas to enhance the "rural experience" that berry pickers seek.
Roadside Marketing

Besides strawberries and apples, opportunities exist for raising other fruits and vegetables. In order to make a profit, the fruit or vegetable grower will in most cases have to use a direct-sales approach. By selling directly to the consumer, a farmer can sell at a price near usual retail levels.

There are four major direct-sale approaches available: a central farmers market; an independent roadside stand; a roadside marketing association; or a pick-your-own operation. Each approach has advantages and disadvantages that should be explored.

It's important to sell only minimally-processed or unprocessed products as much as possible. Processing involves licenses, standards, and inspectors (and possible lawsuits for improper processing). Besides, customers are primarily looking for fresh produce.

The long-range forecast for roadside marketing is a good one. With larger disposable incomes, people will look more and more for the extra quality that roadside markets can provide. In addition, a demand for "natural" foods is increasing, which should result in greater fresh food roadside stand business.

Honey

Honey can be either a good income supplement or a full income producer. Nationally, Wisconsin ranks near the top in terms of per colony honey production, with an average yield of 100 pounds per colony. With its bounty of pasturclands, alfalfa fields, and woods, southwestern Wisconsin is ideal beekeeping territory.

Since honey is considered a luxury item that must be actively marketed, marketing skills are as important as bee management skills. The honey market has been quite strong for several years. About 400 to 500 colonies are needed for a full-time operation, whereas 10 or more colonies can provide a respectable income supplement.

Southwestern Wisconsin is ideal beekeeping country.
WOODLOT MANAGEMENT AND FOREST PRODUCTS

One of southwest Wisconsin’s most important natural resources is its woodlands. They produce lumber, ties, veneer, firewood, maple syrup, Christmas trees, and other products. At the same time, they serve as a significant aesthetic resource, provide a wide variety of recreational experiences, and are a vital part of the region’s environmental system.

Woods account for almost one-quarter of the acreage of southwestern Wisconsin farms. These wooded areas contain considerable untapped potential for the growth of forest products. If the woods are managed wisely, this growth can be harvested without destroying aesthetic and environmental values.

If you own and would like to manage your own wooded acreage as a productive resource, your first step should be to contact your Department of Natural Resources county forester. If you are considering purchasing a tract of woods, contact a consulting forester for an appraisal of its potential uses and value. It’s hard to get good management advice without an expert actually looking at your woods, because woodlands vary so greatly. For example, if you had one woods owned in three separate parcels, one parcel might have been grazed for 50 years; one parcel might have been overcut and contain only poor quality trees; and the third parcel might contain a well-managed stand of hardwoods. The management guidelines for each would be completely different.

A county or consulting forester can give you valuable advice on management for timber production, recreation development, wildlife habitat improvement, and soil and water conservation. They will mark trees for harvest, estimate your potential yield, contact loggers, help you with a tree planting program, and help solve any disease and insect problems your trees may have. Ask your forester’s advice about which trees are ready to harvest.

Before selling standing timber, have him mark the trees to harvest. Ask him to recommend reputable loggers. Poor harvesting techniques can severely reduce the future productivity of your woods.

Your County Agricultural Stabilization and Conservation Service office has a forestry incentives program through which you can receive up to 75 percent of the cost of culling out poor trees, pruning pines, planting young trees, and making other timber stand improvements.

If you own a continuous tract of 10 or more acres of woodland, you are probably eligible for Wisconsin’s Woodland Tax Program or Forest Crop Tax Program. The Woodland Tax Program is more commonly used. Under this program, by entering into a 15-year contract, the state will exempt your woodland from the general property tax. You pay only 40¢ per acre per year to your town in lieu of the property tax. Requirements under the Forest Crop Tax Program are somewhat different. For more information on either program, contact your county forester.

Firewood

Many long-time residents of rural southwest Wisconsin have always heated their homes with wood. Today numerous others are joining them, as they discover the advantages of using wood for fuel.

Each year, the average woodland acre in Wisconsin grows about one-half a standard cord of firewood. (A standard cord is a pile four feet high by four feet wide by eight feet long). Good management can double this amount. With careful selection of trees harvested for firewood, the remaining trees in a woodland will grow more vigorously. Wood that is left in the forest to rot decomposes through oxidation, a process which is the same as burning only occurring at a much slower rate. With today’s energy situation, it

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Fire damaged Low value "Wolf tree" Dead

Improve your timber stand by removing poor quality trees.
behooves us to take advantage of this process by letting it occur in our wood heaters.

