SITE SELECTION CRITERIA FOR RESORT DEVELOPMENT AND A CASE STUDY IN NORTHERN NEW ENGLAND

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PART ONE

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by

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ABSTRACT

This thesis will examine the site-specific determinants affecting the prefeasibility evaluation and selection of large tracts of raw land for destination resort development. These site-specific determinants are comprised of three categories; natural amenities and resources, physical attributes and constraints, and locational attributes. In Part one, the criteria used in the analysis of a site's physical and locational suitability for resort development is established. Part two, consists of a case analysis, used as an example of the application of these criteria, and Part three, provides a checklist to facilitate an objective and early evaluation of a site's physical attributes and constraints. While our thesis addresses site-specific issues relating to the physical and locational nature of a property, it should be emphasized that addressing these issues is only one component of a greater study required to determine the overall viability of a project. Market demand, financial feasibility, and the approvals process are all important issues that affect development feasibility. However, we believe that early on-site reconnaissance is critical to identifying a site's overall limitations and potential.

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PART 1

I. *INTRODUCTION & GENERAL CONSIDERATIONS*

This thesis will examine the site-specific determinants affecting the prefeasibility evaluation and selection of large tracts of raw land for destination resort development. These site-specific determinants are comprised of three categories; natural amenities and resources, physical attributes and constraints, and locational attributes. In Part one, the criteria used in the analysis of a site's physical and locational suitability for resort development is established. Part two, consists of a case analysis, used as an example of the application of these criteria, and Part three, provides a checklist to facilitate an objective and early evaluation of a site's physical attributes and constraints. While our thesis addresses site-specific issues relating to the physical and locational nature of a property, it should be emphasized that addressing these issues is only one component of a greater study required to determine the overall viability of a

project. Market demand, financial feasibility, and the approvals process are all important issues that affect development feasibility. However, we believe that early on-site reconnaissance is critical to identifying a site's overall limitations and potential. A prefeasibility analysis of site-specific issues will establish vital facts, and can be accomplished at little risk and expense.

Destination resorts are short-term final destinations that provide a full array of services, amenities, and recreational facilities for the pleasure traveler. They are often located in close proximity to a natural attraction, and benefit from surrounding natural amenities. As well as offering indoor activities, destination resorts provide outdoor recreational and leisure amenities that are either included as a part of the resort (eg. golf, tennis, skiing), or located within an easy commute (eg. national parks, landmarks, beaches, lakes). Hence, the site amenities and location are major factors that contribute to success.

Traditionally, the key fundamental elements of resort development have been an "artifact of location and landscape" (Phillips, 1986: 5), great natural

amenities such as the beaches of Cape Cod, the islands of Hawaii, and the mountains of Colorado (Gee, 1981: 40). Early resorts built exclusively around existing natural amenities included, The Broadmoor, Colorado Springs, the Hotel del Coronado, San Diego, and The Breakers, Palm Beach. Only recently have recreational activities such as golf, boating, and skiing, become cornerstones for destination resorts. Yet, development of these recreational amenities is limited by the nature, suitability, and physical constraints of the site, as well as economic considerations. The Doral Hotel & Country Club, Miami, and The Lodge at Pebble Beach are examples of resorts developed around built amenities, specifically golf and tennis.

Resort development is one of the riskiest vehicles for real estate investment. The uncertainties surrounding such development are multi-dimensional. Developers of resort properties incur high front-end costs since recreational facilities are generally completed prior to the commencement of operations. These early costs coupled with a long payback period make resort projects very speculative ventures.

In analyzing various resort developments, it becomes

evident that a critical mass must be established in the initial phase to facilitate the marketability of the resort. For example, the developers of Lakeridge, Connecticut, a 235 acre planned unit development and resort, surrounded by 2000 acres of state forest, built amenities in the early stages of the project because buyers were skeptical about their ability to deliver facilities and keep promises (Smart, 1981: 113). Similarly, developers of Beaver Creek, a 1400 acre year round destination resort in Avon, Colorado believed that a critical mass was necessary before the project could become viable (Smart, 1981: 119). The developers of the PGA National, a 2340 acre planned resort in Palm Beach Gardens, Florida offered amenities early on in order to "establish immediately visible benefits of choosing a home in PGA National" (Phillips, 1986: 197).

The great variety of recreational activities required of modern resorts has urged developers to employ innovative methods and strategies to offset the upfront costs necessary in providing these amenities. The experience in Beaver Creek, demonstrated that in the early years of operations, costs exceed income (Smart, 1981: 119). Other developments have had similar experiences. Generally, resort development requires a high equity

investment, and at least a ten year time frame for investment return (Baltin, 1990).

In developing Sun River, a 3,370 acre resort in Sun River, Oregon, the developer faced severe financial problems in attempting to provide facilities early (Smart, 1981: 109). Although initial costs were high, the existence of these amenities was essential in that they would add the necessary credibility to the project. In managing the resulting front-end debt, 2185 acres of the original 5555 acres were sold off to the US Forest Service, reducing the timeframe of the project from 15 to 7 years (Smart, 1981: 103). Alternatively, at The Pointe, a 389 acre year round resort in Bloomington, Indiana, all buyers of resort property were required to purchase golf course memberships in an attempt to reduce front-end costs (Smart, 1981: 132). Another strategy has been to open recreational amenities not only to resort guests, but to the general public as well. For example, the golf and tennis amenities in Beaver Creek were open to the general public during the first year of operation (Phillips, 1986: 193). The 882 acre resort of Harbour Ridge, in Stuart, Florida opened the use of all recreational amenities such as golf, tennis, and use of boat slips to nonresidents in the early years of

operation (Phillips, 1986: 241). This strategy however, has not always been successful, and may result in animosity between resort guests or owners, and the local public. The Naples Bath and Tennis Club in Naples, Florida found that mixing resort guests with the local public proved to be a difficult task. It seems that the private members actively resisted the promotion of the resort to the public, and sought to keep the resort exclusive (Phillips, 1986: 214).

As has been demonstrated, the need to create the required critical mass, and provide a multitude of amenities early, is clearly a burden on the financial success and overall feasibility of a resort development. While the prerequisite recreational amenities are provided in the early stage of development, most resort developments are phased over relatively long timeframes (Lawson, 1976: 62). With escalating land costs, more stringent environmental regulations, scarcity of buildable land, and increased infrastructure responsibility on the developer, the site evaluation and selection process has become more sophisticated and complex.

The regulatory climate often mandates a very long

planning and effective build-out period. For example, developers of the Longboat Key Club in Sarasota, Florida secured development approvals after ten years of planning (Phillips, 1986: 181). With Beaver Creek, while planning commenced in 1971, the project was only 20 percent complete by 1985 (Phillips, 1986: 188). Similarly, the Naples Bath and Tennis Resort experienced a 10 to 12 year build-out period, and Boca West in Palm Beach County experienced a 10 year buildout period, following the approvals stage (Smart, 1981: 124).

Resort development is highly vulnerable to changes in consumer behavior and preference (Smart, 1981: 18). Destination resorts have finite popularity cycles, and are affected by demographic trends, consumer tastes, and the addition of newer attractions elsewhere (Gee, 1981: 26). Of course, areas such as South Florida and Southern California have a long history as popular pleasure travel locations and continue to reign as leading resort destinations (Gee, 1981: 23). However, new locations are constantly emerging as did Hawaii, and more recently Mexico. Careful site selection, allowing for the potential development of a variety of recreational activities, can offer diversity, and thus reduce the detrimental effects of changing consumer

behavior and preference.

Resort Types

Resorts can generally be classified into four categories (Gee, 1981: 84); the summer resort, the winter resort, the winter vacation resort and the four season resort. The need to classify resorts is an important consideration in site analysis since recreational activities differ by resort type. Seasonal fluctuations, weather conditions, site potential, and accessibility play a major role in resort development, and are significant factors in determining the classification of a particular resort (Lawson, 1976: 43), and the array of amenities.

The summer resort benefits from close proximity to beaches or mountains. The patrons, generally families, frequent this resort from Easter through labor day. The amenities typically provided include tennis, golf, horseback riding, bicycling, hunting, fishing, swimming, boating, and water sports. Southern California is a prime example of a summer resort destination. The winter resort is ideally located with a northern or eastern geographic orientation for the most favorable

downhill ski trails. Vacationers, generally families and single adults, frequent this resort from November through April. Activities include skiing, snow mobiling, ice skating, indoor tennis, squash and swimming. Examples of winter resorts include Stowe, Vermont, and North Conway, New Hampshire. The winter vacation resort is situated in a southern or southwestern location and is frequented from January through March. Single adults and senior citizens comprise the bulk of the market. The most popular activities in this resort type are golf, tennis, swimming and water sports. The winter desert climate of Phoenix, Scottsdale , and Tucson in Arizona make these popular winter vacation destinations. The four season resort, a relatively modern phenomenon, was created out of inflationary pressures, technological advances in transportation and finally the unreliability and variability of seasonal markets (Gee, 1981: 26). This resort is typically located in a mild climate and caters to all market groups. Vail in Colorado, traditionally a winter resort began four season operations by offering amenities such as golf, and tennis, and by sponsoring events such as summer music festivals (Gee, 1981: 24). Other resort destinations that are popular year round include Las Vegas, Nevada, and Hawaii.

There is a host of issues associated with the seasonal resort. Hiring of personnel is a difficult task and has to be accomplished each season. Because of the temporary work, it is difficult to retain good personnel who typically need to work year round. During the off season months, security may prove to be a problem, with lack of personnel, and absence of activities. Finally, with resorts such as winter resorts, the 90 - 120 days may not provide adequate revenue to justify expenses, and amortize costs over a reasonable period.

Development Team

Resort development, particularly in remote areas requires the skills and expertise of a vast array of professionals. The developer is responsible for coordinating this development process and determining when and whom to engage throughout the process. Typically, the developer assembles a team of professionals and consultants that work together as required throughout the process. The input of a variety of consultants and experts may be solicited on issues ranging from market demand, to engineering, to amenities design and layout.

With the expertise of a resort consultant, the site may be developed as a package, and a resort operator brought in to manage the completed property. Alternately, a resort operator may become a member of the development team and involved in all phases of design and planning. Most resort operators have specific planning requirements and guidelines that must be met inorder for them to consider a property (number of rooms, distance to airport, room size, facilities offered). Resort operators provide extensive knowledge of the market that is useful in the overall formation of the final product.

From a site evaluation and planning standpoint, the land planner, who may come from a variety of disciplines such as architecture, landscape architecture, or even a land planning specialization (McMahon, 1989: 345), is the central figure on this team. Further, the team may consist of: an ecologist (to evaluate the ecosystem and assess the environmental impact of any proposed development), a geologist or soils engineer (to analyze the soils and test for hazardous materials on the site), civil engineers (to assess and plan for earth moving, utilities, waste disposal, and water), and a traffic engineer (to assess the impacts of development and plan

for future access and road requirements) (McMahon, 1989: 345). A team composed of an interdisciplinary group of seasoned professional experts can provide a preliminary "sniff test" at very little time and expense (Freedman, 1990), critical to controlling prefeasibility and hence unnecessary front-end costs.

Direction and guidance of the team is required of the developer such that a well coordinated, efficient, and focussed process occurs. Objectives and goals must be set out for the group and progress carefully monitored. The exchange of information and consistent communication is required amongst all the members of the team. It is the developers responsibility, as the leader of this team, to ensure the proper functioning and synergies of the group.

The team need not be composed of a complete and permanent group of professionals from the onset, but may involve only key professionals early on and evolve as the process continues. Alternately, a core group of a few skilled professionals may be created, and outside consultants contracted to provide expertise and input to the group only as necessary. Outside consultants generally offer highly specialized expertise and

knowledge that may otherwise not be available nor continually required within the team. The use of consultants allows for a smaller and more manageable group, often limiting conflicts and easing complex decisions.

Furthermore, the sequential nature of the resort development process (Smart, 1981: 41) necessitates varied input and expertise at different stages of the development. A drawback may be a lack of continuity in the overall process, but this may be overcome by a skilled developer/manager. In the development of the Sun River resort in Oregon, it was found that the planning process for the project was going to be very complex, requiring specialized skills and experience. The initial reaction was to create an all encompassing development and operations team, but this quickly proved to be too expensive and time consuming. The development approach was altered to one of a key group, with contractors and consultants hired as required at a specific price and a specific purpose (Smart, 1981: 109).

The use and input of consultants must however, be carefully controlled and limited in order to maximize

the benefit and minimize the costs involved. Consultants should be used to answer specific questions and address or evaluate specific problems. Careful control and management of consultants is extremely important to control costs and increase the efficiency of the group. Consultants are not to be used in lieu of the group , but to enhance the group, when and if required. Decision making authority lies with the group.

The planning group creates a conceptual master plan, defining the development potential and limitations of the site, outlining the locations and types of possible amenities and proposed built structures, and even selecting the general image and design standards of the resort that would be in keeping with the characteristics of the site (Gee, 1981: 47). This group will interface with the financial and marketing teams, as well as the resort operator throughout the process to maintain and ensure a coordinated and successful development effort.

II. *PREFEASIBILITY EVALUATION FOR RESORT DEVELOPMENT*

In developing remote areas as destination resorts, the unique properties and fundamental characteristics of a site have a great bearing in evaluation and comparison of alternatives. Location and access are crucial to a site's potential and ultimate prospects for growth. Rural sites, however, have a "complex internal identity" that is further influenced by factors that contribute to their "productive or aesthetic appeal" (Miles, 1977: 72). These factors must be identified and evaluated prior to even attempting to gauge suitability for resort development (Miles, 1977: 73). By identifying these issues and establishing a systematic framework, an empirical method for analysis and comparison of different sites may be developed, and a checklist of issues with developmental implications formulated. Prefeasibility site-specific issues fall into several broad categories. These include natural amenities and resources, physical attributes and constraints, and

locational attributes.

A. NATURAL AMENITIES AND RESOURCES

A project's image and overall credibility is to a large degree dependent upon the amenity package that it offers (Phillips, 1986: 3). This is particularly important in remote locations, or in areas of emerging markets, where the resort relies on established amenities for prolonged success and viability (Phillips, 1986: 3). For example, Village Equestre De Pampadour, located in Correze, France is a development with a holiday village concept that provides a complete array of recreational amenities (eg. riding, hiking, tennis), as well as a full range of social amenities, ranging from bars to libraries. A sophisticated design and plan create the ambience of a small village, nestled within the landscape. Small paths and roads connect a series of non-obtrusive buildings and secluded compounds, creating a kind of village precinct (Lawson, 1976: 12).

Amenities associated with destination resorts fall into two categories. The first are characteristics that are inherent to a site such as orientation, natural beauty of the landscape, views, and favorable climate; the

second category include improvements to the site, often for recreational activities such as hiking trails, equestrian riding paths, and ski trails (Phillips, 1986: 4). Amenities, both natural and man-made, are used to attract interest and establish resort identity. At Otter Creek, Arkansas, a 550 acre residential resort community, by providing continuous events and functions, the developers were able to create a social focal point out of a relatively small swim and racquet club (Phillips, 1986: 210). The potential for a variety of recreational activities is highly dependent on the natural amenities and resources of a given site. A thorough investigation of the site in the pre-development stage should lead to a good understanding of both constraints and potentials, ultimately leading to a successful site plan.

Orientation

The orientation of a site, particularly if located in a mountainous region with greatly fluctuating slopes, will have a significant impact on the development and program of the site. One direct outcome is the amount of sunlight and presence of other climatic conditions, such as wind velocity. Favorable conditions will increase

the usable season of a resort, and decrease construction and overall maintenance costs, thus potentially creating a competitive advantage over other resorts. For example, a northern or northeastern orientation is desirable for ski slopes at a winter resort, but may be a liability for a summer resort. An extended ski season and a higher percentage snow coverage on ski trails make this orientation ideal for ski resort development but less desirable for activities such as hiking.

Natural Beauty

The inherent natural beauty of the site is a major asset for resort development. Scenery, highly valued by society, is an amenity which has aesthetic value, and is unique to the site. No two scenic amenities or aesthetic experiences are the same. These may include diversity of topography, form and landscape color, as well as natural amenities such as lakes and ponds. The land intensive nature of many recreational facilities serves to preserve open space and reduce overall density. A successful development should maintain and balance environmental and ecological forces. The developer should be wary of creating an overdeveloped destination, prone to pollution and void of ambience

(Gee, 1981: 38). Creative and innovative management, sensitivity to overdevelopment, and environmental pollution controls enhance the viability of resorts in the long run (Gee, 1981: 26).

Proper and careful site planning can limit the adverse effects of development, such as pollution, congestion, and deterioration of the physical environment. The Tides Inn, Irvington, Virginia is a small resort on the water, with a marina that is sensitively designed to minimize both congestion and pollution, and thus maintain the natural aspects of the environment (Gee, 1981: 39). Increasingly, resort operators are taking careful measures to enhance the immediate environment and conserve the site's natural resources and beauty. Irresponsible planning may lead to an imbalanced and unpleasant use of the surroundings, to the ultimate demise of the resort. A destination resort is successful to the extent that it provides a pleasant atmosphere for its guests.

Views

The views from a specific site can be used to enhance a recreational activity. During the planning phase, the

developer can utilize views offered by the site's topography to maximize the experience of each recreational use. For example, the presence of magnificent views can be used as a catalyst for providing facilities that might otherwise be quite mundane (eg. a swimming pool overlooking a valley or linked to a water fall), as significant features of the resort and may strengthen the resort's image. Initially, a visual survey of the site is an effective means for identifying locations with superior views and their potential for value enhancement.

The developer may choose to utilize the natural amenities of a given site as a focal point of the development project. Consider the case of a resort hotel strategically located on a mountain cliff, overlooking a valley, or the beach. For example, Tahara's Intercontinental Hotel and Resort in Tahiti, is designed with guestrooms nestled in a sloping hillside on ten different levels, terracing down towards the coast and offering spectacular views (Lawson, 1976: 67). Clearly, dramatic and unique views may lend a strong image to a project and strengthen marketability. Yet, a second approach might encourage visitors to 'discover' the site's attractions and natural resources such as

hidden trails, lakes, valleys and other natural amenities of the site, allowing an unobtrusive interaction with the environment. Either approach may be appropriate depending on the development program and ultimately the target group's preferences.

Varied terrain can be used to accommodate development by providing wonderful views of the natural environment, while at the same time limiting views to and upon the built environment. Thus, preserving the purity and natural quality of the landscape. The development of the Homestead, a 221 acre destination resort in Glen Arbor, Michigan was especially environmentally sensitive, with great emphasis placed on the preservation of the natural environment. Using clustered development, the majority of the site was left in original form, and buildings were sited to take maximum advantage of wooded areas, and views of Lake Michigan (Smart, 1981: 76).

Climate

The typical climate in a given area may make a site ideal for certain activities or developments, and dismal and inappropriate for other types of activities. There

is readily available data on climatic conditions such as temperature, humidity, precipitation, cloudiness, sun path and wind speed and direction (Lynch et al., 1984: 48). Governmental agencies such as the National Oceanographic and Atmospheric Administration, as well as local governments are good sources of information (McLoughlin, 1990).

Climate will affect the seasonality of the resort destination. The reliability and duration of weather in the season is particularly important. For example, attempts to extend the season of resorts in the Rockies have failed in that the excessive rains and runoffs in the spring turn the landscape predominantly to mud. Therefore, due to climatic conditions four season resort are not possible in the Rockies (Horst, 1990).

Furthermore, the climate may in fact dictate not only the season, but the type of resort development that is possible. With a season that lasts only half the year the likelihood of hotel development is severely limited in that hotels require an average year round occupancy of about 70% to be successful. With a 50% season, condominium resort development is much more feasible and successful (Horst, 1990).

The potential for severe climatic phenomenon such as monsoons, hurricanes, and blizzards also limit the resort development of a particular location. Even when the resort season is set not to overlap with severe climatic seasons unexpected occurrences can have an obvious dramatic impact.

B. PHYSICAL ATTRIBUTES AND CONSTRAINTS

A site's overall condition and qualities such as hydrology and soils, topography, plants and wildlife, water quality and availability, potential for utilities, and environmental conditions need to be thoroughly investigated. Knowledge of the history of natural hazards such as earthquakes, floods, and hurricanes is also vital to development potential as a resort destination (McMahan, 1989: 342).

Present Utilization and Adaptability

The present use of a site, if any, affects the ease of adaptability for resort development and may pose significant environmental constraints. The developer

should be wary of present and past uses with deleterious effects on the environment. Remote sites are generally less affected by these issues than sites situated in close proximity to urban areas. Yet, even rural sites traditionally used for farming or timber may present problems that threaten the natural landscape, such as erosion, ecological imbalance, and the presence of hazardous materials and toxic waste. Pesticides and chemical fertilizers used in farming operations may pose potential hazards. For example, pesticides used in peach orchards in the early nineteen thirties left arsenic residue in the soils (Freedman, 1990). During the planning stage, the developer should perform due diligence, and identify adverse environmental conditions, if any, and formulate a strategy for coping with these complexities.

A highly restrictive regulatory environment may also prove detrimental and costly for resort development. Restrictions and time delays may occur when contemplating removal of existing property or altering present use because of stringent preservation requirements. The presence of modern conservation schemes may severely restrict the development potential of a given site (Lawson, 1976: 54). For example, at the

Islandside, Florida, a planned unit and marina development, dredge and fill permits required over five years of negotiation with government agencies before being issued by the U.S. Army Corps of Engineers. An additional three years were required inorder to receive the necessary permits from the Department of Natural Resources and Environmental Regulation to proceed with the construction of the marina (Phillips, 1986: 185). While this thesis is not intended to address issues relating to zoning ordinance or environmental impact assessments, these are of great significance and should be addressed in the early planning stages.

Government regulation is meant to prevent the demolition of existing structures that are considered historic such as old castles, mills, farmhouses. Many successful resorts have used this to advantage and have built around areas protected by governmental regulation. For example, the Hilton Hotel in Budapest is built within the shell of a twelfth century baroque church, which creates a distinct resort concept and a powerful image (Lawson, 1976: 28).

Topography

The topography of a site has impacts on views, drainage, wind patterns, and gradients for roads and pedestrian movement (McMahan, 1989: 343). For example, a steep terrain, while providing excellent views is costly to develop. Flat terrain, may reduce the need for grading but may require a more complex infrastructure for sewage and drainage. The topography of a site may pose serious constraints on its use. For example, soils located on steep terrain with a high level of rain fall may suffer from erosion (AIREA, 1983: 69). However, effective use of the topography can be extremely beneficial in providing a buffer from adverse conditions such as winds or storms while providing the opportunity for favorable conditions such as fabulous views and unique settings.

The micro-topography of a site can be useful in the appropriate resort image by concealing built additions while maintaining the natural aspects of the site (Freedman, 1990). In developing the Homestead, a 221 acre destination resort in Glen Arbor, Michigan, great care was taken to preserve the natural setting with an environmentally sensitive program. The developers were able to preserve the site in its original form by

clustering buildings and locating them in such a way as to take advantage of the natural contours of the site (Smart, 1981: 76). A development such as the Homestead that used topography to maintain the essence of the natural environment was sought to be a strong sales tool, especially when targeting the well-educated, affluent market who value these qualities.

The particular layout of the topography such as the distribution of valleys and hills, the severity of slopes, and the general conditions of the terrain will affect the type and quality of amenities to be offered. Downhill skiing, for example, has very specific slope and run requirements to be attractive to the user.

Study of the topography is also useful in identifying potential soil problems, water availability, and locating sites for favorable sewage disposal such as kame terraces.

Drainage

The drainage pattern and rate of absorption dictate the array and types of use appropriate to the site. A well-drained site has substantial advantages. There are

several factors which affect the natural drainage of a site. First, the topography of a site considerably impacts drainage. Steeper sites generally have higher drainage rates, resulting from the forces of gravity. Second, soil types exert significant influence on the drainage characteristics of the site. The rate of percolation, as well as the absolute potential amount of water that the soil is capable of absorbing directly affect drainage. While fine soils such as clays and silts percolate poorly, sands and gravels possess excellent percolation rates. The presence of soil types with high percolation rates and high absorption capacities are ideal for sites which require good drainage. The array of vegetation that exists on the site is also an important element. Generally, thicker vegetation leads to lower drainage rates. Finally, the amount of rainfall experienced in a region is of prime importance. All else equal, the effectiveness of natural drainage declines with increasing amounts of rainfall.

There are several problems which are associated with excess water, which arise from a poorly drained site. Results of poor drainage include flooding and erosion caused by surface water runoff, and soil salinisation

which is primarily caused by excess salts (Rycroft, 1983: 41). Both conditions deteriorate the site's suitability and stability for agricultural, as well development purposes.

Drainage systems are generally comprised of three integral parts, the field component, a main component and an outlet (Rycroft, 1983: 43). The field system utilizes drains to accumulate excess water. The main system facilitates the flow of the accumulated water via ditches and channels to the outlet. In the absence of gravity, pumps may act as catalysts for initiating the flow of water to the third component, the outlet. The latter is usually a designated natural body of water such as a river or open sea (Rycroft, 1983: 44).

In rural areas, drainage helps control the water table, enabling the site to offer better cultivation rates and provide better grazing grounds (Penning-Rowsell, 1986: 125). Abuse of drainage, however, may adversely affect the landscape's wildlife population. The drainage and transformation of wetlands for use as arable land affects the ecosystem that has been present in such environments (Penning-Rowsell, 1986: 125). The latter directly affects wildlife population, as well as

diminishing the natural beauty of the landscape. With increasing environmental regulation this activity is being carefully restricted.

Following an in-depth study of the site's drainage patterns and capabilities, any proposed drainage system should take into account the type and magnitude of the development. As the development size increases, the increased requirement for drainage may mandate a more extensive and elaborate drainage system (Unterman, 1973: 51). Drainage efficiency can be increased by engaging in grading to divert accumulated rainfall to a storm drainage system, which collects, conducts and disposes of excess water, often to a river or other natural body of water (Unterman, 1973: 46). However, modern wisdom considers storm water management to be a more effective and environmentally sound approach to drainage (Freedman, 1990).

Storm water management techniques try to replicate the existing natural systems, avoiding harmful conditions such as rerouting drainage patterns and peak discharge. Storm water management is an ecological approach to drainage that recognizes the role and importance of wetlands, floodplains, and naturally occurring bodies of

water. Techniques include creating storage areas such as retention ponds, and using natural channels to simulate naturally occurring storage areas. Generally, this approach slows down water movement, is less costly, and produces results that are of greater aesthetic value, and are unobtrusive to the environment.

By assessing a site's topography, soils, and current drainage patterns and conditions, a geotechnical engineer can determine the suitability and scope of potential development, as well as its impact on the environment. A system that controls and mitigates the effects of development on the natural environment can then be established.

Soil Analysis

Soil conditions affect the usability of land and the siting of facilities. Soil type and structure determine bearing capacity and drainage characteristics (McMahan, 1989: 343), and impact costs and difficulties encountered in construction. In particular, the costs associated with providing complex foundation systems and earthwork, required of unstable soil conditions escalate rapidly (e.g. rock excavation, retaining walls, piles,

caissons).

Early in the process, soil conditions can be determined using on-site reconnaissance techniques, interpreting topographical features, geological till interpretation, and using available resources such as soil maps produced by the U.S. Geological Survey, to provide necessary information. Generally, a geotechnical engineer would be hired to provide this analysis. Exact soil type and condition is determined by test samples and borings taken on site and analyzed in laboratories. Numerous test samples must be taken with varying locations and depths. Systematic borings and test samples are taken on site usually at fifty foot intervals and at depths of at least 20 feet below the bottom of any anticipated foundations or to bedrock (Lynch et al., 1984: 38). Such thoroughness however, is only required at the latter stages of the planning process.

There are three basic layers of soil. The first layer, top soil, is composed of organic and mineral material that supports plant and agricultural activity. The second layer, the soil, is mostly of mineral composition and lies below the level of most plant roots with little organic activity. The third layer, source material for

second layer, lies directly above bedrock and is of little organic use (Lynch et al., 1984: 35).

Soil composition is determined by particle size and soil type is classified accordingly. Most naturally occurring soils consist of a mixture of grain sizes (Lynch et al., 1984: 35) and do not exclusively belong to any one category. Table one in the appendix categorizes composition by grain size. There are ten basic engineering categories of soil type that react differently to loading and water. The soil response to loading and water are the aggregate response of several factors; general composition, grading and mix, water content, and the presence of organic matter (Lynch et al., 1984: 36). Table two in appendix indicates the engineering applications of various soil types.

Soils are also classified agriculturally by texture. The texture of a soil is determined by the relative quantities of sand, silt, and clay that are present in the soil (AIREA, 1983: 64). Although the agricultural classification is not as important from an engineering point of view, it does give a good description of the make-up of the soil. When the examined soil is concluded to be an intricate mixture of several soil

types, the qualities of the least desirable component are considered to predominate. The structure of the soil, that is, the presence of layers, clusters, empty pockets or voids, and slippage planes affect the stability, strength, and drainage characteristics of the land surface (Lynch et al., 1984: 38). The depth required to reach bedrock or presence of large boulders and rock ledges add considerably to construction difficulties and costs. Often, it becomes necessary to remove large boulders and ledges by either blasting or excavating (Lynch et al., 1984: 38). While the best surface with high bearing capacity and stability for foundations is bedrock, the suitability of the various soils differs considerably, and should be investigated.

Utilities

Since most resort developments occur in rural or isolated areas, often there exists a lack of adequate services. The availability of a suitable infrastructure for sewage facilities, water supply, electricity, gas and telephone is crucial to any form of development, particularly resort development where usage rates are quite intense. The availability and accessibility of adequate infrastructure and services will ultimately

determine feasibility of the proposed development.

a. Sewage

The need to dispose of waste water and sewage is a condition faced by any development. The developer should examine the availability and adequacy of municipal sewer facilities in the immediate area, and if unavailable, determine whether a new municipal district can be established. In the absence of municipal sewerage, either an on-site septic system or a sewage treatment plant must be installed to allow for the disposal of the effluent. Often in rural areas, municipal sewage is nonexistent and package sewage plants become necessary. A hydrological study is necessary to determine suitability for on-site sewage disposal and quantify the extent of treatment required. Regional regulations govern the proper disposal of waste.

An on-site septic system would be suitable for small scale, isolated and dispersed projects. A critical floor analysis will provide a rough indication as to whether or not a package treatment plant would be required. For example, a one hundred room hotel at an

average consumption of 150 gallons of water per person per day plus ancillary activities could be expected to use over twenty thousand gallons of water on a daily basis. Functionally, this is the marginal limit above which a package treatment plant would be required. In fact, some states regulate this limit, in Massachusets for example, the limit is set at fifteen thousand gallons per day above which package treatment is mandatory. Therefore, establishing the rough quantities of water required, and the pattern and siting of the various components of the development is necessary in assessing the type of sewage system required. The capital cost of a package treatment plant is about ten to twelve dollars per gallon of the daily water requirement (i.e. a plant required to service 20,000 gallons/day would cost about 250,00 dollars).

The primary function of the sewage treatment plant is to liquify and purify crude waste into a manageable form. Often, the resulting product can be utilized for the purpose of irrigation, and returned to the soil. In other circumstances, the treated waste is released in a large body of water such as a river or underground stream, or diluted in a vast body of water such as the open sea. Underground streams should be investigated

for adequacy of dilution, in periods of low water flow (PIC, 1982: 2). Often due to the inaccessibility of a surface water source, and inadequate dilution, disposal of the effluent is limited to ground water discharge. Ideally, the effluent can be discharged through absorption fields into deep deposits of sand or gravel.

In the past, sewage has been successfully treated to acceptable levels by a variety of methods. The most popular form of sewage disposal has been via the septic tank, which is a water tight chamber where anaerobic bacteria decompose sewage into liquids and gases (Hall, 1976: 142). This system incorporate a covered septic tank with either aeration over an open filter or through a land irrigation system (Lawson, 1976: 200). A second popular method for treatment of waste is the aerobic tank, where the biological processes are altogether different from the septic tank. With this system, air is pumped and propelled to the bottom of an aerobic tank. The air movement facilitates the decomposition of waste by organisms which require oxygen to decompose the waste (PIC, 1982: 4). This method mechanically aerates the tank, with settlement and recycling of the sludge prior to discharge of the effluent (Lawson, 1976: 200).

When the intent of the development is to use the purified waste for irrigation purposes, a system of pipes have to be utilized to lead the liquified product to a soil area with acceptable percolation rates. With subsurface irrigation, the pipes are laid below the ground, in varying formations. Surface irrigation may be accomplished by directing the treated waste to channels formed on ground (Hall, 1978: 142). The treated waste may also be utilized for other purposes. For example, in Santee, California, the waste water is stored in an artificial lake, to allow further oxidation, and chlorinated and pumped to an area where it flows over rocky and sandy soil, and is then used to irrigate a nearby golf course (Keller, 1979: 315). Hence, resorts which require private treatment facilities may be able to utilize the end-product to meet irrigation needs. In fact, the ability to create these kinds of synergies enhances the overall integrity of the development plan, as well as reduces costs.

The siting of treatment plants in rural areas is crucial. Great care should be taken in identifying potential sites for waste water treatment. It is estimated that in Pennsylvania, only twenty percent of the land is suitable for on-lot sewage disposal (PIC,

1982: 1). There exists a variety of factors which affect the siting issue. First, the soil where the treated effluent is discharged must have a percolation rate greater that 2.5 centimeters per hour (Keller, 1979: 309). A second criteria is an acceptable level of ground water. Taking seasonal fluctuations to consideration, the minimum ground water should be at least five meters beneath the bottom of the soil absorption field (Keller, 1979: 311). Third, the minimum distance between bedrock and the absorption field must equal 1.2 meters (Keller, 1979: 311). Finally, slopes greater that 15 percent may make the pipe layout and construction increasingly difficult (Keller, 1979: 311). These conditions are useful as general guidelines. Exact requirements are subject to government regulation and may vary from state to state.

The failure or waste water treatment plants can generally be associated with faulty siting, which ultimately results in poor drainage. Poor drainage results from poor soils, high water table, presence of bedrock, and flooding or steep topography which often yield flood plains. A problem that results of poor siting is the premature emergence of effluent onto the surface (e.g. near a stream), before the ground soils

have had a chance to treat and naturally filter the effluent.

On site reconnaissance, and a survey of the soils, drainage patterns, and topography of a site will provide an early indication of sewage capabilities and constraints. A geohydrology study will provide the necessary information to exactly assess the sewage capacity of a site. Ideally, large zones of highly permeable soil are present, so large quantities of sewage effluent can be discharged.

b. Water Availability and Quality

Any form of intervention on raw land affects the quantity, quality, and flow of water that is naturally available, or potentially tapped by connection to existing sources of water. The developer needs to assess water availability. In built areas the services of a local engineer can be used to quickly determine water availability and quality. In more remote areas, the use of groundwater favorability maps and open file information available through the United States Geological Agency provides an effective means for the early determination of water availability. Significant

amounts of water are routinely utilized by resort properties. The range of uses varies greatly; personal use, food preparation, cleaning and maintenance, firefighting, cooling, swimming pools and other recreation facilities, and irrigation (Lawson, 1976: 197). Table three in the appendix shows an estimate of water usage per person per day in hotels.

Early analysis of water supply should address the quantity and quality of possible sources. These include connection to an existing district, creation of a private district, and existing reserve capacity on the site. The total water requirements of a resort can be met by a combination of the above sources. Further inquiry should include whether public water extensions are being planned, whether extension of the existing public supply are possible by the developer, and whether there exists a connection moratorium which may inhibit development altogether (Freedman, 1990).