The type of wood and wood heater that you may choose to use will make a big difference in the amount of work involved with wood heating. Dense woods, such as maples and oaks, have a much greater heat value than light woods, such as poplars and willows. Wood heater efficiency varies from model to model. Fireplaces, Franklin stoves, and box stoves are relatively inefficient burners while "airtight" heaters are the most efficient. A great number of wood heaters on the market today are untested, so you must shop very carefully when looking to purchase one.

**APPRAOIHATE WEIGHT OF ONE CORD (4X4X8) DRY WOOD (APPROX. 20% MOISTURE)**

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<tr>
<td>WHITE OAK</td>
<td>3920</td>
<td>22.7</td>
</tr>
<tr>
<td>WHITE PINE</td>
<td>2080</td>
<td>13.3</td>
</tr>
</tbody>
</table>

Maple Syrup

Maple syrup is a specialty woodland crop that can be harvested in many areas of southwestern Wisconsin. It can be produced on either a small or large scale. If you wish, you can start with one tree. A full-time operation requires about 8,000 to 10,000 taps, which requires a 100 to 200 acre sugar bush (woodland of predominantly sugar or black maple).

Since maple syrup production can vary greatly from year to year, a producer should have an alternative income source for bad years. A good combination of enterprises is maple syrup and firewood. By improving tree spacing through thinning, a larger tree crown results, which contributes to a greater volume of sweeter sap. Well-managed maple syrup operations can return 15 to 20 percent on capital.

Christmas Trees

Christmas trees are a potential wood crop for soils unsuited to conventional agricultural crops. Christmas trees prefer a loamy sand soil. One person can care for 20,000 trees in his or her spare time. A minimum full-time operation requires about 100,000 trees, which would cover about 100 acres of land.

Christmas trees involve an average eight-year lag between planting and harvesting. Initial investments are minimal although risks can be considerable due to disease, insects, fire, and poor shearing.

FITTING AGRICULTURAL ACTIVITIES TO THE LAND

If you are contemplating engaging in agricultural activity, one of your first steps should be to determine how well your land is suited to the activity you have in mind. Fortunately, each county has a local office of the Soil Conservation Service which is equipped to give you a detailed and accurate picture of what types of agricultural activities your land can sustain.

At the same time you are deciding how to use your land, you should find out how to care for it so these uses can be sustained on a long-term basis.

By helping you prepare a farm conservation plan, your soil conservationist will help you fit what you would like to do with your land together with how the land should be treated.

In addition, your County Agricultural Stabilization and Conservation Service has attractive cost sharing programs for the installation of soil conservation features, such as terraces and grass waterways. With all of the technical and financial assistance programs available for soil conservation, it is possible to maintain your land for the future and still make a profit today.

In general, the most enduring approach to agriculture in the ridge and valley lands of southwestern Wisconsin emphasizes pasture renovation and management for livestock grazing. In this part of the state, it's best to market forage through livestock rather than directly marketing cash grain crops. Where slopes are gentle enough to raise cash crops, they should be raised using rotation and strip cropping methods.

Several conservation tillage practices are becoming more widely used in southwest Wisconsin. These practices, which include chisel plowing, zero tillage, and till planting, control soil erosion and can cut down on time, labor, and energy costs.

There's a lot more to forage and pasture management than just letting the grass grow. A renovated, well-managed pasture can yield two to three times more than unimproved pasture. By using two or more pasture types, you can stretch out your productive grazing season. For example, full stands of perennial grasses can provide your livestock with high yields of quality forage in early spring and in the fall when legumes (like alfalfa and birdsfoot trefoil) should be rested.

One important pasture management rule to follow is that livestock should not be grazed in wooded areas. Continuous grazing will eventually destroy woods. Studies have shown that one acre of renovated pasture can yield as much in tons of dry matter per acre as 11 acres of wooded pasture and as much protein as 30 acres of wooded pasture.
2 CFB + 35

IF ALL CONSERVATION MEASURES ARE USED, SMALL GRAINS ARE BEST SUIT ED TO HAY & PASTURE. CONSERVATION MEASURES & TILLAGE ARE RECOMMENDED. ROW CROPS, IF CONSERVATION

WELL SUITE TO PERMANENT PASTURES, WOODS & WILDLIFE ARE.