In areas of proximity to existing development, the supply of water through existing mains may be possible. In remote areas, however, private supplies can be obtained from underground aquifers (limestone, chalk, coral) through wells and bores; catchment surfaces that

drain into storage tanks and cisterns; and in rare instances from the distillation of seawater (Lawson , 1976: 197). A determination of the quality of available water, particularly if natural on site sources are being considered, will affect usability. It should be noted, that surface sources of water may be easily contaminated.

Water availability is greatly affected by the type of soil present, a well into glacial till (an impermeable and hard packed clay or silt) for example, allows for the extraction of two to three gallons of water per minute (suitable for a household), whereas a well into an aquifer (a zone of permeable soil saturated with water) allows for the extraction over two hundred gallons per minute (suitable for a much larger development).

Even if the domestic water supply requirements can be met the availability of an adequate supply of fire water is necessary. This can be achieved through the use of elevated storage tanks, ponds, or reservoirs with the capacity to provide two to three thousand gallons of water per minute for approximately a two hour period. A typical hotel would require three to four hundred

thousand gallons of water in reserve capacity for fire fighting purposes. In the case of a storage tank system the cost would be about one dollar per gallon of water stored (Freedman, 1990).

c. Electricity, Gas & Telephone

The availability and accessibility of these utilities needs to be ascertained, and the costs associated with obtaining these services should be evaluated. Typically, public municipal sources are available but obtaining connections to them may be tedious, difficult, and costly. Proximity to existing or programmed main service lines is a definite advantage. Installation and access to these services are governed by national codes and regulations that control their use in the interest of public safety. Standards may also be set by local codes and utility companies (Lawson, 1976: 200).

Providing utilities and services on a limited scale may be economical, however, careful evaluation of available and potential services is necessary. In non-urban areas, long distances and difficult terrain may need to be covered to link with necessary services, and may lead to a site that is for all economic and practical

purposes unserviceable for resort use.

For electrical service, the distribution voltage, the distance to a distribution facility, and the reserve capacity available, are critical factors. Usable voltage is 220/120, three phase, and depending on the distribution voltage which may vary from 14 KVA to 375 KVA, the costs required to step down to the useable voltage will differ greatly. The cost of running air cable is about twenty thousand dollars per mile (Freedman, 1990). In most instances, the capital costs incurred in providing electrical service are returned in the form of rate reductions in the first three to four years.

With the current technology, telephone service is not a problem even in the most remote areas. Natural gas is not readily available, however portable gas tanks, or on site storage is feasible if required. Diesel generators can also provide an alternate source of energy if necessary.

Natural Hazards

The location of a site in an area historically linked to natural hazards may prove as a severe constraint. Natural hazards include floods, land subsidence, landslides, avalanches and earthquakes. River flooding is perhaps the most frequently occurring form of flood hazard, and primarily results in substantial property damage in industrial countries. Floods may occur following intense rainfall, or by accumulation of excess water in the form of surface runoffs (Keller, 1979: 108).

Landslides most commonly occur when the weight of the earth surface exceeds its sheer strength. Important factors include the type of earth surface materials, topography and water. Erosion associated with water runoffs significantly contributes to landslides, and changes in water pressure are normally experienced prior to landslides (Keller, 1979: 152). Earthquakes comprise one of nature's most catastrophic and destructive hazards, which not only result in direct deaths and casualties but also inflict long-term psychological and emotional harm to survivors. Secondary earthquake effects often initiate hazards such as floods and

landslides. Human activity has increased the occurrence of earthquakes in three ways; the construction of large reservoirs, disposition of liquid wastes in deep wells, and underground nuclear explosions. The site should be investigated for any historic data on earthquake occurrence and for the presence of any active faults (Keller, 1978: 188).

While the prevention and deterrence of most natural hazards has not been mastered by today's technology, there are certain precautions that may reduce or mitigate the likelihood and impact of harmful events (earthquake design standards, water management, flood control techniques). Therefore, sensitive site planning may help avoid the location of developments in high risk areas.

C. LOCATIONAL ATTRIBUTES

Locational attributes of the site and the surrounding areas have a great impact on the success and marketability of a resort. Interest in a particular resort may be stirred as a result of the surrounding area amenities and ambience, whether natural such as

beaches and mountains, or created such as a town center.

Furthermore, the travel habits of the people nearby and their propensity of when and where to travel may represent a secondary market for a resort destination particularly in the off season. In Mexico for example, the month of December represents a lull in travel by Americans, however this is favorably offset by the fact that Mexicans themselves choose to vacation in December at nearby resorts (Horst, 1990).

Community Attitude

Resort development is a long term process. Community acceptance of any proposed development is essential to success. Community attitude may vary from either extreme of no growth to pro growth. Furthermore, community sophistication and sensitivity to design, environmental, and development issues will vary depending on the location of the proposed development.

Resort development offers benefits to the community often in terms of improved infrastructure, increased employment, and higher sales at local businesses. However, it may also cause inconvenience and unwelcome

changes to the community such as greater congestion, pollution, and noise.

Community attitude impacts not only the planning and development phases, but the continued success of a resort as well. Hostile and unfriendly resident behavior has contributed to the decline of the Caribbean as a resort destination. Whereas, the perceived friendliness of the local community is considered to be one of the most important attributes contributing to the appeal of a resort destination (Gee, 1981: 33). Clearly, it is imperative that community interest be addressed, and that community leaders and local groups be involved throughout the development process.

Proximity to Activity

The presence of existing nearby tourist attractions, and proximity to existing nodes of activity may greatly enhances a site's potential, as demonstrated by table four in the appendix. While this table is not exclusive to destination resort analysis, it does present a roster of reasons which document the rationale for travel.

The market area of major destination resorts is quite extensive, often national or international. For resort properties where the dependence is on tourism, recreation and the pleasure traveller, initial interest is generated by the image presented of the surrounding area and its attractions; scenic, cultural, recreational facilities, historic landmarks. Proximity to major metropolitan areas, the presence of nearby quality shopping, and existence of entertainment areas are beneficial to most resort developments. Resorts that are located in remote areas may choose to offer a multiplicity of services and activities in order to enhance their marketability and competitive advantage (Gee, 1981: 8). The usual parameters of consumer behavior, namely price and quality, may fall second to the influences of area's image and surroundings (Lawson, 1976: 19). The selection of a site located in a favored area considerably affects the consumer's selection process, and is of great advantage to the resort developer. In fact, many large resort developers only locate in already established recreation destinations (eg. Four Seasons in Hawaii).

Accessibility

In selecting a site, the developer should ensure that an adequate level of accessibility is present. The success of resort development is critically affected by time and distance constraints. Inaccessible sites invariably suffer from reduced demand. In certain cases, such as with an exotic destination, this may not pose a major problem. For example, the Key Biscayne Hotel and Villas which is located in a remote area of the Florida Keys has proved quite successful. There is a market which seeks a destination located in an environment void of crowding, pollution, traffic and concrete structures, reminiscent of escape from the urban surroundings (Gee, 1981: 9). Nevertheless, the consumer should generally be compensated for the inconvenience of commuting (Smart, 1981: 37). Access to Aspen, Colorado is a less than ideal, yet it is seen as part of the overall experience and image of the resort. In order to reach Aspen, one must generally first fly to Denver, and then either ride for four hours in a bus, or fly in a tiny commuter plane. However, upon arrival the resulting amenities and beauty are seen as well worth the trip, compensating for any inconvenience (Horst, 1990).

Construction costs are invariably higher with the

inaccessible site. Not only is it important from a demand point of view, but the overall costs incurred and the availability of labor pool are affected. Thus, if significant improvements are necessary, a project may become logistically, as well as financially unfeasible. At Hassle Island in the Virgin Islands, where high rise construction of a high density hotel and condominium project was not physically practical, prefabrication and modular construction, as well as creating compact groupings, were proposed as methods for reducing cost and increasing the projects feasibility (Lawson, 1976: 52,53). Cheaper land costs, on the other hand, or increased marketability due to the presence of special and unique climatic conditions (eg. great wind conditions for windsurfing) may make the development feasible.

a. Accessibility by car

Access to and from principal arteries and interchanges is not as critical for resort properties, as with traditional hotel or motel developments. Nonetheless, access to major nodes of transportation such as airports, sea ports or train terminals is important. Of course, proximity and ease of access to major

interchanges will enhance the market of a resort by increasing the attractiveness of a location and decreasing the overall travel cost and time incurred by the pleasure traveller. Table five in the appendix provides a checklist of important factors when analyzing road accessibility.

With the changing lifestyles of many households and the increases in double income families and young professionals, the weekend getaway is increasing in popularity. Industry standard considers that the limit of acceptable drive time to a destination location from a major metropolitan area not exceed two to three hours (Freedman, 1990). The only exception to this rule seems to be the New York market where a three to four hour travel time is considered the norm.

b. Accessibility to transportation nodes

Proximity to major airport facilities provides the necessary links to national and international pleasure travellers and tourists. Cancun, for example, is a popular destination for European and Japanese travellers, in that convenient air travel allows people to move great distances without hesitation

(Horst, 1990). Of concern are issues of airport location, distance from site, types of service available (domestic/international, passenger/freight), airport facilities (gates, runways, periods of operation), origin and destination of flights, schedules, airlines serviced, and volume of traffic (Roginsky, 1990). Potential development or expansion of existing facilities, or the introduction of private facilities such as a landing strips or helicopter pads may be feasible and incorporated as a unique feature of the development. For example, for Sun River with the principle market 175 miles away, access was a critical issue since ground transportation was quite inefficient. The airport at Sun River evolved into a very important part of the project, where air transportation has been substantially increasing each year, where by the early 1980s, an average of 300 small planes flew into sun river each week. In 1979, Air Oregon commenced air service to Sun River airport (Smart, 1981: 107).

A favorable condition for many resorts is the ability of obtaining inexpensive fares to convenient airports in the areas in which they are located (eg. Mexico). The success and growth of the resort industries in Hawaii, the U.S. Virgin Islands, and Puerto Rico is directly

attributable to the increased accessibility resulting from less expensive and more convenient air travel to these areas (Gee, 1981: 24).

Proximity to port and rail facilities, as well as extent and quality of services offered provides a greater, more flexible access to a broader market. Links between the various points of embarkation, disembarkation and modes of transportation in relation to combined fly-cruise-tour travel and vacation packages determine the relative impact and importance of each transportation facility (Lawson, 1976: 39).

c. Accessibility to the site

The topography of a site and its soil conditions will determine the ease of accessibility. Steep slopes, weak soils, and dense forestation may limit access to areas of a site. In remote locations with severe changes in climate some modes of access may be available only during parts of the year. For example, roads may be snowed over, or high winds may limit visibility during parts of the year making access difficult.

Many of the problems faced by difficult access to a site

can be resolved using unique design solutions that become special features or attractions to the resort (e.g. elevators, tunnels, ferries, bridges...). The effects and difficulties encountered in providing access and meeting infrastructure requirements has a great impact on construction costs and the overall development program (Lawson, 1976: 23).

The total experience in reaching a resort destination contributes to its overall perception and image. The "arrival sequence" from the point where one begins travel to the point of reaching the resort, considering the modes of transportation, and the experiences encountered along the way (urban, scenic, foliage, time zones) are issues that affecting accessibility (Horst, 1990). Access is continuous process that can enhance the resort experience. For example, when approaching the Village resort of Ouarzazate, located in a desert setting, the impression is that of approaching an ancient fortress (Lawson, 1976: 73).

III. SITE REQUIREMENTS FOR RECREATIONAL ACTIVITIES

In determining the scope of activities and amenities offered by a particular resort, the developer should be aware of recent trends and the popularity of various recreational activities. More importantly, the target market should be investigated. For example, a long and demanding championship quality golf course may not meet the needs of a retired person (Phillips, 1986:16). Alternatively, a first rate golf course may provide a world class image for a destination resort.

While this thesis does not dwell on market demand issues, these issues are an integral part of the decision matrix in selecting activities and ultimately evaluating a development's feasibility. Table six in the appendix illustrates percentage participation in various activities by various income groups. It indicates that there is a strong positive correlation between income and participation, especially in

activities which are expensive or have been affiliated with private clubs in the past (Phillips, 1986: 8). In addition, participation tends to increase with income, which in turn is positively linked to education, household type and leisure time (Phillips, 1986: 8). Any amenity offered by a resort should be evaluated financially to access risk and determine feasibility. A discussion of site selection issues for major recreational activities are outlined below.

Golf

The sport of golf is growing rapidly in popularity and therefore is a prime amenity to be offered. Additional benefits are the synergies that are create between the golf course and other aspects of the resort. Golf courses open up the terrain, and offer views to the surrounding landscape that may other not have been possible, as well as views upon the manicured lawns of the course itself (Freedman, 1990). Yet, the developers of Sun River believe that for a seasonal resort, the cost of a golf course can never be amortized in a reasonable period by the income generated by the course. Hence, according to them, land adjacent to the golf course should be sold to augment income, and reduce

capital costs (Smart, 1981: 110).

While many championship 18 hole golf courses are situated on 200 to more than 300 acres (AIREA, 1983: 33), the minimum requirements are 110 acres, and ideally 160 acres (Gee, 1981: 86). More recently, 18 hole executive golf courses have been designed which utilize 45 to 60 acres, and can be golfed in half the time of the regulation golf course (Smart, 1981: 29). Although it is felt that a competitive and quality course could not be built with less than eighty to ninety acres (Freedman, 1990).

The site selection process is an important element in golf course development. A desirable topography, with gently rolling slopes and minimal grading requirements can substantially reduce development costs. With adequate investment, a flat site can be graded to improve drainage and add character. The various contours should be assessed for suitability of fairways, greens and tees (Phillips, 1986: 41). A site that has minimal contours may necessitate excavation of ponds and deposit of fills to enable positive drainage (Smart, 1981: 47). Typically, around 200,000 cubic yards have to be moved with flat sites, and substantial filling, in

excess of 300,000 cubic yards would also be necessary to create interest, variety, and proper drainage (Smart, 1981: 47) (Freedman, 1990).

In addition, the existence of creeks, ponds and trees add to the aesthetics and pleasure derived from playing on the course (AIREA, 1983: 33). Analyzing vegetation on a given site is also crucial. A wooded site can provide the setting for an impressive looking course, but may burden development with high cost of clearing and disposition. Yet, a wooded course gives the distinct impression of age and substance, which may otherwise be lacking. Farmland, while already cleared, may present substantial landscaping costs with trees which may take years to mature (Phillips, 1986: 43).

Drainage is also vital to the prolonged success of a golf course. A well-drained site both reduces maintenance and repair costs and increases play time. Adequate drainage prevents standing water (AIREA, 1983: 34) and thus increases number of play days. Although drainage problematic sites such as wetlands, floodplains, drainage channels, and dry steam beds have been successfully developed into golf courses, construction costs are invariably higher (Phillips,

1986: 42).

The site should also benefit from a suitable soil, preferably sandy loom, which may be found in a well-maintained pasture land (AIREA, 1983: 21). Peat and muck soils can be prohibitive because of the high content of organic material. Alluvial soils found in coastal regions can make excellent soils which are cost-effective (Phillips, 1986: 43). These soils are often covered by one layer of top soil (Smart, 1981: 53). Clay soils may present a problem depending on their percolation rates, but facilitate development of lakes and ponds (Phillips, 1986: 43). It is important to note that while high percolation soils provide excellent drainage, they may substantially add to irrigation and fertilization costs. Hence, a balance should be achieved . Rocky soils are more expensive to develop and often necessitate blasting and filling. Existence of gravel beds require importation of an adequate layer of top soil for transformation to a suitable turf (Phillips, 1986: 43). Hence, analyzing the soils on a specific site is a vital determinant in golf course development.

A variety of grass are offered for golf courses. Each

seed or stolon may be suitable for a given climate or physical soil characteristics. Hybrid Bermuda grasses, planted from stolons, are ideal in warm or tropical environments, while seeded grasses are generally more suited to cooler climates (AIREA, 1983: 34). On greens, Penncross or Emerald Creeping Bentgrass are widely planted. Many times blends of Kentucky bluegrasses, perennial ryegrasses and fescues are used on fairways, tees and roughs (AIREA, 1983: 34).

Existence of an adequate water supply is also critical to the selection process. A water source of 1.5 million to 3.5 million gallons per week should be identified (Smart, 1981: 53). Wells, streams, rivers and lakes have been used on various sites to satisfy the irrigation requirements. Water from streams and rivers are often pumped into a pond for irrigations use. Many times, this system is combined with a well system for periods when the water level is low. Furthermore, depending on the slopes, pumping significant amounts of water can be costly and prohibitive.

Potentially waste water treatment plants can provide at least a significant portion of this requirement. Utilizing effluent water may not be possible if the

critical mass is absent. In the early stages of a project, effluent is not available in adequate quantities and a second source has to be established (Phillips, 1986: 44). The developers of Sun River, utilized treated effluent, collected in golf course ponds to irrigate the golf course (Smart, 1981: 110). With rising environmental concerns, this method is increasingly being utilized for irrigation purposes (Smart, 1981: 55). However, potential problems do exist, in that treated water is not considered totally clean and the potential for viral contamination exists. Contact of effluent water with humans should be avoided. In colder climates the freezing of effluent water used in irrigation may also present a problem (Freedman, 1990).

Finally, lack of a natural water source has turned some developers into paying for water. In some areas such as Southern California, the operator is required to purchase water for irrigation (Smart, 1981: 55). The quality of the water source is also important. A water supply containing more that 2000 parts of salt per million cannot support the needs of most grasses (Phillips, 1986: 43). Table seven in the appendix demonstrates the percentage usage of various water

sources for golf courses by region.

Tennis

Tennis has increased dramatically in popularity over the past two decades (Phillips, 1986: 82), and has posed as the main attraction for several resorts, similar to that of a golf course.

While there are no strict site requirements in developing tennis courts, several issues are important in site selection. A single court measures 60 feet by 120 feet, and as many as 6 courts may be designed on a one acre parcel. Generally, location of tennis courts on slopes greater than 8 percent would be more costly because of the required terracing, retaining walls and drainage (Smart, 1981: 89). The soil type should be well-drained and stable to avoid increased costs associated with maintenance.

Climate has a profound implication for designing tennis courts. In hot sunny environments, shade structures or additional landscaping should be present to afford relief (Phillips, 1986: 88), whereas colder climates may require development of indoor heated tennis courts for

prolonged use. Primarily, the developer should be wary of wind velocity and amount of direct sun light present, utilizing wind screens to help reduce wind velocity and glare. In addition, tennis courts are aligned with a north-south exposure, to help reduce amount of direct sunlight from the east-west movement of the sun (Gee, 1981: 92). Other criteria include general aesthetics and ambiance, and availability of adequate land for other related facilities such as a clubhouse, snackbar and pro shop.

Significant attention should be given to selecting appropriate surfaces. A least 14 different surface types are available for selection . Climate, level of maintenance and player preference affect this choice. For example, clay courts dry relatively slowly after rains while other court surfaces dry at a much faster rate . In hot climates, the developer may select a court which remains cool, reduces glare and does not crack in heat (Phillips, 1986: 93). The level of maintenance is also a major issue. Concrete courts are very durable and are essentially maintenance-free, and may be used in high traffic and usage areas. Player preference of the target market should also be investigated. For example, retirees may prefer soft Har-Tru courts to hard court

surfaces, and in fact, many resorts offer several surfaces (Phillips, 1986: 93).

Downhill skiing

Although questions of accessibility have been fully addressed elsewhere in this paper, it should be emphasized that ski resorts which are located more than a three hour drive from a metropolitan center have not been successful in attracting regional and local skiers in the early years of operation. Hence, reaching operating capacity or even the break-even point may take many years (Phillips, 1986: 122). Preliminary planning for a downhill ski facility is more complex and costly than with any other recreational amenity. The developer should seek the input of a number of specialized consultants and experts, ranging from wildlife biologists to avalanche trackers in order to determine feasibility (Phillips, 1986: 121). Downhill skiing is successful only if the ski slopes meet certain stringent requirements.

According to Ted Farwell (Gee, 1981: 94), ski consultant, there exist numerous guidelines in site selection for downhill skiing. A major vertical drop of

3000 - 4000 feet in the West, and 1500 feet in the Northeast should be present, combined with a North or Northeast exposure . A minimum of 200 inches of new snow per season should be anticipated, with average temperatures below 32 fahrenheit to facilitate snow making (Gee, 1981: 94). Conversely, excess snow may trigger avalanches and slides (Phillips, 1986: 123). A favorable climate for skiing would comprise of colder nights but sunny days. Slopes with minimal wind conditions are also desirable and popular with skiers. In some cases, strong winds can strip exposed slopes in a matter of hours (Phillips, 1986: 123).

A varied slope gradient is desirable to satisfy the beginner, as well as the expert. The intermediate level, which incorporates the largest part of the ski market, requires slopes of 25 - 45 percent. Beginner skiers would utilize gentler slopes of less that 25 percent. Expert skiers would demand challenging slopes of 45 to 75 percent (Gee, 1981: 94).

Other considerations would include adequate source of water supply for snow making, and base terrain large enough to support lodges, lift terminals and parking. Soil types are also a significant factor in determining

suitability. The developer should be wary of erosion, and implement mitigation measures (Phillips, 1986: 124).

Cross Country Skiing

Cross country skiing has been on the rise for the past several years. Factors contributing to this trend are accessibility, simplicity of learning, relatively inexpensive equipment, reasonable trail fees, absence of crowds and superior cardiovascular conditioning. Yet, traditionally, cross country skiing has not been as key an amenity as the ones already discussed, in all likelihood ,in that it can be done in a greater variety of locations and under less stringent conditions.

Site requirements for cross country skiing are vastly different from its downhill counterpart. Facilities can be developed on a much greater number of sites, and require less natural snow. Furthermore, the developer is not faced with a myriad of regulatory measures because of minimal impacts to the environment (Phillips, 1986: 135). A number of resorts have responded to the recent popularity by establishing touring tracks through scenic forests, and charging trail fees. In addition, much lower development and operating costs are incurred,

as lifts are unnecessary and trails are both narrower, less steep and more accessible.

Marina & Boating

Integral to marina development is proper site selection. The ideal site is safe from strong winds, waves and currents, with easy access to open usable body of water (Gee, 1981: 99). Water access requirements are different depending on boat type and recreational activity. For example, deep sea fishing requires a different set of conditions than sailing small boats.

Site selection criteria for marina development can be separated in two categories, onshore and offshore criteria (Phillips, 1986: 151). Onshore, the site should have adequate usable land, approximately equal to the water area. However, in resort properties where the marina is integrated into the overall project much less onshore space may be required (Freedman, 1990). A one acre body of water can generally accommodate 25 to 65 boats, depending on boat size and marina layout (Phillips, 1986: 151). An important element in marina development is the quality of the soil, which needs to have adequate bearing capacity. Experts should be

consulted to test existence of fills, erosion and sedimentation in the initial phase prior to actual development.

Various offshore conditions should also be examined. First, the water depth, and daily and seasonal fluctuations should be ascertained. Ideally, minimum depth would be 8 feet, in low water . Fluctuations in water depth can be especially alarming with high water, where facilities may be damaged and flooded. Furthermore, the marina should be protected from strong waves and high wind velocity (Phillips, 1986: 152), which can, at times, severely damage facilities. A host of experts should be consulted prior to the development phase.

Two key criteria for Marina planning are, exposure and fetch. Marinas should be located where the wave potential is low, in natural protected niches if possible. Furthermore, the water depth may vary depending on the size of the body of water, and therefore the vessels on it (2-3 feet for small boats on small bodies of water up to 8 feet on the ocean for major marinas) (Freedman, 1990). Of course, the costs increase with the depth requirement.

The orientation of the Marina considering summer prevailing winds is another important factor. With proper orientation the marina will be self cleaning and boating will be facilitated. For safer boating and handling, vessels should not have to cross prevailing winds when entering or exiting the marina (Freedman, 1990).

As with many of the other amenities, a marina presents many synergies with the overall resort. Marinas offer the opportunity for water side restaurants and wonderful scenic views of the marina itself.

Swimming

The outdoor pool is ideally situated on a sunny parcel of land with limited winds, and absence of multitude of trees. The latter controls insects and leaves which are undesired. The site should be flat, with minimum rock or underground water. Water quality and temperature are important consideration.

Imaginative design can create a beach like environment adding interest and appeal to the

resort, as well as providing an added visual amenity. Water activities can be enhanced by features such as water slides, diving boards, and wave pools.

Equestrian

In order to accommodate equestrian activities, several distinct facilities are required. These include barns with stalls, turnout paddocks, several outdoor riding rings, a dressage ring, an indoor ring, and a series of cross country trails.

According to Dr. Joan Buckley, a veterinarian who competed in the US National Collegiate Equestrian Championships and held the title of Reserve Grand Champion of the Northeast Region of the United States, equestrian centers should follow several broad guidelines in order to provide better facilities and a superior riding experience. While not always stringent, each equestrian facility has certain criteria. For example, the turnout paddock, a parcel used for horses to pasture on, is not required to be level and can be located on undulating terrain. However, the existence of trees is necessary to provide shaded areas for horses. The outdoor riding rings are often lighted and

can vary in size, but at least one large ring is required to work the horses. If the latter is 110 meters long, it can double for polo use. The surface of the outdoor rings should be level and consist of dirt and sand, and can incorporate Jumping fences for various riding activities.

The dressage ring is a formal riding ring used for specialized riding, competition, and shows. In addition to the dressage, indoor rings are necessary to exercise the horses, and are typically 20 meters by 60 meters. For cross country riding, a series of interconnected and groomed trails are ideal. For example, trails may begin in grassy fields with natural obstacles such as small hills and bodies of water, to create interest and variety. For added variety, trails may then lead into the woods, where they can be fairly steep, gently bending and turning. Trails through wooded areas should be at least four to five feet wide and clear of obstructions such as branches or any other interference. Hard packed dirt provides the best surface for these trails. Rocks and rocky soils are dangerous and may cause injury to the horses. Trails should vary in difficulty, and should be interconnected to provide for a variety of skill levels, and riding times of one half

hour up to three hours. More detailed information should be solicited form equestrian experts, who routinely design facilities to maximize the riding experience, and cater facilities to meet the resort's particular target group.

IV. POST PREFEASIBILITY STEPS AND CONCLUSION

Post prefeasibility steps

Armed with a business plan, and having completed the above prefeasibilty evaluation and determined the site's limitations and potential, the next step is to ascertain its overall suitability for resort development. If favorable conditions exist, control of the property should be secured as quickly as possible, by the developer. This can be achieved by obtaining an option from the owner to purchase the property at an agreed upon and often, conditional price for the duration of the option. This option should be secured at the least possible cost, to minimize the amount of at risk capital.

Upon securing the option, the developer seeks an investment partner to reduce risk and provide capital.

Often, this partner is also the operator of the resort property, and brings to the table both capital and expertise. A partner with a solid reputation, resort experience, and an established track record enhances the project's credibility, and facilitates securing financing.

The next step is to begin a detailed feasibility study, which addresses site-specific issues, as well as market demand, and the political approvals process. The latter includes securing 'matter of right' for the proposed project. This involves obtaining all necessary local, state and federal permits and approvals on a variety of issues such as zoning, highway access, sewage treatment and the EPA. This process can take as little as one to two years, with soft costs (engineering/legal fees) ranging from a quarter to one million dollars. As described in numerous examples, this process can however, take over ten years and involve great expense. Attempts should be made to reduce capital outlay, and minimize time delays throughout the entire process.

Concurrent to obtaining permits, a development team (see page 17) is assembled, and preliminary planning begins.

Once all necessary approvals and permits are in place, financing is secured, the property is acquired, and only then is final planning and design commenced. The above discussion presents a generalized framework, in that no two developments are the same. Congruencies do however, exists and broad procedural steps can be identified.

Conclusion

Part one of this thesis has identified the many site specific issues and concerns which one must address in the initial analysis and evaluation of a site for resort development. The importance and impact of the various issues will vary depending on the nature and location of the specific site. What is of critical concern for one site may be of no consequence for another. For example, in northern New England, the soil conditions are of great concern when assessing development potential, in that the predominate glacial till is hard packed and highly impermeable, making the disposal of sewage effluent extremely difficult. In Tucson, Arizona, however, this is not of major consequence. In Tucson, a critical issue is the existence of an adequate source of water supply.

It should be reiterated that our concentration on site specific issues is not meant to discount the importance of other concerns. The considerations addressed in this thesis are only one component of a larger study that would be required to determine the full feasibility of a resort development. Other critical issues include market demand studies, financial analysis, and with increasing importance, the political approvals process. However, we believe that an on-site prefeasibility evaluation of site specific issues, as described in our thesis, would lead to an early understanding of the site's potentials and constraints, identifying critical issues that may hinder any development, even prior to embarking on a full scale feasibility study. Unless the issues directly related to the physical and locational nature of the site are addressed and fully understood at the onset, one risks proceeding often at great expense with a site that may be for all practical purposes unfeasible for any reasonable development.

Keep in mind, the city of Fatupahr in Sikri,India. This beautifully designed city, incorporating both eastern and western architecture, was commissioned by Shah Jahan, the patron of the Taj Mahal. This wonderful city

is now known as "The Abandoned City" in that it was occupied for only five years due to a depleted water supply. Fatupahr has stood in the desert for 500 years as a monument to poor infrastructure planning (Freedman, 1990).

PART 2

I. *INTRODUCTION AND GENERAL CONSIDERATIONS*

This section of the thesis will apply the criteria developed in part one to a 4800 acre site located in Danby, Vermont, and outline a prefeasibility evaluation of the site's potential for low impact resort development. The site is located off Danby Mountain road at Danby Four Corners, in southern Vermont. It comprises over 17 percent of the town of Danby (see Site Map in Appendix Three), and is in part utilized by the Smokey House project, a non-profit organization for disadvantaged youth. The property is owned outright by the Taconic Foundation, the custodian of the land.

Danby, is a rural farm community located in southern Vermont, between the towns of Manchester and Rutland. Its current population is just over 1000, with farming being the major source of employment. A nearby marble quarry also serves as a source of livelihood for many of Danby's residents. Danby is a small, sedate town that

typifies the images of rural Vermont. It has experienced little growth and suffers from a stagnating dairy economy, distant location from major ski centers and tourist attractions, and more recently increasingly unreliable climatic conditions .

Introduction : Hotel and Amenities

A preliminary scope of resort development on this property would entail the construction of a hotel, conference center and recreational amenities. According to Michael Horst, a resort planner and consultant, a minimum of 150 to 200 rooms is required to meet the economies of scale (Horst, 1990) for a small hotel, and provide a large enough facility to accommodate guests for business meetings. Given the desire for low impact and low intensity development, a 150 key hotel is recommended. Today, however, hotel properties require a 70-75 percent occupancy ratio in order to break even, and due to climatic variability, seasonality becomes a factor. It should be noted that a 70-75 percent occupancy break-even ratio may translate into a higher required occupancy, during the winter months. Achieving this high occupancy ratio might be possible if Danby were to be transformed into a downhill ski resort area,

such as Stowe.

In the absence of the latter, creating a strong demand would require some truly 'special' amenity or attraction (Horst, 1990). For example, a golf center created within a community which practices ecology may provide a spectacular setting for golf. A skilled golf course designer may be able to design a first-rate, low impact course which takes advantage of the environment, incorporates the natural setting and resources, providing an excellent course meshed with scenic amenities, and a challenging and perhaps even unorthodox configuration. A course that allows one to discover nature and, at the same time, creates a unique and superior golfing experience may provide the sought-after draw. While the Danby site is visually and aesthetically attractive, it is our opinion that unless something 'special' is created and promoted, these characteristics alone will not justify nor sustain the development of a resort.

As with any development, however, it is important that the amenities potentially incorporated on the Danby site, be cost effective, and not drain projected revenues (Freedman, 1990). With this in mind, one

amenity which seems to be almost a necessity for winter vacation resorts is the conference center. Conference centers help boost occupancy rates, especially during the off-season months and help offset the high fixed costs incurred by most resort properties.

Front-end Costs

In order to mitigate the high front-end costs, the development team must create a strategy. First, memberships for use of any developed recreational amenities may be sold to the public. However, this practice would not be desirable for a resort that strives to provide something special and exclusive. Furthermore, the local year round residents generally do not have the finances nor any interest to partake in the recreational amenities offered by the site. Owners of the surrounding area's vacation homes may however, exhibit an interest. A second method would entail selling-off a limited number of large parcels (e.g. 100 acres) within the site. The latter would provide purchasers the opportunity to own their own "kingdoms", with undivided interest in the resort's amenities. A successful example of this concept is in Melrose, South Carolina. The latter would also have the advantage of

being a low impact, low intensity use on the site, effectively limiting the scope of any development, and significantly reducing the front-end investment. A third and imaginative method is to create a general partnership, where members (e.g. land owners), contribute a low monthly fee to be used for the permanent preservation of the open space, thus protecting the views, and the natural environment (Horst, 1990), allowing for the year round participation by the partners in the enjoyment of the landscape and outdoor activities. Alternatively, if it is determined that front-end costs cannot be sufficiently offset, and a high occupancy ratio for a hotel cannot be sustained, an alternate product such as time-sharing or condominium hotel may need to be considered.

II. *SITE EVALUATION FOR RESORT DEVELOPMENT*

The description that follows is an on-site prefeasibility investigation of the natural amenities, and physical and locational attributes of the site. With this preliminary analysis, an early understanding of the site's potential for resort development, along with an identification of critical issues will be developed. Further investigation would require compiling secondary sources of information, and the solicitation of expert opinions, such as from consultants. It should be stressed that the political feasibility of resort development is equally, if not more complex than any engineering constraints which the site may pose. Most physical constraints can technically be overcome, although often at high expense (Horst, 1990).

While we have not focused on the political issues, relevant sections of the Vermont Act 250, Vermont's Land

Use and Development Law, have been utilized to establish broad parameters for development. Act 250 evaluates "the capability of the land to support development.... and make reasonable use of the state's resources and minimize waste or destruction of irreplaceable values". It is not difficult to see that almost any reasonable sized project on the Danby site, would fall under the jurisdiction of Act 250. A development would fall under Act 250, if it meets any one of the following criteria listed below.

i: any improvements above the elevations of 2,500 feet.
ii: the construction of improvements for commercial or industrial purposes, or roads providing access on lands of one acre or more. In municipalities with both permanent zoning and subdivision bylaws, this jurisdiction shall apply if the tracts are more than ten acres.
iii: construction of housing.... with ten or more units.... within the radius of 5 miles.
iv: The drilling of a well for testing of a natural reservoir.
v: Any exploration for fissionable source beyond the reconnaissance phase.
vi: any construction of improvements which shall be a substantial change from a pre-existing development.

Several areas on the site have been identified as potentially favorable locations for the development of resort facilities and amenities (see Developable Areas

Map in Appendix Three). Upon preliminary analysis and site reconnaissance, these locations have been determined to possess acceptable conditions and qualities for development, such as appropriate orientation, views, topography and accessibility, and acceptable soil qualities and drainage characteristics.

A. NATURAL AMENITIES AND RESOURCES

The major components of the site are 1400 acres of mountain forests, 2500 acres of commercial forest and 800 acres of agricultural land (LandVest, 1989: 19). While some of the lower and flatter regions of the site have been cleared for agricultural use and timber value, the upper mountain regions remain densely covered with vegetation and trees.

Under Act 250, "the products of the land and the stone and minerals under the land, as well as beauty of the landscape are the principal natural resources of the state. Preservation of the agricultural and forest productivity of the land.... conservation of recreational opportunity afforded by the state's hills, forests, streams and lakes.... are matters of public

good. Uses which threaten or significantly inhibit these resources should be permitted only when the public is clearly benefited thereby".