TILLAGE REQUIRED. FOR CONTINUOUS ROW CROPS IF CONSERVATION

MAY BE SUBJECT TO FLOODING.

SHORT CROP ROTATIONS.

LONG CROP ROTATIONS.

2-6% SLOPE

6-12% SLOPE

12-20% SLOPE

0-2% SLOPE
BEFORE YOU DECIDE

Before you decide on any type of agricultural activity, be sure to discuss your ideas with as many people as possible. By seeking advice from the following groups of people, you should get a good picture of whether or not your ideas are sound:

1. County Extension agents and Soil Conservation Service staff;
2. Successful farmers in your area who raise the same types of crops or livestock that you are contemplating;
3. Local feed mill and farm supply operators;
4. Local credit and financing officers.

Each of these people will give a different slant on if and how you can succeed. By putting together their views, you can improve the probability of making the right decision. You might also consult the growers’ or producers’ association concerned with the type of crop or livestock you are contemplating. Once you’ve chosen a type of crop or livestock, try joining the appropriate association. It’s usually a good source of support and continuous, up-to-date information.

WHEN YOU DECIDE

Don’t let popular conceptions or personal biases guide your decisions in choosing crop and livestock enterprises. Of course, you’ll want to choose something consistent with your personal likes and dislikes but you also should find out whether your choice is feasible and will result in the best use of your resources. When seeking out information, try to get answers to the following questions:

1. How much labor will you have available?
2. How much capital do you have and how much debt are you willing to assume?
3. What are the limitations and potentials of your land?
4. What level of risk are you willing to take?
5. What level of business and production management skills will you need?
6. Do you want to produce for personal use, income supplement, or sole source of income? (Be realistic about your expectations).
7. Can you adapt existing buildings and machinery to a new use?
8. Is there an existing market for your product?

Look for the enterprise that gives you the highest net return from the most limiting factor—land, labor, or capital.

By doing your homework before you make commitments, you can save yourself a lot of disappointment and loss.

IF YOU CHOOSE TO RENT OUT YOUR LAND

If you have purchased more land than you intend to use yourself, you might consider renting it out to a nearby farmer. There are two basic types of rental agreements you can choose to offer. With a cash rent agreement, you rent acreage for a set amount per acre. With a share crop agreement, you share the cost of planting and the profits from the crop. With the share crop agreement, you share the risk of poor yields with the farm operator but raise your profit potential if the yield is good.

If you choose to rent your land, remember that you still have the primary responsibility to see that it is not overworked or improperly used. The best way to ensure that your land will be properly cared for is to include requirements for soil conservation practices and appropriate crop rotations in a written lease. Also include provision for paying the renter for improvements that will contribute to long-term soil protection and production. Your county Extension agent will supply you with sample lease agreements which you can prepare with the help of your attorney. When you rent out your land, don’t let your desire for short-term gains override your long-term responsibility toward your land.
Ten Steps to Knowing Your Land

Your land use decisions represent a long-term commitment to yourself, to your land, to your community, and to future landowners. Therefore, it's important to take the time to match your needs with the land's capabilities before choosing a course of action.

This section provides a set of steps to help you apply the information provided in this handbook to a particular piece of land. The steps will aid you in organizing your observations as you walk over and study your site.

The amount of work you put into these steps will depend on your situation. If you're a farmer thinking about selling a portion of your farm, you'll want to make a general assessment of how your land could be divided in different ways to suit the needs of different buyers. It's a good idea to refrain from dividing your land until you have a committed buyer. If, on the other hand, you are thinking of buying a piece of land, you'll want to spend more time on these steps—time enough to be certain that the land will or won't serve your particular needs. If you already own the land and are making the final decision on what to do with it, you'll want to spend a considerable amount of time working through these steps.

Before starting, be sure to check with town and county officials to see how local plans and how sanitary, land division, and zoning codes might affect your intentions.
To help you work through these steps, you'll want to draw a base map on which to record your observations. Your base map should include major features such as roads, streams, and fence lines. By making several copies of this map, you can record different sets of information which you will eventually combine into a problems and opportunities map. In order to illustrate how you might record your site's characteristics on base maps, we have provided a sample study site and a corresponding set of study maps.