Orientation

The site is bounded by the slopes of Dorset Mountain to the South and Woodlawn mountain to the west, creating an inward looking, protected, and private central zone with a northeastern orientation. The relatively flat lowland valley creates a focal point and offers views to the north and northeast.

The northeastern orientation of the mountain slopes presents a favorable condition for downhill skiing. Yet, the site's openness to lowlands in the eastern and northern directions allows for the penetration of sunlight, which is desirable for a variety of recreational amenities.

Natural Beauty

Rolling hills, scenic valleys and plateaus, gentle slopes, and steep mountainous ranges create a diverse natural landscape, rich in visual attractiveness and

beauty. The presence of several brooks (including a beaver dam), naturally occurring springs, and a variety of indigenous wildlife (e.g. deer, bear, chipmunk, game bird) further enhance the natural quality and appeal of the property. During the fall, the foliage and dense vegetation on the site create a colorful panorama, which is potentially a major tourist attraction.

The flow of streams and brooks throughout the site adds aesthetic value and provides a retreat for the wildlife population. For the visitor, the tranquil and remote setting provides a retreat from the everyday mundane urban life.

The size of the site allows for a low impact development, that balances the ecological and environmental considerations. It is our opinion that the Danby site could easily accommodate a reasonable size development in an unobtrusive and harmonious manner, preserving the site's natural beauty.

Views

The site's serene views and multiple vantage points may be utilized to create amenities of superior quality and

appeal by offering outstanding views of the surrounding landscape. There is ample opportunity on the site to create interesting amenities either inconspicuously nestled in the landscape, or strategically located for dramatic impact.

According to Act 250, "the use and development of lands and waters should not significantly detract form recognized scenic resources.... Accordingly, conditions may be imposed on development in order to control unreasonable and unnecessary adverse effects upon scenic resources".

Climate

The climate in the region ranges from severe cold to pleasantly warm days during the summer. More recently, however, snow coverage has been unreliable and unpredictable. The latter may pose a significant constraint for winter recreational activities. The high variability in climate impacts the seasonality of the resort, thus, affecting its evolution to a full four season resort.

B. PHYSICAL ATTRIBUTES AND CONSTRAINTS

Present Utilization & Adaptability

Currently, the site supports several low impact uses which preserve the natural environment. These uses include corn fields, a dairy farm, logging activity, and the Smokey House project, a nonprofit organization which provides learning facilities for disadvantaged youths. In addition, two gravel pits exist on the property and are presently unused. The current uses on the site do not present any immediate environmental hazards.

The improvements to the site are non-obtrusive in nature and maintain the rural image of the landscape and the surrounding areas. These include approximately thirty structures, ranging from old sheds to recently renovated residential buildings. The improvements are clustered in six areas around the site (Leggat McCall, 1989: 14). For the location and a description of the existing improvements, refer to Appendix Four. The present improvements on the site are a fraction of the site's potential.

Any change to the current uses and existing improvements

on the site should maintain the integrity and appeal of the natural environment. A unique opportunity exists whereby the current uses (farming, logging, Smokey House) and improvements (barns, silos, cottages), can potentially become attractions of a destination resort.

Topography

The topography of the site offers many unique development opportunities. The steep slopes and gentle valleys may potentially host a multitude of activities and uses, such as hiking, cross country skiing, or an equestrian center. Elevations vary from a low point of 1300 feet in the valley to a high point of 3700 feet at Dorset peak.

Slopes on the site range from near 0 to over 80 percent. The changing slopes, although at times dramatic, occur in a consistent pattern and provide access to the highest points of the site. The varying slopes and high elevations present the potential opportunity for establishing downhill skiing, as discussed later in the paper. Furthermore, the diversity of the topography and its aesthetic qualities offer favorable conditions for cross country skiing during the winter months, and

equestrian activities during the off-season months.

Drainage & Soil Analysis

The development potential of the site as a whole, and in particular, the siting of the various facilities and structures is determined by the type of soils present, and their bearing capacity and drainage characteristics. Of the twenty four different soil types identified on the site , nine types seem to be prevalent in areas with favorable potential for development (i.e. acceptable topography, views, access). The following table describes the main characteristics of these nine soil types.

PREDOMINANT SOIL TYPE CHARACTERISTICS

Macomber-Dutchess : A silt loam, consisting of Macomber, a moderately well-draining soil found on uplands, and Dutchess, a well-draining soil, formed in glacial till.

Dutchess Flaggy : A well-draining soil, formed in glacial till.

Georgia and Amenia : A fine sandy loam, consisting of two moderately well-draining soils found on uplands of the site, and formed in glacial till.

Georgia and Amenia : A very stony fine sandy loam which is also a combination of two deep, moderately well-draining soils found on uplands, and formed in glacial till.

Warwick and Quonset : A sandy loam with excessive drainage characteristics, found on outwash plains, terraces, and deltas.

Copake : A gravelly loam, well to excessively draining, located on outwash plains, kanes, eskers, and moraines.

Sago : A poorly draining soil formed of organic material, located under stratified sandy and loamy sediments on lake plains and river terraces.

Stockbridge : A silt loam, well-draining, found on uplands and formed in glacial till.

Houghtonville : A fine sandy loam, well-draining and found in loamy glacial till.

source: Smokey House/Taconic Foundation soil survey

A soil classification system, developed by the Soil Science Society of America, groups soils in terms of degrees of limitation and provides an effective means of analyzing soil suitability for potential development. The three groupings; slight, moderate, and severe are described in Appendix Two. Generally, soils categorized as slight have minor limitations affecting their intended use. Soils in the moderate category have greater limitations which may be overcome by proper and careful planning, design, and construction. Soils having severe limitations are at best questionable in terms of their usability and may require complex and costly design and construction techniques in order to be used as development sites (Environmental Geology, 1979: 459).

The following is a table that describes the characteristics and classification of each of the predominate soil types, and potential uses. It should be noted that soil characteristics vary depending on the slope of the land. The areas previously identified as exhibiting development potential are all located on the flatter slopes.

SOIL TYPES	*USE*			
	Small Building	*Septic Tank Absorption Field*	*Drain-age*	*Path/ Trail*
Macomber	moderate to severe, depth to bedrock, slope	severe, depth to rock, slope	deep to water	slight to severe with slope
Dutchess	moderate to severe	moderate, percs slowly	depth to rock	erodes easily
Georgia	moderate to severe, wetness	severe, percs slowly, wetness	percs slowly, frost action	erodes easily
Amenia	moderate to severe, wetness	severe, percs slowly, wetness	percs slowly, frost action	wet
Quonset	slight to severe, slope	severe, poor filter	deep to water	slight to severe
Copake	slight to severe, slope	severe, poor filter	deep to water	slope
Sago	severe, ponding	severe, ponding	ponding, subsides, frost	severe
Stockbridge	slight to severe, slope	severe, percs slowly	deep to water	slight to severe
Houghtonville	slight to severe	moderate to severe, percs slowly	deep to water	erodes easily

source: Smokey House/Taconic Foundation Soil Survey

In evaluating a site in New England, soil characteristics are vital to the prolonged success of any significant project. Due to the high impermeability of soils resulting from the presence of densely compacted glacial till and a high water table, these soils present complex technical problems, in terms of the siting of improvements, the disposal of sewage, and separation of effluent from clean water sources.

In accordance with Act 250, the district engineer would review the soil types and assess their capacities for installation of a waste disposal facilities, pollution controls, and water conservation techniques. More specifically, prior to the issuance of a permit, the district commission would need to determine that the soils can "adequately support waste disposal" and will not result in "undue water or air pollution". The solutions to these problems would mandate further investigation by expert consultants, familiar with the restrictions imposed by Act 250, and the practices of local inspectors and engineers.

Utilities

a. Sewage

The characteristics of the soils on site and suitability for septic tank absorption fields may pose some economic restrictions on development. Under Act 250, "development which is responsible for unique or large amounts of waste should be permitted if it can be demonstrated that available methods will allow the environment to satisfactorily assimilate the waste".

However, all of the soils present are classified by the Soil Society of America as either moderate or severe for use as septic tank absorption fields. There are no soils on the site classified as having only slight limitations. These soils are characterized by slow percolation rates, poor filtering and wetness (see above table). Given the poor condition of the soils and the unavailability of a municipal sewage system, a private package treatment plant would be required to accommodate a reasonable size hotel development, upwards of 150 rooms. As indicated in part one, the capital costs of such a plant are roughly $12 per gallon of daily water

requirement (Freedman, 1990). In order to determine the economic feasibility of a package treatment plant, the cost must be evaluated in reference to the overall development cost.

The remoteness of many areas of the site allows the unobtrusive location of a treatment plant away from recreational activities and clean water supply. Furthermore, the size of the site could at a minimum accommodate a small scale development. However, a comprehensive hydrological study would be required prior to siting a package treatment plant. Act 250, scrutinizes the soils for "adequately supporting waste disposal, the slope of the land and its effects on effluents, the availability of streams for disposal of effluents; and the applicable health and environmental conservation department regulations". In addition, the disposal of effluents "should not involve the injection of waste materials or any harmful or toxic substances into ground water and wells".

b. Water

Ground water is in abundant supply and lack of this commodity does not seem to be a limiting factor for any

proposed development. The presence of a series of streams and brooks provide easy access to water. In addition, several naturally occurring springs provide fresh water, and a potential attraction for resort development. At present, the water quality seems to be superb.

Water conservation and quality are important elements of Act 250. The development should meet all "health and environmental conservation department regulation regarding reduction of the quality of the ground and surface waters flowing through and upon lands which are not devoted to intensive development, and which lands are:

i. headwaters or watersheds characterized by steep slopes and shallow soils; or
ii. drainage areas of 20 square miles or less; or
iii. above 1500 feet elevation; or
iv. watersheds of public water supplies designated by the Vermont department of health; or
v. areas supplying significant amounts of recharge waters to aquifiers."

c. Electricity, Gas & Telephone

The site is presently serviced by usable electric power of 220/120, three phase voltage. However, the existence of excess capacity to accommodate future development

should be investigated. In the absence of nearby excess capacity, a high cost in the order of $20,000 per mile may be incurred.

Telephone lines have been installed on the site, and access to hook up is available. A rotary telephone system is in use in the Danby area, but touchtone service has not been made available. The latter may pose some communications limitations for resort development.

Natural Hazards

The presence of any natural hazardous conditions have not been identified on the site. However, under Act 250, any development within a floodway should not "restrict or divert the flow of floods waters, and endanger the health, safety and welfare of the public or of riparian owners during flooding; and.... not significantly increase the peak discharge of the river or stream within or downstream from the area of development".

C. LOCATIONAL ATTRIBUTES

Danby Four Corners is located between Rutland and Manchester (see Locational Context Map in Appendix Three). Danby has not greatly benefited from the strong and diverse economies and attractions of the surrounding areas. The closest ski centers are located over 30-40 minutes from Danby Four Corners, and the spillover effects of tourism and other beneficial economic activities have not significantly affected Danby's economy.

Both Dorset and Manchester, have long been rich and established areas, where many families have traditionally held summer homes. The existence of this base, could potentially provide an upscale clientele for any activities envisioned on the site.

Community Attitude

While the community may benefit economically from any proposed development, the community attitude is anti-development. Local residents have traditionally used the site as hunting grounds and are reluctant to cease their hunting activities, as a result of any

development. Similarly, many seem to enjoy their present lifestyles, and may not want the latter changed by any development. In summary, there is a distinct conservationist and anti-growth sentiment in Danby.

Furthermore, under Act 250, "the use and development of land and waters should occur in such as way as not to significantly diminish the value and availability of outdoor recreational activities to the people of Vermont, including hunting, fishing, hiking.... and other recreational activities".

Proximity to activity

For the downhill ski enthusiast, ski resorts have long been attractions of southern Vermont. Several downhill ski areas are in the same general region as Danby Four Corners. However, due to Danby's remote location, the region's tourism has not appreciably benefited Danby. To the south and southeast of Danby, and in order of proximity are Bromely, Mount Snow, Magic Mountain, and Stratton mountains, with vertical drops ranging from 1334 feet at Bromely, to 2003 feet at Stratton. While the nearby Bromely mountain, located in Manchester Center has only 35 ski runs, the other resorts have at

least 70 ski runs. To the north and northeast, in order of proximity are Okemo, Killington, and Pico mountains, with vertical drops of near 2000 feet at Pico, to 3175 feet at Killington. Similarly, the number of ski runs range from 35 at Pico, to 107 runs at Killington.

For the cross country enthusiast, to the south and southeast of Danby Four Corners, Wild wings, located east of Dorset, and the Hilden Ski Touring Center, in Manchester offer groomed trails and lodging facilities.

The most famous golf tournament in the area is the Stratton LPGA event, which has replaced the Volvo tennis tournament. The Stratton Mountain Golf Course, designed by Geoffrey Cornish, is a 27 hole course, with a secluded 22 acre site, expressly designed for golf instruction. The oldest course, however, is situated in the Dorset Field Club.

Summer activities are plentiful in southern Vermont. In Dorset, for example, the Theatre Festival is currently performing various plays, and is in its fifteenth season. Other events are routinely held at Stratton; an International Jazz Festival has been performing for the past 27 years, and the Stratton Arts festival displays

Vermont handicrafts. Similarly, in Manchester, the southern Vermont Arts Center displays works of Vermont artists, as well as, accommodates tours from all over the world. Nearby Rutland, the second largest city in Vermont, represents a major regional commercial center, and benefits from its proximity to marble quarries, and the ski areas of Pico and Killington. Like Manchester, Rutland offers an array of activities, such as dining, night clubs, museums, theatre, historic sites and shopping.

Accessibility

Assessing the potential market for any resort development requires an understanding of the site's overall accessibility. Major regional markets are represented by nearby metropolitan centers of New York City, Boston, and Montreal. Approximate distances to these centers are 225, 210, and 190 miles, respectively (see Regional Context Map in Appendix Three). These metropolitan centers are located at the limit of acceptable drive time to a resort destination.

a. Automobile

The subject site is readily accessible by state and interstate highways systems. It is located between state highway 30 and federal highway 7. Route 7 is a limited access highway that runs adjacent to the town of Danby. It is a relatively tedious and boring drive, with the exception of views of Mt. Equinox. For a more scenic and historic drive, Route 7-A through Manchester Village may be the better choice. The site can be accessed by two town roads that run by the site. These roads are currently unmarked and are accessible from the town of Danby on the eastern border.

Danby Four Corners is a thirty minute drive to Rutland, and a fifteen minute drive to Manchester, along route 7. The town is located directly between two major north-south interstate highways, 91 and 87. The distance from a major artery has limited the current development potential of Danby, particularly beyond route 7. The latter has helped preserve the character and rural nature of Danby Four Corners, and its immediate surroundings (LandVest Report, 1990).

b. Other modes of transportation

The nearest commercial airport is ninety minutes, or 70

miles from Danby Four Corners, and is located in Albany, New York. A wide array of regularly scheduled flights serve the Albany airport. Resort industry standard dictates that ninety minutes is the maximum travel time acceptable between a major resort and a commercial airport (Marriott), placing Danby Four Corners at the limit. Accessibility by air to the site, therefore, is less than ideal. Marketing efforts can however overcome this problem by promoting a strong image based on the location as exclusive and remote.

An airport facility does exist in Rutland, but has not been in operation for several years. At present, there are no plans for the reopening of this facility. The construction of a private landing strip on the site is not feasible due to strong wind shears, caused by the geometry of the flanking mountains.

Amtrak provides service to White River junction, Vermont which is located thirty five miles west of Rutland. By bus, Vermont transit provides service from New York and Montreal, to Manchester. Travellers from Boston are required to connect through Williamstown, Massachusetts, or Rutland, Vermont.

c. The site

Although a series of existing logging roads and private trails have made many portions of the site accessible by automobile, the presence of numerous footpaths and hiking trails provide access to the more remote and secluded areas of the site. Vehicular access is limited to the lower elevations through the valley area. The existing network does, however, provide access to all areas identified as having development potential. The upper elevations of the site, and the steep slopes to the south and west are largely inaccessible by automobile.

III. *SITE REQUIREMENTS FOR RECREATIONAL AMENITIES*

The Recreational Amenities Map in Appendix Three illustrates potential locations for recreational amenities. However, this map is subject to further investigation following a more in-depth study of the site's constraints.

A. Golf

Golf has recently benefited from a tremendous upsurge in popularity, and has continued to anchor a number of resorts as the main attraction. Yet, the development of an 18 hole golf course entails a high impact use on the site, and typically covers over 100 acres.

Given the mandate of low impact development in keeping with the environment, a 'links' course can be developed, integrating nature and golf. A 'links' course would attempt to minimally alter the natural site. Hence,

only the tee areas would be manicured, leaving the remainder in pristine condition. Originating in Scotland, these courses have been quite successful and are prevalent in Scottsdale and Tucson. Desert Mountain in Carefree, Arizona provides a fine example. The latest world reknown 'links' type course is located in Spanish Bay, as the newest addition to Pebble Beach. According to Michael Horst, 25 percent of all courses planned today incorporate environmental constraints (Horst, 1990).

B. Tennis

With a site of this magnitude, the location of tennis facilities will not pose a problem. Criteria established in part one should be adhered to.

C. Downhill Skiing

Downhill skiing is perhaps the single biggest reason for pleasure travel during the winter months. Of those who frequent Vermont ski destinations, only 16 percent reside in Vermont. At 27 percent, New York State constitutes the largest percentage of Vermont skiers, with Connecticut and Massachusetts at 22 percent and 16

percent, respectively (Vermont Business, 1988: 67 - 69).

While downhill skiing is a superb amenity to be offered, it presents a high impact and high intensity use of the site. Furthermore, the regulatory hurdles may present an extremely difficult barrier for such a development. Nonetheless, the Danby site benefits from slopes ranging from near zero to eighty percent, accommodating even the most skilled skiers. Vertical drops of 1500 to 2000 feet exist on the site, which are above the required minimum vertical drop of 1500 feet for ski facilities in the northeast. However, recent fluctuations in snowfall have lead to highly unpredictable and variable conditions. Finally, the possibility of avalanches should be thoroughly investigated.

D. Cross Country Skiing

The aesthetic qualities and topographic diversity of the landscape present unique opportunities for scenic and challenging trails. Cross country skiing, contrary to downhill skiing is a low impact and environmentally conscious use of the landscape. Cross country skiing is a desirable amenity, particularly when offered as part

of a total package. While cross country skiing has become increasingly popular in recent years, it does not by itself provide pleasure travelers with an adequate reason to frequent a resort location, especially if situated at great distance. Perhaps, a major reason is the availability of multiple locations suitable for cross country skiing.

E. Marina & Boating

A definite disadvantage and limiting factor of the site is the lack of a lake or pond that can be utilized for summertime water activities. Recreational ponds can however be artificially built. The existence of natural bodies of water is preferred.

F. Swimming

With a site of this magnitude, the location of indoor and outdoor swimming facilities will not pose a problem. Criteria established in part one should be adhered to.

The sites chosen for locating swimming, as well as tennis facilities, are flat, clear areas that are easily accessible. These locations offer great views of the

surrounding landscape.

G. Equestrian

Again, the Danby Four Corners site can easily accommodate all the facilities required of equestrian centers. Given the minimal infrastructure requirements of these facilities, they can be located in many areas of the site. The variety of the landscape provides both level grounds for outdoor/indoor rings, as well as undulating terrain for turnout paddocks. A series of trails can be created from the lowland valley area, through the woods, to provide an interesting and pleasant riding experience for the novice and the skilled rider.

The site chosen for possible equestrian facilities exhibits all the necessary requirements. It is a relatively clear, flat to undulating field located in close proximity to wooded areas.

CONCLUSION

The two main attractions in Southern Vermont consist of downhill skiing, and golf. The former has long been the single largest reason for travel to Vermont, while the latter has benefitted from a near unprecedented popularity, and continues to increasingly attract vacation travelers. In our opinion, Danby cannot compete with the nearby resorts of Stratton and Bromley, in downhill skiing facilities and amenities. These resorts already benefit from a strong image as ski destinations, and provide excellent facilities. Hence, establishing downhill skiing in Danby would not present a competitive advantage, as ski enthusiasts will still opt for the more established resort.

There exists an opportunity for Danby Four Corners to evolve into a first-rate environmentally conscious golf center. Certainly, the site has tremendous scenic qualities and possesses a diverse topographical diversity. The right planner may be able to create an absolutely first-rate 'links' course. However, in order to create a competitive advantage and ultimately a niche, any course or courses contemplated should be of the quality to attract golf enthusiasts from all over

the country. An average course would only compete with the golf courses in the immediate vicinity, whereas the addition of a nationally reknown course could prove to be a major attraction for the area. High quality golf courses in the area include the 18 hole Equinox golf center, designed by Walter Travis, and a 27 hole Geoffrey Cornish designed course at Stratton. By adding a first rate 'links' golf course at Danby, one can offer diversity and create a synergy with the existing courses that would transform the region into a national golf mecca. However, the creation of such first-rate amenities would require substantial front-end capital.

Resort development is a risky endeavor, and as such the site's representatives may be risk-averse, and generally unprepared to pursue a costly development proposal. Yet, additional revenues are desired to offset the current annual expenses associated with the land. However, we believe that there does exist an opportunity to utilize the site for low-impact activities, which would require minimal investment capital, yet create the necessary attraction and critical mass for success. Therefore, a strategy is developed within these parameters.

The current status of the property presents a rare opportunity for the Taconic Foundation to pursue one of the many unique strategies outlined below to generate revenue, and better utilize the resources of the land. First, the Danby site is one of the largest privately owned parcel of undeveloped land in the northeast, presenting an unusual opportunity for implementing a development concept. Second, there currently exists numerous structures on the site, which could be utilized in a development concept, such as those outlined later. Third, the Taconic Foundation holds the property debt-free, and is in a position to accept a lower return than that required by a leveraged owner, and can thus explore a more favorable financial structure.

THE STRATEGY

The development opportunities for a large scale site, such as the Danby site are tremendous, yet simultaneously constrained. Our analysis has identified many of the positive attributes, as well as shortcomings of the site. Within the scope of its 4800 plus acreage, many creative and imaginative development schemes are possible. As we have iterated, there may be high costs

associated with implementing certain development schemes. Yet, in our opinion, the implementation of many, if not all, low impact recreational amenities is feasible.

As we have noted, the existence of some truly 'special' amenity is an absolute requirement for this site to succeed as a resort. Although the Danby site is uniquely large, it should be remembered that not all portions are developable. The site benefits from distinctive scenic resources, as well as a quaint 'rural Vermont' image. These qualities in themselves, however, are not sufficient to draw a critical mass to the site. In essence, a strong element should be present for a New Yorker, a Bostonian, or a Canadian to spend his vacation in Danby, Vermont. Cleary, there are many resorts which are closer to these metropolitan markets, have better access, and ultimately benefit from a long standing image, such as the Balsams Grand Resort, Canyon Ranch In The Berkshires, the Bethel Inn & Country Club, the Samoset Resort, and the Topnotch Spa. Hence, the strategy for the Danby Four Corners site is to create a strong amenity or attraction, which would provide a reason for the pleasure traveler, be it the New Yorker, the Bostonian or the Canadian, to travel to this

particular location. The next step is to develop a concept for impelementing this strategy.

THE CONCEPT

In developing a concept for this property one should consider the many built improvements that are currently on the site. Incorporating these structures into a development scheme presents a unique opportunity to create a special experience, and is essential in maintaining the site's natural character, and favorable in minimizing costs. The concept developed should take full advantage of these structures, and new construction should be used to enhance, and contribute to the interplay currently existing amongst these structures. By using the existing improvements, the overall impact of any development on the site is inherently limited.

The question then becomes, developing a concept for the Danby Four Corners site. A 'concept' should incorporate facilities and amenities which would provide a competitive advantage and financial viability. While, we have not dwelled on the many market-driven issues, an understanding of the site and its regional context

necessitates entertaining unique and entrepreneurial development concepts, to create the necessary 'special' attraction for the site and its location. In keeping with the above parameters, several innovative ideas for the Danby property are discussed.

Agricultural Research Center

An agricultural research center is an environmental education and research facility that engages in activities such as aqua-culture, organic gardening, and experimental farming. These organizations are environmentally conscious, and seek to promote an understanding of nature, and the effects of human interaction with the environment.

An excellent example is the New Alchemy Institute, a non-profit organization, located in Falmouth, Cape Cod. Expert teachers and farmers, educate and consult on a range of topics such as food, energy and, water and waste treatment systems. Current projects entail covercrop research, and integrated pest management. Seminars, conferences, and practical training are offered by the Institute.

The center is situated on a twelve acre site, comprised of research fields, organic market gardens, theme gardens, green houses, and a bio-shelter. Many experimental structures exist on the site, including a 'super insulated' auditorium, which naturally maintains ambient temperature, both in the winter and summer, where heat is generated internally, by lighting and body temperature. New Alchemy's additional facilities include a visitor center, book store, and conference space.

The unique nature of the Institute attracts visitors from not only the northeast, but all over the world. The Institute appeals to a broad range of people and backgrounds. Amateur botanists and scientists are attracted by the specialized knowledge and expertise available. Cape Cod tourists are intrigued by the day to day activities of the Institute and often include a visit as part of their vacation plans.

Why the Site

Danby Four Corners offers an ideal setting for such an endeavour. The large acreage provides a variety of

environmental conditions and certainly more than enough space for research fields, experimental farming, and ecological studies. With careful planning, a cohesive research community could be established on the site, providing intellectual, leisure, and day to day support for its residents. For example, a young scientist could actually live, work, and indulge in the many natural amenities offered by the site.

Many of the existing structures can easily accommodate the needs of such a community. A number of barns, silos, and sheds can readily be converted into research and study spaces. Permanent staff, as well as visiting scholars and scientists can be housed in the more than thirty bedrooms available on the site. Further, a synergy can be created with many of the current uses on the site, such as the farming and forestry activities.

The Smokey House project can easily be incorporated into the educational and research activities of the center. This synergy would allow the Smokey House to grow, and expand its activities with the center.

Benefits

This concept can be implemented at essentially no cost to the Taconic Foundation. Its contribution to such an endeavour would simply be to allow use of its land. Second, the potential benefit to the Smokey House Project can be tremendous. The center would provide a unique learning experience, and a multitude of educational activities for the youths participating in Smokey House. Third, any new structural improvements and renovations by the users would enhance the value of the property. Finally, the potential for generating revenue exists in a variety of ways. A fee could be charged to the scientists to cover administrative expenses and property taxes. Seminars, conferences, and tours of the facilities could generate a substantial sum for the Taconic Foundation. The existing residences could be leased to visiting scholars. Organically raised crops, and produce could be sold in the marketplace. Corporate and government sponsorship could be sought for the various projects and activities of the center. Additionally, a joint venture could be established with educational institutions in Botany, Forestry or Agricultural Management.

Artists' Village

A unique concept can be developed whereby skilled masters of the arts and a select group of apprentices meet for extended periods of time in a tranquil and bucolic setting to create inspired works of art. This group would live and work on the site. The apprentice, utilizes his/her period of residency to enhance his/her skills in a variety of traditional arts and crafts. Some of the activities may include, painting, sculpture, ceramics, jewelry making, weaving and quilt making, woodworking, and boat and furniture building.

In selecting the activities to be offered, several issues are considered. First, the reputation of the master is important in that it attracts interest and lends credibility to the program. Second, the proposed activity should be of low impact, and respect the environment and ecology of the site. Finally, the work produced should be marketable, and provide revenue. Artists have the opportunity to gain exposure and notoriety through their association with a reputable and reknown artists' village. Examples of this concept are as follow.

The Headlands Art Center, in northern California, is located in a 15,000 acre recreational area. Six former military buildings are situated on the site, and are being converted by the artists into studio space. Activities offered include, 'artists in residence program', public seminars, lectures, and art exhibits. Apprentices attend the center for a nine month period, and work under the direction of skilled masters.

The Olema Artists' Live/Work Colony, located on a historic seashore in northern California, provides residence and work space for 9 artists at a time. Olema has effectively used the existing structures on the site to accommodate space requirements. A renovated farmhouse, cottage and water tower are utilized to provide living accommodations, and a renovated stable provides work space for the artists.

A third example is The Art Park, in Lewiston, New York, commonly referred to as the 'sculpture farm'. Sculptors produce environmental art and create works in the landscape. Fundraising is tied to the community and is effectively utilized to attract tourism to the town. The Art Park has become an attraction that provides livelihood to Lewiston, where tourists now visit

specifically to see The Art Park.

Why the Site

The relationship between nature and art has been a long standing tradition. Pursuing these activities within a pastoral environment promotes creativity, and offers an outlet for the artists' emotions, creating superior works of art. With the Danby Four Corners site an actual artists' community could be developed. The buildings on the site could be used to provide both living and work space for the artists.

Benefits

To generate income, the artists' work can be sold through a network of art galleries, and other retail stores. Further, the Taconic foundation can expect income from rent paid by the masters and apprentices, instruction fees from seminars, lectures, and training courses, and revenue from tourism. In addition, the nine bedroom Herrick house can be transformed into a bed and breakfast country inn to accommodate visitors. The apprentices can also help renovate, expand, and maintain the current improvements, thus creating value.

Conference Center/Executive Retreat

The combination of conference center and executive retreat is quickly gaining popularity, particularly with corporations seeking to provide a stimulating and exciting environment for strategy formulation and specialized educational training for their executives. Corporate executives attend meetings and conferences, while the surrounding landscape, and recreational amenities provide relief for leisure.

Increasingly, the resorts of New England are being marketed to national planners for meetings and conventions, and business is providing the core demand. Business has found New England's scenic attractions and historic sites appealing. With the continued support and demand for New England meeting and convention space, the winter resorts of Vermont and the neighboring states, are evolving into summer destinations, providing a vast array of year round amenities.

Several resorts in the area are benefiting from the demand for conference and meeting space located in

pleasant rural surroundings. The Balsams, a 15,000 acre resort located in New Hampshire, and surrounded by mountanous terrain offers a vast array of recreational activities. The Balsams is a year round resort that attracts pleasure travellers both during the winter and summer. In the slow spring and late fall seasons, the resort is marketed primarily as a conference and meeting center. It provides recreational amenities such as tennis, golf, swimming, downhill and cross country skiing. A second example is the Bethel Inn & Country Club located in Maine. Over sixty five percent of its revenue is generated from corporate and business demand. Amenities include a 6000 square foot conference center, a 70 rooms inn, and numerous recreational activities. Another example, the Samoset, a 230 acre resort in Rockport, Maine generates over forty five percent of its revenue from corporate meetings.

Why the Site

As we have already indicated, this site offers a secluded natural setting, which lends itself perfectly as a premier meeting place and executive retreat. Even in the absense of any recreational improvements, the surrounding area offers a multitude of activities, and

the site itself provides a pristine environment for retreat and leisure. The many natural springs and streams provide an added dimension for enjoyment. For example, following meetings, executives could utilize the site for the natural amenities, and participate in activities such as horseback riding, hiking, and cross country skiing.

The current meeting and conference space would be inadequate, and would have to be expanded. Similarly, the existing overnight accommodations would require expansion. The existing improvements, however, provide a tranquil, quaint, and relaxed setting for the highly stressed corporate executive, who seeks a productive retreat and a pleasant change in surroundings.

Benefits

Clearly, a full scale conference facility would generate substantial income, yet would require front-end investment and heavy marketing inorder to compete with existing facilities. The front-end investment, however, would not necessarily be exhorbitant due to the current availability of limited meeting space and lodging on the site. The existing stuctures on the site could

easily be expanded and converted into additional meeting space, and overnight accommodations. Rather than building totally new faciliities, incorporating the existing structures would enhance the property's rural and pastoral image. A conference center would increase profitability by providing diversification, and a revenue generating buffer during slow season periods. For a resort location in southern Vermont, a three season resort is essential for success. Winter and summer recreational amenities, combined with conference and meeting facilities, would render the site profitable and provide revenue for the Taconic Foundation.

War Games

An activity with increasing popularity throughout the country is war games. In these games, two or more teams engage in simulated combat, 'roughing' it in the wilderness. The weapons utilize harmless paint pellets, to mark soldiers who have been shot. The objective of a popular version of the game is to 'capture the flag'. These games have little impact on the immediate environment, where the wilderness and lack of modern facilities is viewed as an amenity, contributing to the

authenticity of combat. One of the authors has personally experienced the thrill of partipating in these games, in the Laurentian Mountains, and can attest to the increasing interest in this activity.

Why the Site

The site, in its pristine condition, offers the participants unique grounds for partaking in these games. The Danby site is enclosed by mountainous terrain, creating an inward orientation, ideal for these games. As one of the largest privately held undeveloped parcel in the northeast, it provides an unparalleled sense of remoteness, isolation, and adventure. The varying topography and diverse natural conditions are ideal in that they create interest, and offer a challenging and realistic terrain.

Benefits

Danby Four Corners could become a national sponsor of these games, and benefit from fees associated from such sponsorship. Further, admission to the site and rental fees for necessary combat gear can be used to generate substantial income with relatively little front-end

expenditure. The existing structures on the site can be used to accommodate the participants and their activities. In particular, two or more residences can be rented as team headquarters. In addition, bare shacks, placed in varying locations throughout the site, can be rented, since these games are generally carried out during weekends, where a one or two night stay is required. Other sources of revenue include food and beverage, and technical instruction.

SUMMARY

The common theme among the four concepts discussed above is that each project condones an environmentally conscious use of the land, takes maximum advantage of existing structures, requires little effort to implement, and provides a reasonable revenue for the Taconic Foundation. At present, the site is held debt-free, with administrative costs and property taxes comprising the major portion of annual expenses. The above uses, would generate adequate income for the Taconic Foundation, without incurring the normal front-end costs associated with resort development. In each case, the concept advocates improvement or

expansion of the many structures on the property , thus creating long term value.

With most of these concepts, the Smokey House project can play an integral and mutually beneficial role. For example, with the artists' village, the expertise and skill of its residents, are reciprocated with the manpower, enthusiasm, and energy of the disadvantaged youth. Furthermore, remaining committed to Smokey House would benefit the project's image and strengthen the Taconic Foundation's ties with the local community.

The success of resort devlopment on this site is at best uncertain. With resort development, the high front-end costs may prove too costly and unjustified as the development proceeds through the many obstacles on the way to potentially becoming a destination resort. As we have discussed at great length, these hurdles could prove unsurmountable, and ultimately result in a failed development. These hurdles include, but are not limited to questions of access, lack of a national airport within a reasonable commute, the approvals process and the uncertain regulatory climate, and the anti-development sentiment prevalent in the Danby area.

As discussed, resort development is a high risk endeavor, requiring significant upfront investment. In order to reduce the project risk and limit the required upfront capital expenditure, parcels may need to be subdivided and sold individually, resulting in a smaller less majestic property. At present, the site's 4800 acres represents one of the largest privately owned undeveloped parcels in the northeast region. The opportunity to participate in activities and enjoy the recreationl amenities of a parcel of such grandeur is certainly at best limited. There exists a rare oppportunity to preserve the land and transform the present utilization into a national center; for the arts, agricultural research, conference/retreat, or even simply a home for the ever-increasing popular war games. We believe these creative concepts fully utilize the advantages of the property, with minimal adverse impacts. Once implemented, these concepts would require little day to day administrative support, and certainly generate a reasonable risk adjusted return to cover expenses, and provide additional retained earnings for the Taconic Foundation.

PART 3

Prefeasibility Checklist

The prefeasibility site evaluation checklist that follows provides the observer with an instrument to be used on site to assess attributes and characteristics in a thoughtful and methodological manner. It facilitates the identification of critical issues, which would require further analysis, as well as favorable conditions which should be explored. In addition, the framework outlines the key elements to be evaluated, prior to proceeding with any project.