You should be able to do an adequate job of drawing the base map yourself. It only has to be accurate enough to suit your needs. You might want to look at an aerial photograph of your site at your County Soil Conservation Service or Agricultural Stabilization and Conservation Service Office to get the proper proportions of the different features of your site.

Once you have your base map ready, you can proceed through the ten steps. Do as much of the analysis as you can yourself. If you don't feel competent to do it all, get some professional help. The time you invest in choosing and evaluating a site will pay you handsome dividends for many years to come.

1 DECIDING WHAT YOU WANT TO DO

Before taking a serious look at your land, you should have a clear picture of what you want from it. Ask yourself these questions: Do I really know what rural living involves? Do I want to build a new home or buy an existing home or farm? Do I want an income from my land? If so, how much and from what? Do I want land just for hunting or nature appreciation? By developing a clear picture of what you want beforehand, you are more likely to choose a site that suits your needs. Once you select a site that you think holds some promise, you can proceed through the rest of the steps.

2 TOPOGRAPHY AND DRAINAGE

One of the first things you'll want to do when inspecting your site is to get an idea of the steepness and nature of the slopes. Slopes determine where different crops can be grown, how driveways should be aligned, where houses should be placed, and many other factors.

Walk around your site and make notes on a copy of your base map about the general direction and steepness of the slopes. If the land you are looking at has not been divided from another parcel, look at how that division can be made with respect to the lay of the land.

You will also want to note the location of your site's drainage-ways. On steeper slopes they will look like small valleys running up the hill. The best way to identify the drainage ways on your site is to be there during or shortly after a heavy rainstorm.

Once you've inspected your site for these things, you'll need to determine how the uses of different slopes will be affected by the types of soil found beneath them. This you can find by taking a look at the soils of your site.

3 SOILS

Soil surveys prepared by the Soil Conservation Service (SCS), can provide you with a wealth of information. Fortunately, a soil survey has been prepared for all of southwestern Wisconsin's counties.

By paying a visit to your county SCS office, you can get an accurate picture of the soil capabilities and limitations of your site. The first thing to do is to find your site on one of the soil interpretation maps. Then make a list of all the different soils on your site. Finally, have the SCS conservationist help you look up the different suitabilities of those soils. To keep your information organized, make a table like the sample at right.

There are a great many soil interpretations that you can make from the soil survey. To avoid confusion, limit yourself to the ones you feel will be most important.

The soils interpretations include considerations of slope, so check back to see how your comments on slope will be affected by the soils on those slopes. Know, too, that the soil surveys are not accurate enough to tell you exactly where such things as septic system filter fields should go. To properly locate this sort of thing, you'll need the services of a certified soil tester.
**4 VEGETATION AND SITE FEATURES**

Your plans for using a piece of land will be affected by what is already there and how previous owners have used the land in the past. For example, an existing farm field road might easily be converted to a driveway for a homesite. By using an existing well on an abandoned farmstead you can save the expense of drilling a new one.

The health of farm fields and wooded areas can vary greatly from site to site. Therefore, you'll want to get an idea of how these different features will affect your future land use plans.

On a copy of your base map, note the vegetation and other features that cover the ground, such as woods, fields, pastures, existing buildings, paths and farm roads, springs, and conservation measures. There are several good tree and plant guides available to help you with this part of your task. The summer months are best for looking at vegetation, if you can't visit during all the seasons.

You might try inquiring at the biology or botany department of the nearest college or University if they could provide a student to help you identify vegetation and wildlife on your land. For a small fee, you'll receive some valuable information and help a budding zoologist or botanist get field experience. Be sure to involve your family, and include the roadside in your inventory. Interesting plants and important animal habitat occur along the roadside. By working with your neighbors and the town board, you may be able to identify important stretches of natural vegetation and reduce unnecessary mowing or use of herbicides.

If you are interested in managing your woods, have a consulting forester assess them for the potential they hold. If you already own the land, your county forester can help you.
5 ENERGY CONSIDERATIONS

While looking at your site, remember how slope orientation affects home and farm energy use. Also remember how wind and air flow change with the season and time of day. Note how existing trees and shrubs can be used to block winter winds and channel summer breezes. Finally, remember that climatic conditions on a site can vary greatly from ridge tops to slopes to valley bottoms. Refer back to the section on planning for energy conservation for energy site planning guidelines.