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST

Date and Time: _____

Project Name : _____

Site Location: _____

A. NATURAL AMENITIES AND RESOURCES

Orientation

N__ S__ W__ E__

Sun_____ Shade_____

Wind Exposure_____

Natural Beauty

Scenery: (diversity, variety, color)

_____
_____
_____
_____

Natural Amenities: (desert, mountain, beach, lake, pond)

_____
_____
_____
_____

Views

Quality, Variety, and Key Locations:

_____
_____
_____
_____

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST ..2

Climate

Temperature, Precipitation, Humidity, and variability:

_____
_____
_____
_____

B. PHYSICAL ATTRIBUTES AND CONSTRAINTS

Present Utilization & Adaptibility

Type and Impact: (environmental conditions, hazardous materials, regulations) _____
_____
_____
_____

Topography

Highest Elevation___ Lowest Elevation___

Type and Variability: (flat, sloping, mountainous)

_____
_____
_____
_____

Drainage

Natural Patterns: (rainfall, rate of absorption, bodies of water, water table, topography)

_____
_____
_____
_____

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST ..3

Soil Analysis

Type and Condition: (mix, texture, wetness, rockiness)

_____
_____
_____
_____

Utilities

a. Sewage

Connection Moratorium__

Existing District___ Planned District___ Extension___

Critical Floor Analysis: (on site septic vs. package treatment at 15-20 thousand gallons/day)

_____
_____
_____
_____

Surface Water Source: (capacity, flow, dilution rate)

_____
_____
_____
_____

Ground Water Discharge: (sands, gravel, water table)

_____
_____
_____
_____

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST ..4

b. Water

Connection Moratorium__

Existing District___ Planned District___ Extension___

Type and Estimated Uses: (gallons/day, quality required)

_____
_____
_____
_____

On-Site Sources: (aquifers, springs, catchment surfaces)

_____
_____
_____
_____

Quality of Available Water:

_____
_____
_____
_____

c. Electricity, Gas, Telephone

Electric : Available__ Not Available__ Programmed__

Gas : Available__ Not Available__ Programmed__

Telephone: Available__ Not Available__ Programmed__

Natural Hazards

History: (type, frequency, severity, season)

_____
_____
_____
_____

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST ..5

C. LOCATIONAL ATTRIBUTES

Community Attitude

Pro Growth__ No Growth__ Unclear__

Planning and Design: (sophistication, sensitivity)

_____
_____
_____
_____

Key Groups and Leaders:

_____
_____
_____
_____

Proximity to Activity

Urban__ Suburban__ Rural__

Type and Character: (natural attraction, cultural, social, historic, image and quality)

_____
_____
_____
_____

Accessibility

a. Automobile

Roads: (proximity, type, volume, condition)

_____
_____
_____
_____

RESORT DEVELOPMENT
PREFEASIBILITY
SITE EVALUATION CHECKLIST ..6

Nearest Metropolitan Center: (name, distance, drivetime)

b. Other Transportation Nodes

Airport: (location, service, facilities)

Port and/or Rail: (location, service, links)

c. The Site

Ease of Accessibility: (terrain, seasons)

Arrival Sequence: (type, quality, image)

PART 4

APPENDIX ONE : TABLE ONE TO TABLE SEVEN

TABLE ONE : *SOIL TYPE COMPOSITION*

GENERAL COMPOSITION	*DEFINITION*
Gravel	particle size over 2mm in diameter
Sand	particle size of 0.05 to 2mm; grains are visible to the eye Silt particle size of 0.002 to 0.05mm; grains are not visible but can be distinguished by touch
Clay	particle size of less than 0.002mm; smooth and stiff when dry, plastic and sticky when wet

source: Lynch et al., 1984: 379

TABLE TWO : *SOIL TYPE CHARACTERISTICS*

SOIL CLASS	*ENGINEERING IMPLICATIONS*
Clean Gravel	Dominant component is gravel with less that ten percent silt or clay; stable when loaded; reacts well under freezing; excellent for drainage; high bearing capacity
Silty & Clayey Gravel	Mostly gravel with more than ten percent silt or clay; generally stable when loaded; fair to good stability when frozen; questionable drainage characteristics; good bearing capacity

Clean Sands	Mostly sand with less than 10% silt or clay; stable when loaded; reacts well under freezing; excellent for drainage; bearing capacity dependant on grading
Silty and Clayey Sands	Mostly sand with more than 10% silt or clay; fairly stable; questionable drainage and bearing capacity
Nonplastic silts	Inorganic silts or fine sands with a liquid limit of less than 50%; begin to flow like a liquid; fairly stable; poor drainage and bearing capacity
Plastic silts	Inorganic silts with a liquid limit over 50% ; poor stability, drainage, and bearing capacity
Organic Silts	Silts containing organic matter and a liquid limit under 50% ; poor stability, drainage, and bearing capacity
Nonplastic Clays	Inorganic clays with a liquid limit under 50% ; poor stability and bearing capacity, unusable for drainage
Plastic & Organic Clays	Clay or silt containing organic matter and a liquid limit over 50%; poor stability, unusable drainage and bearing capacity
Peat and Muck	Organic material; unstable, some drainage characteristics, unusable bearing capacity

source: Lynch et al., 1984: 379-380,383

TABLE THREE : *PER PERSON WATER USAGE*

QUANTITY USED	*PER PERSON/DAY* (l)
Hotel Guest	135
Resident Employees	90
Non Resident Employees	45

Source: Lawson, 1976: 197

TABLE FOUR : *TRAVEL REASONS*

ACTIVITY NODE	*EXAMPLE*
Leisure	sun seeking, sight seeing
Recreation	sailing, golf, skiing, climbing, riding, sports, spectator games, displays
Culture	interests in art, history, archeology and pageantry
Religion	ceremonies, pilgrimages, festivals
Entertainment	theatre, concert halls, opera, casinos, night clubs
Convention	conferences, conventions, assemblies, meetings
Institutional	visitors to institutions, hospitals and universities
Business	business and commercial travel, executive meetings
Economic	promotional shows, exhibitions and trade displays
Medical	health, dietary, spa and convalescence facilities
Social	visits by relatives, friends, societies, clubs
Travel	overnight lodging requirements

source: Lawson, 1976: 18

TABLE FIVE : *ISSUES OF ACCESS*

ISSUES	*CONCERNS*
Highway Type	Classification and Role Statutory Restrictions Positions of Intersections/Routes
Relationship to Highway	Distances from intersections Frontage length Visibility to traffic Possible hazards Visibility/access from other routes
Traffic Volume	Traffic flows Daily, weekend/weekday fluctuation Seasonal fluctuation Trends and speeds
Traffic Type	Short or long distance Business or leisure Major travel bus route
Future Development	Proposals/expansion plans of roads New links

source: Lawson, 1976: 36

TABLE SIX : *ACTIVITY PARTICIPATION BY INCOME GROUP*

	INCOME GROUP (thousands)				
ACTIVITY	<$5	$5-$15	$15-$25	$25-$50	>$50
Bicycling	23	24	35	41	42
Boating	16	20	27	39	43
Golfing	6	6	13	20	27
Jogging	21	20	27	33	37
Skiing	5	5	7	13	21
Swimming	34	39	57	68	72
Tennis	12	11	18	22	37
No partic.	28	18	6	4	3

source: Philips, 1986: 9

TABLE SEVEN : *PERCENTAGE USAGE OF WATER SOURCES FOR GOLF COURSES*

SOURCE	*NE*	*N.Cent*	*S*	*W*	*Nation*
Lakes and Streams	55.5	41.0	46.6	32.1	44.2
Wells	21.4	39.3	32.6	38.4	33.7
Local potable water	19.6	16.4	12.0	21.3	16.6
Effluent Water	2.6	1.7	7.9	7.2	4.6
No Irrigation	0.5	1.6	0.9	1.0	1.0

source: Phillips, 1986: 44

APPENDIX TWO: *Soil Limitations for Buildings in Recreational Areas*

Degree of Limitation

None to Slight

Wetness	: Well to moderately well-drained soils not subject to ponding or seepage. Over 1.2m to seasonal water table.
Flooding	: Not subject to flooding
Slope	: 0% to 8%
Rockiness	: None
Stoniness	: None to few
Depth to bedrock	: 1.5 meters

Moderate

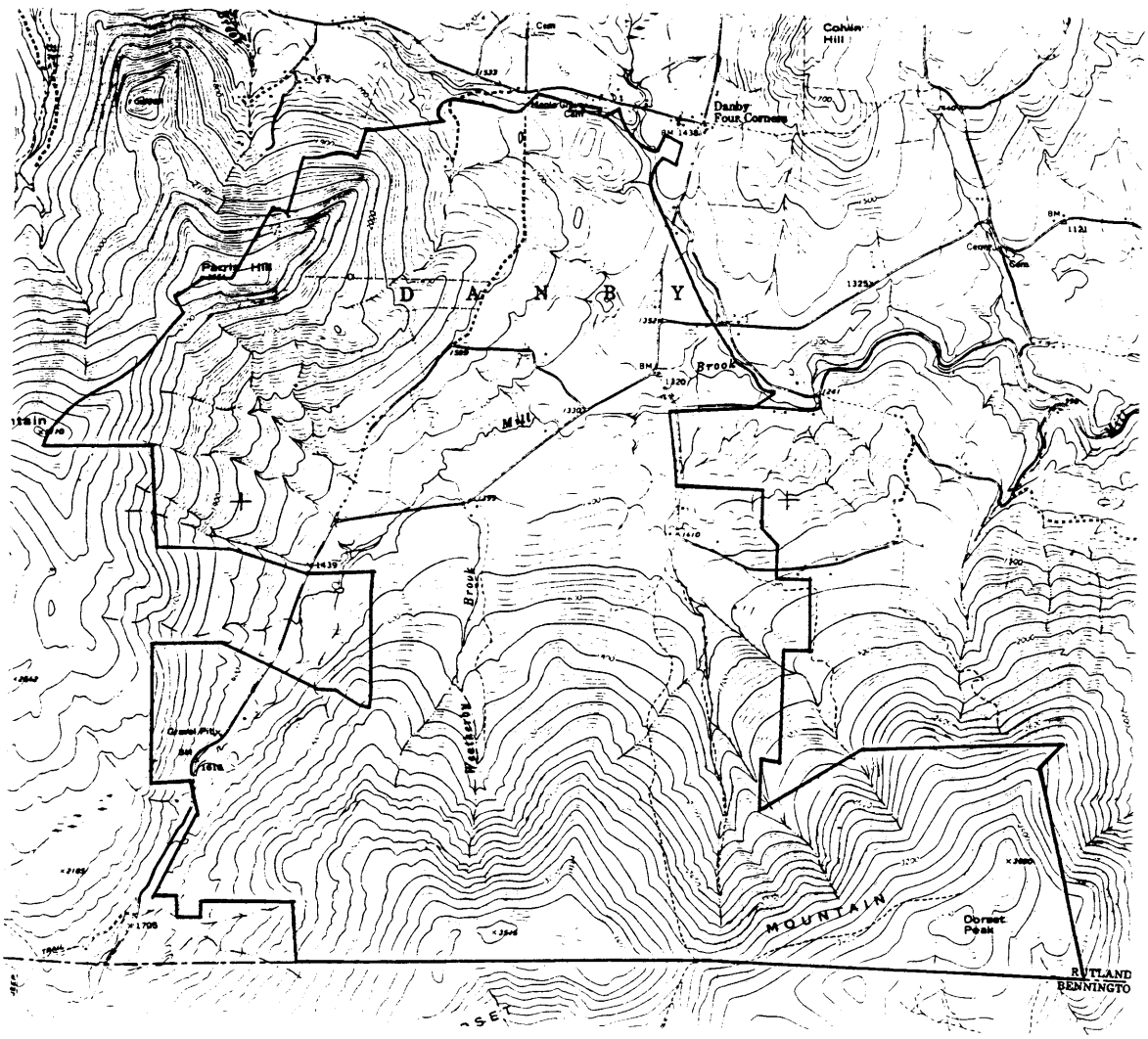
Wetness	: Well & moderately well-drained soils subject to occasional ponding or seepage. Somewhat poorly drained not subject to ponding. Seasonal water table of 0.6 to 1.2 meters
Flooding	: Not subject to flooding
Slope	: 8% to 15%
Rockiness	: Few
Stoniness	: Moderate
Depth to bedrock	: 0.9 to 1.5 meters

Severe

Wetness	: Somewhat poorly drained soils subject to ponding. Poorly and very poorly drained soils
Flooding	: Subject to flooding
Slope	: Over 15%
Rockiness	: Moderate to many
Stoniness	: Moderate
Depth to bedrock	: Less than 1.0 meters