To plan for energy conservation, it helps to be on the site for the better part of a day in different weather and seasons to observe how sun and wind patterns change from morning to evening. Be sure to bring along a hand compass to help you predict changes in wind and sun patterns on your site during different seasons.

6 SERVICES AND UTILITIES

If you are expecting to build anything more than a hunting cabin, you will need to plan for electricity and telephone lines. These are expensive to install, so you should find out where existing lines are in relation to where you will need service. If you plan to install new overhead lines, install them where they won't interfere with agricultural activities or natural views. It is also helpful at this time to note where soils suitable for septic tank filter fields lie in relation to existing utility lines. Avoid the use of holding tanks for sewer disposal. They are expensive to maintain, both in terms of cost and energy consumption, and these costs are sure to get higher.

Check with a local well driller to find out how expensive drilling costs might be on your site. Because of the high elevation above the water table, wells in Southwest Wisconsin must often be several hundred feet deep. This makes them both expensive to drill ($10 or more per foot) and to operate.

Be sure that driveways can be designed for all-weather emergency access. This means that they must not be too steep, too narrow, nor have a narrow curve radius.

If you plan to move to the country from an urban area, don't expect the same level of urban services from your town government. For example, you will be responsible for taking your trash to the town landfill site or collection point. In the winter, your road may not be plowed the first thing in the morning. Town services primarily serve the needs of the agricultural community at an economical level. A higher level of services would place an additional income tax burden on farmers for services they don't need.

7 YOUR SITE'S RELATIONSHIP TO THE SURROUNDING AREA

How you use your land affects how your neighbors use their land. The opposite is also true. Therefore, when studying your site, be sure to consider what is going on around you. For example, don't plan to put your house too close to a neighbor's farm field. If you do, be prepared to put up with dust, pesticides, and herbicides blowing your way, the noise of night plowing and harvesting, and the smell of the manure spreader.

When siting a house, you will want to take advantage of views. When choosing your views, remember that your homesite might be part of someone else's view. Through proper siting and architectural design, you can give yourself beautiful views while preserving the views of others.

On your base map make notes of what is happening on the land surrounding your site. Then make note of the different views available from different points.
Next, drive around the roads that are visible from these points and think about what you can do to preserve the views of your site.

8 PUTTING IT ALL TOGETHER:
THE PROBLEMS AND OPPORTUNITIES MAP

Putting together all the information you’ve collected is the most challenging step in the whole process. Your aim should be to gather all your information in a way that not only meets all your expectations but also respects your land. This is where your creativity and imagination are important.

The first thing to do is mark out on your base map all those areas for which only a single appropriate use is evident, such as:
- slopes too steep to farm or build on
- soils that are agriculturally productive; and in fields large enough to be economically farmed
- marshes, streams and other areas important to the maintenance of the environment

After you have outlined these areas, look at the rest of your site. The way you proceed with the rest of this step will depend on whether you plan to build on the site, farm the land, and many other factors. The object is to fit all the uses that you intend for the site in a way that takes best advantage of the site’s resources. For example, an optimum site for a new house might contain the following characteristics:
- soils suitable for basements and septic system filter fields
- have a good view without reducing the quality of someone else’s view

Combining or overlaying the information to develop the Problems & Opportunities Map can be achieved using the following layers:

- Site Relationship to Surroundings
- Services & Utilities
- Energy Considerations
- Vegetation & Site Structures
- Soils
- Topography & Drainage
- Base Map
• be located near existing utility lines
• be located away from neighboring fields or other activities that might cause problems
• be located where a driveway would not have to follow a steep slope

The chances are slim that you will have all the right conditions in one place. So find the places with the best conditions and then use your imagination to overcome your site’s limitations. For example, if your best building site is one on a west slope, which is not the best for energy conservation, compensate by using passive solar heating techniques and by planting trees to influence wind and sun patterns.

Finally, if you intend to pursue some agricultural activity on your site, this is the time to find out if there is an activity that suits both your needs and desires and the characteristics of your site.

9 COMPARING YOUR EARLIER EXPECTATIONS WITH YOUR NEW KNOWLEDGE

Now that you have gone through these steps and made some judgements about what uses the site is good for, take another look at your original expectations. Ask yourself if they can be fulfilled by the site you have looked at. If you have serious doubts, don’t buy the land. If you already own it, consider selling it. Take the time to find the land that suits you. Even if a piece of land is available at a low price, it is no bargain if it can’t fulfill your needs or if you have to ignore the land’s needs in order to suit them.

10 THE LEARNING NEVER STOPS

Once you’ve chosen a site and decided what to do with it, keep in mind that your land is continuously changing. Unplowed fields turn to weeds, then shrubs, then woods. Agricultural markets and technology will change which in turn will affect your future plans. Keep observing and learning from your land and be ready to change with it.
Additional Sources of Information and Assistance

By contacting one or more of the following sources of information and assistance, you should be able to obtain help in dealing with all of the topics discussed in this handbook. Everyone, even agency staff, has his or her own personal biases, so if you are unsure about information you get from one source, double check it with another. Most of these sources can be contacted by consulting a local phone directory. The county courthouse is a good place to start looking for help, as many of the following county agencies are normally located there.

<table>
<thead>
<tr>
<th>SOURCE</th>
<th>HELP AND INFORMATION AVAILABLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Extension Office</td>
<td>Full and part-time farming activities, home economics, gardening, energy use and conservation, farmland preservation tax information.</td>
</tr>
<tr>
<td>County Soil Conservation Service Office</td>
<td>Soil surveys, farm conservation plans, wildlife protection, erosion control planning.</td>
</tr>
<tr>
<td>County Agricultural Stabilization and Conservation Service Office</td>
<td>Farm and woodland conservation cost sharing programs, crop and livestock price support programs, aerial photographs.</td>
</tr>
<tr>
<td>Department of Natural Resources County Forester</td>
<td>Woodland management assistance, timber harvesting advice, wildlife protection, Woodland and Forest Crop Tax Law information.</td>
</tr>
<tr>
<td>Professional Consultants</td>
<td>Experienced advice and technical assistance with a wide range of land use problems and needs.</td>
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<tr>
<td>County Sanitarian and Zoning Administrator</td>
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<tr>
<td>County and Regional Planning Offices</td>
<td></td>
</tr>
<tr>
<td>Town government officials (contact town clerk first)</td>
<td></td>
</tr>
<tr>
<td>Neighbors</td>
<td></td>
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<tr>
<td>PUBLICATIONS</td>
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Most of the printed information you will need is available in booklet or pamphlet form from one of the county agencies just mentioned. Your county Extension office has the widest range of information available. We have included several books we are familiar with that provide information that is generally not available from a county source, or complements what you will find there.

Building Construction Illustrated
By Francis D. K. Ching
Van Nostrand Reinhold Company
1975

Wildflowers and Weeds
By Booth Courtenay and James H. Zimmerman
Van Nostrand Reinhold Co.
New York, 1972
A Naturalist Buys an Old Farm
By E. W. Teale
Dodd, Mead
1974

Solar Dwelling Design Concepts
AIA Research Corp.
Government Printing Office
1976

Forest Trees of Wisconsin: How to Know Them
Department of Natural Resources
Publication Number 202400(77)

NATIVE PLANTS

Following is a list of sources of seeds, tubers, and plants of native Wisconsin vegetation. These sources are located in or near southwest Wisconsin. Other sources are available in other parts of the state. This listing does not constitute an endorsement of the source’s products.

High Meadow Farm
Tom and Molly Murray
Rt. 1, Box 215
Mount Horeb, WI 53572
Plant and seeds—prairie and woodland; some native trees and shrubs.

David Kopitzky
Rural Route 1
Richland Center, WI 53581
Plants—woodland and prairie species

Prairie Associates
c/o David M. Peterson
6328 Piping Rock Road
Madison, WI 53711
Seed and plants—prairie species.

Prairie Nursery
c/o J. R. Smith
P. O. Box 116, Rt. 1
Westfield, WI 53964
Seed and plants—prairie species.

Prairie Ridge Nursery
c/o Joyce Powers
Rt. 2, Overland Road
Mount Horeb, WI 53572
Seed and plants—prairie species.
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