source: Environmental Geology, 1979: 464

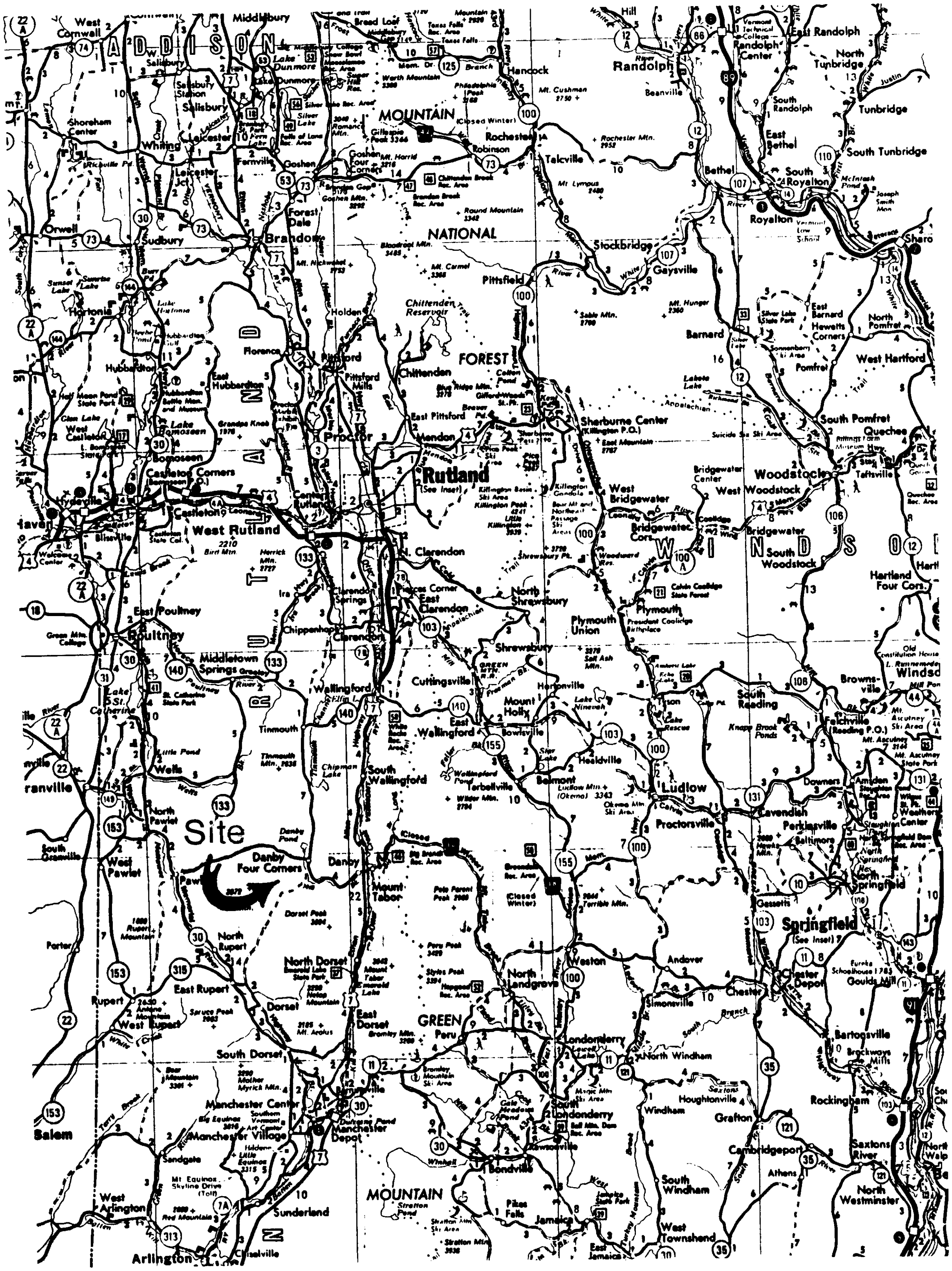
APPENDIX THREE



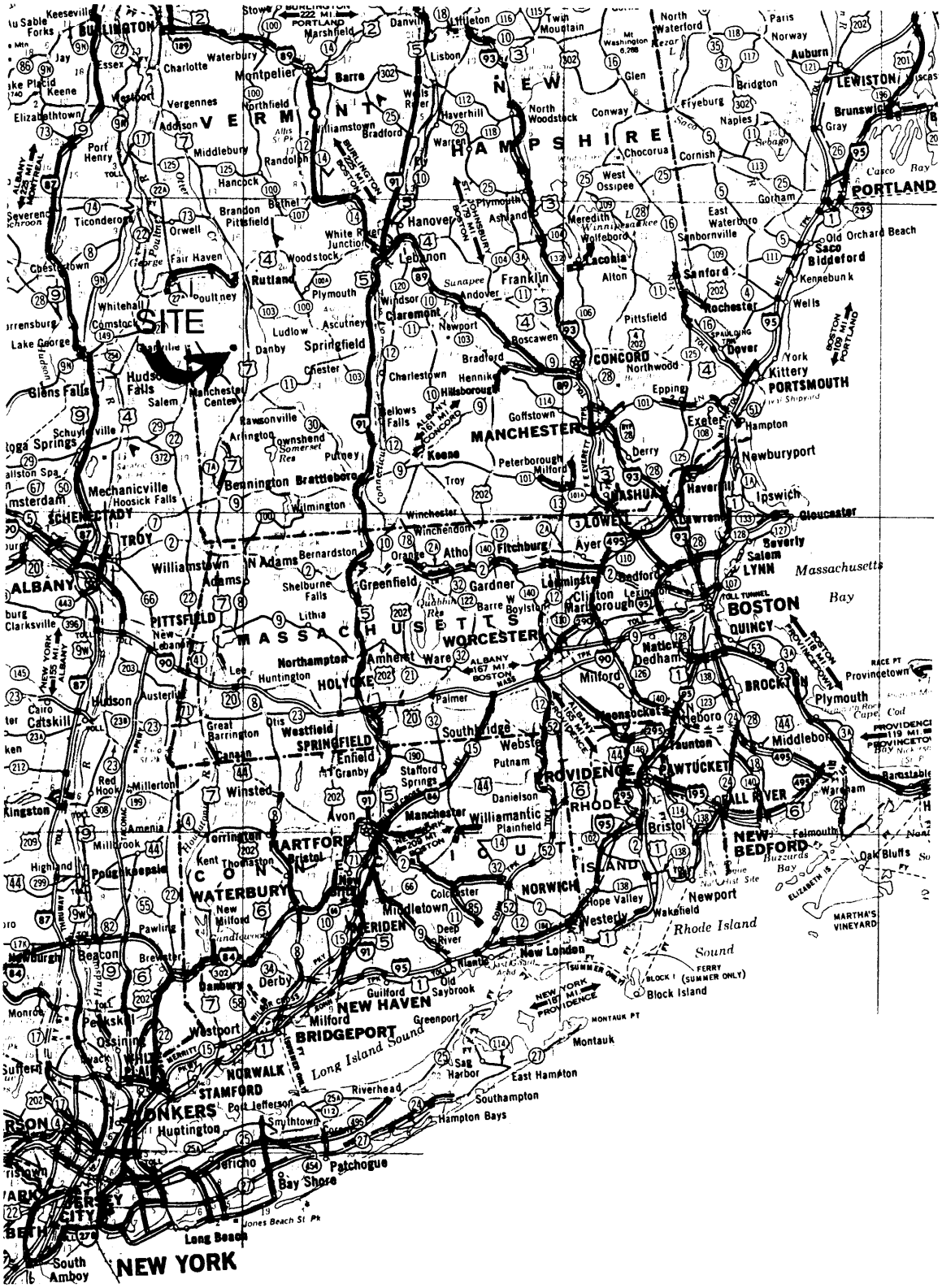
The Site

Danby Four Corners, VT

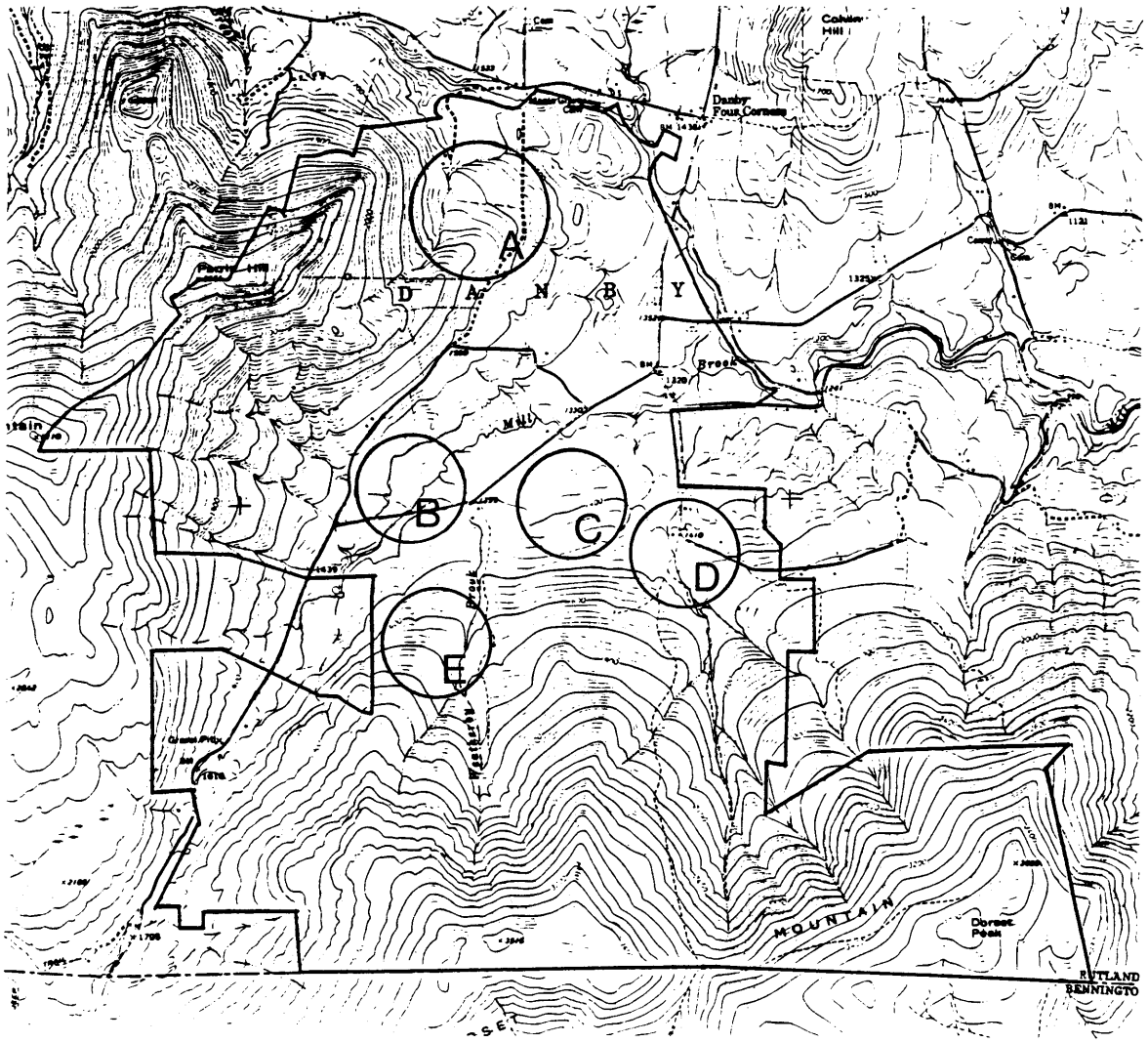
in ——————— one mile



Locational Context



Regional Context



The Site

Danby Four Corners, VT

Developable Areas

in

one mile

DEVELOPABLE AREAS SUMMARY

Refer to the Developable Areas Map

Area A

Present Use : Corn field
Predominate Soil: Dutchess Flaggy, Georgia/Amenia
Terrain : Flat to moderately sloping
Views : Mountain ridges to west, distant valleys to north/northeast
Access : Immediate, off paved town road

Area B

Present Use : Unused, old farm field
Predominate Soil: Copake, Georgia/Amenia
Terrain : Flat, clear field
Views : Surrounding trees limit immediate view, distant views west and south
Access : Direct, off hard packed road

Area C

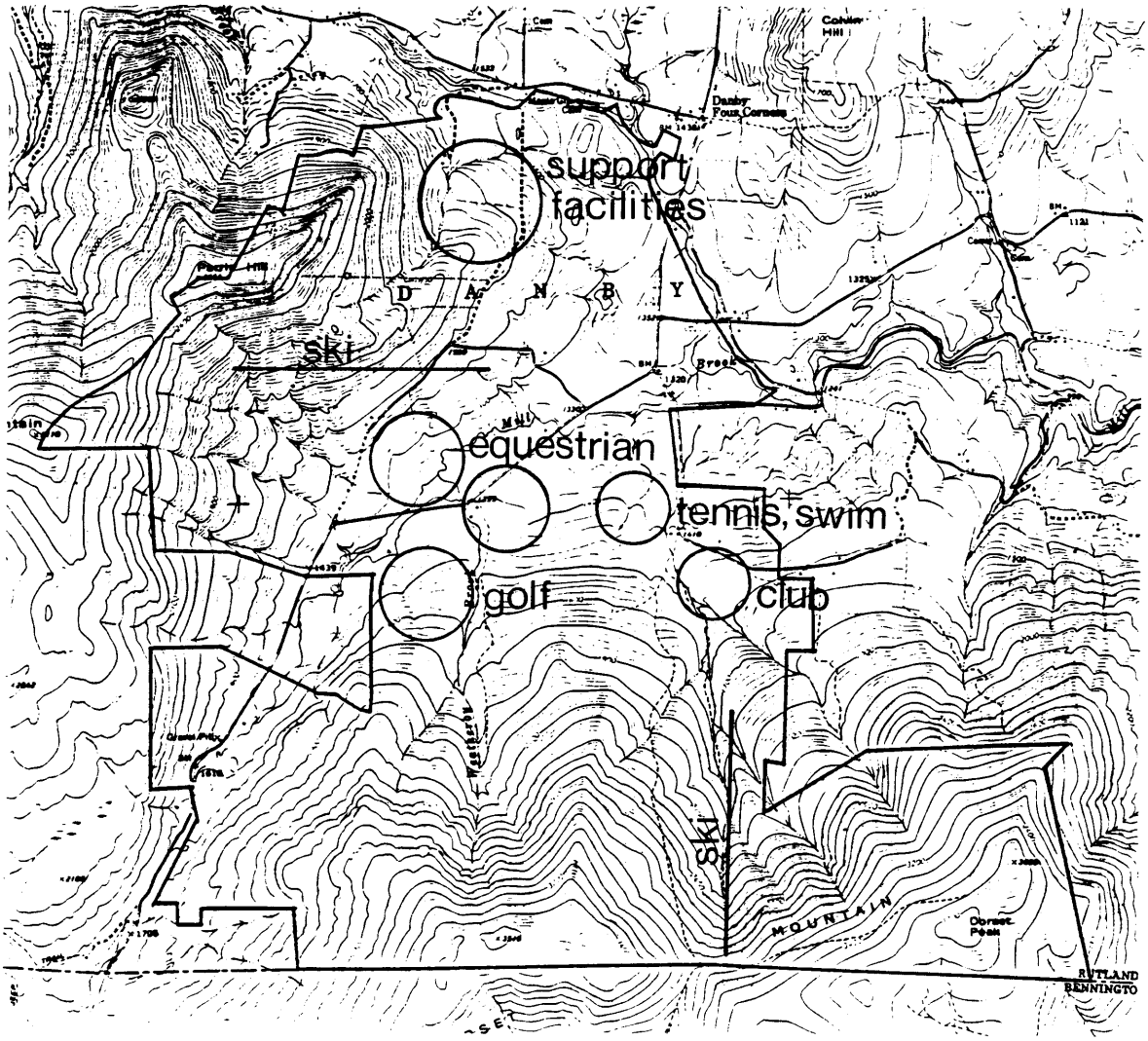
Present Use : Unused
Predominate Soil: Georgia/Amenia
Terrain : Flat, clear meadow
Views : Good views, mountains to south and west
Access : Off hard packed road

Area D

Present Use : Unused
Predominate Soil: Copake, Georgia/Amenia
Terrain : Gently to moderately sloping
Views : Panoramic, distant lowland ranges to north and east
Access : Direct, off hard packed road

Area E

Present Use	: Unused
Predominate Soil	: Georgia/Amenia
Terrain	: Clear, moderately sloping
Views	: North and northwest
Access	: Off hard packed road



The Site

Danby Four Corners, VT

Recreational Amenities

in

one mile

APPENDIX FOUR : *Existing Structures*

The following is a description of the major structures which currently exist on the Danby site (LandVest, 1989). For the location of these structures, refer to map which follows.

The Hilliard Compond

The Hilliard compound houses the Smokey House Project, and serves as its educational and administrative center. The parcel consists of the following structures:

The *Hilliard House*, is a two level structure which incorporates rooms for meetings and conferences. The first floor consists of a large kitchen, and the second floor accommodates a large open span meeting room with an outdoor deck.

The *Smokey House Office Building*, a 2500 square foot wood framed farmhouse, contains 2 large meeting rooms, offices and a kitchen.

Both, the Hilliard House and the office building are fully serviced, and have been recently renovated. Other improvements include a wood working shop, storage barns, a locker room, and a 1000 square foot sugar house.

The Herrick Farm

The Herrick Farm consists of a one and half story clapboard house with a footprint of 4700 square feet. The house incorporates a spacious living room, a large family room (with fireplace), nine bedrooms and a full bath. Aditional structures include a small one and half story building shell, two bay garage, several sheds and barns.

The Bruce Dairy Farm

There are two residences located on this farm. The first, consists of a 4000 square foot farmhouse, with living room, dining room, four bedrooms and two and half baths. The second, an 1800 square foot farmhouse, contains three bedrooms and one and half baths. These houses have many desireable features such as enclosed porches, and flagstone and hardwood floors. Other

structures include dairy barns, silos, a horse barn, and numerous other sheds.

The Fiske Compound

The Fiske property offers some of the best views of the valley, and consists of five structures. The main house contains over 1400 square feet of living space, four bedrooms, and a bathroom. Currently, it serves as the living quarters for the staff of the Smokey House Project. Other structures include a hay barn, Manure Bunker, silo, and storage barn.

The Armstrong Property

This property contains a one story ranch house, with a large living room, three bedrooms, and two baths. The exterior of the property is in poor condition. Other improvements include a garage.

The McClellan Farm

At approximately 2200 square feet, this wood framed McClellan house contains a large living room, five bedrooms, one bathroom, a large kitchen, and an attractive porch. Other structures include garage, a dairy barn, cow barn, and numerous sheds. The property offers outstanding views of the nearby mountains.

The Log Cabin

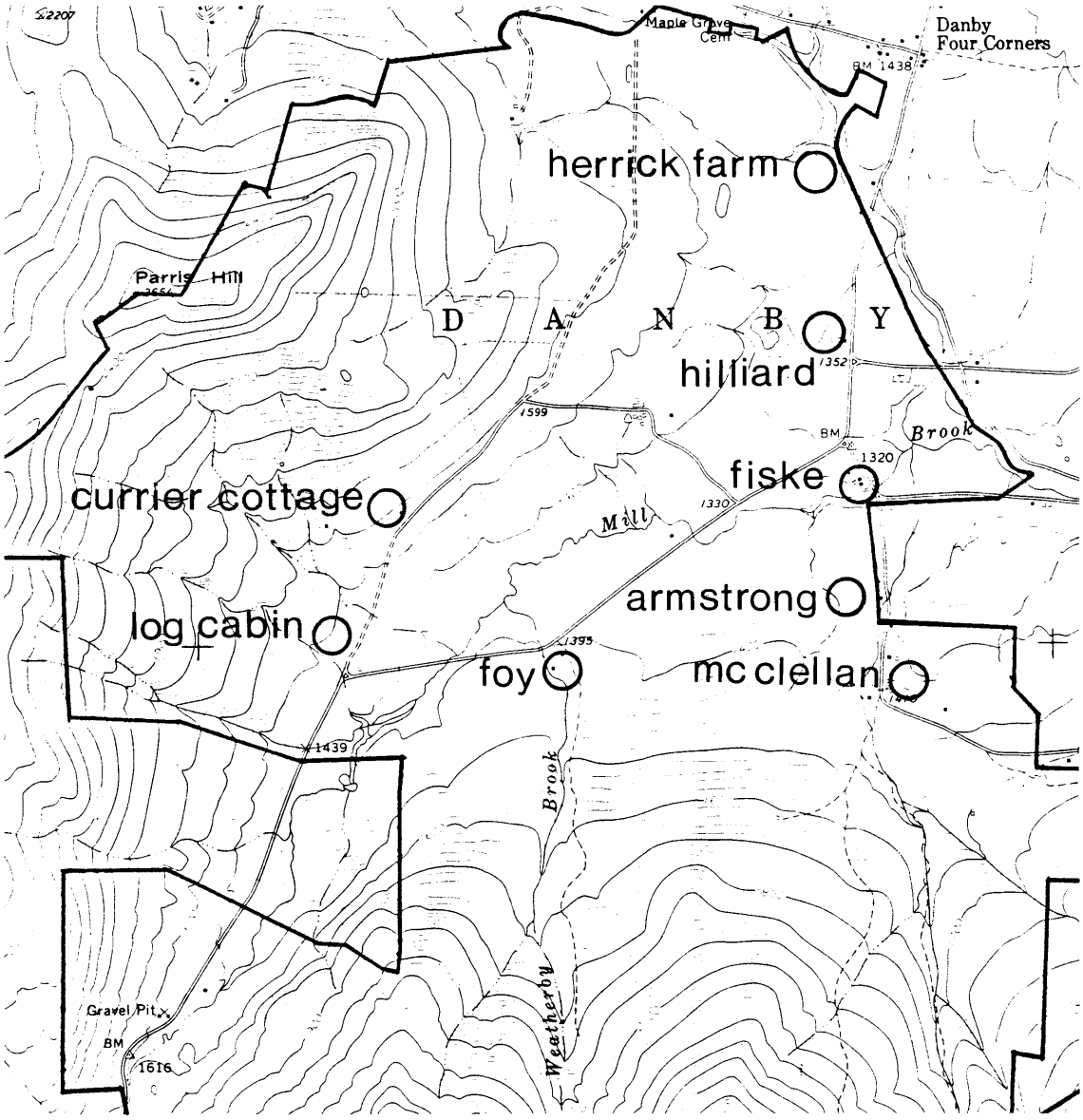
The log cabin, a 1200 square foot quaint structure, is remotely situated, and offers both privacy and outstanding views.

The Foy Cottage

This is a small one story structure, in need of extensive repair.

The Currier Cottage

Situated in a great location with excellent views, this elegant one story wood frame cottage features a masonary fireplace, bay windows, master bed and bath, and a loft bedroom. A studio apartment is adjacent to the cottage, and features a marble exterior.



The Site

Danby Four Corners ,VT

Existing Structures

1/2 mile

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