RESIDENTIAL DEVELOPMENT TECHNIQUES
FOR NORTHERN MICHIGAN:
DESIGNING A DEVELOPMENT TO PRESERVE AND
PROTECT THE NATURAL FEATURES OF THE SITE

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Most of northern Michigan is rural with a few large cities or towns. Shoreline, trees, wildlife, and vistas dominate the area. These natural elements are what attract tourists, as well as seasonal and year round residents, to the state. This attraction has led to an increased growth in the amount of development occurring in northern Michigan, resulting in the loss of these natural features and the rural character of the area. This trend is especially evident in Leelanau County. This project demonstrates the design process for a rural residential development in Leelanau County that protects the natural features of the site. The project evolved through the design process from identifying the problem statement to documenting the final design.
INTRODUCTION

Current Development Trends
Conservation Development
High Density Condominium Development
For example, the term "sprawl" refers to sprawl, not small vil
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Michigan's small village
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developed on the lakeshore
sprawl, patterns between areas due
to people. It is considered a character
character, first place, land use.
Rural character is a hard term to verbally define yet easy to visually identify. It is a concept that refers to the relationship between the natural and built environment in a rural area. The relationship varies from state to state, county to county, and township to township depending on the type of natural environment and the amount of built environment. The elements that strongly dominate the landscape make up the various different rural characters across the country. For example, the upper peninsula of Michigan has a rural character composed largely of woodlands and wildlife. Single family homes and small villages dot the landscape, while farms are scattered few and far between (Wyckoff 5). The rural character is native and wild which contrasts greatly with central Indiana which is composed of large expanses of cornfields with a few farmhouses and hedgerows dotting the horizon. Topography varies little while the feel is quiet and tame.

The rural character of northwest Lower Michigan is dominated with a mix of forest and agriculture fields consisting of cherry trees. This area of Michigan is known as the “Cherry Capitol of the World” producing more cherries than any other region in the world. The orchards and farm buildings associated with them create a strong identity for the area as well as a strong rural character. While the natural elements may dominate the views, the limited built environment is just as important to the rural character. In northwest Michigan, the built environment is often characterized by the clustering of development around villages, farmsteads, and lakeshores (Wyckoff 6). With the continuation of rural sprawl, both the natural and built environmental patterns begin to fade. People often seek to live in rural areas due to their unique character. As more and more people move into the area and develop the land, the character begins to change resulting in a loss of rural character and the reason people moved there in the first place.

In response to this influx, counties and cities are beginning to counter this sprawl with land use ordinances that reduce lot sizes while preserving land for open space thus protecting
the rural character. Howard County, Maryland, for example, added a 10-20-30 percent open space option in their zoning ordinance. This option allows the builder to proportionally reduce the lot sizes as a greater percentage of open space is protected (Land Design 40). Another example are the nineteen towns and cities bordering the Connecticut River Valley that joined together to develop a plan for their future and the protection of the natural resources. The plan included changes to the zoning ordinance, recommendations for by-law amendments, and design regulations for new land uses (Yaro iii). These are just a few examples where the citizens are fighting to protect the natural features of the land while still encouraging growth.

Several different techniques exist to help prevent the loss of rural character and reduce the impacts of development. One is to do nothing and allow the current development trends of the area to continue. Large-lot zoning is the basis of the current trends and, if established correctly, helps to prevent rural sprawl while protecting the character of the area. Another technique is conservation development using open space zoning and residential clustering. This approach focuses on the natural features of the site preserving as much as possible. Developing using high density condominiums is the last technique. High density condominiums protect most of the natural features by decreasing property ownership. Though several development techniques exist some may work better than others may at reaching the project goals.

Current Development Trends

Currently, the development allowed in Northwest Lower Michigan is large-lot zoning ranging anywhere from two to ten acre parcels. Large-lot zoning is thought to protect the farmland and woodland, thus protecting the rural character, by keeping the density of the built environment down (Arendt 1994 281). This concept works best if the minimum lot size is large enough to deter individual homebuyers from purchasing the land. The minimum size also needs to be large enough to keep farmland in blocks that can still produce a profit or woodlands in blocks large enough to supply adequate habitat.
habitat for a variety of flora and fauna.

Large-lot zoning discourages the encroachment of non-farm development into farming areas keeping the farmland intact and not divided into several sublots (Daniels 1997 117). If the lot sizes are too small, a residential buyer may purchase them, build a home, and allow the rest of the site to grow naturally. The disruption may reduce wildlife habitat and turn agricultural fields into open prairie, therefore changing the existing rural character. Consequently, large-lot zoning may also increase the consumption of rural land by forcing residential lots onto large expanses of land.

The lot sizes allowed in Northwest Lower Michigan, especially at the higher end, are of a low enough price that residential homebuyers are able to purchase the land. This means the current development trend of six to ten acres is only increasing the rural sprawl. The distance between built structures is also slowly changing the rural character of the area. The lot sizes ranging from two to six acres helps to slow down the rural sprawl but still continues to disrupt and change the existing rural character.

Conservation Development

Conservation development focuses on protecting the rural character of the area while allowing for new residential growth. One conservation development tool used to protect the rural character of an area is open space zoning. This allows for residential development while “maintaining a strong sense of rural community character” (Wyckoff 7) and preserving the environmental resources. Open space zoning protects open areas on the site and establishes the preservation of open space, consistent with the rural character, as a primary consideration of the development. The dwelling units or lots are clustered together and become a fundamental component of the development but not the primary focus.

Clustered, in this context, refers to the grouping of dwelling units or lots onto a smaller portion of the site. This includes single family homes on individual lots or shared wall units surrounded by open space (Wyckoff 7). This results in the same overall density of homes only with open space designed into the site for the preservation of natural features and the use by all residents (Arendt 1996 2). The open space remains in the ownership of the housing association or may be sold to a nature conservancy. Clustering homes reduces the amount of infrastructure throughout the development, which also lowers the construction costs and increases the return on the investment (Land Design 32).

Often considered a planned unit development (PUD), open space zoning has a different focus. PUD’s are developments planned and built as a unit allowing for more flexibility in density, open space, setbacks, and other design elements (Mesenberg 19). Most PUD’s place primary emphasis on the clustering of homes around common areas in order to minimize the infrastructure costs. This results in less of a focus toward the development and protection of open space. Open space
developments also retain more open common areas than traditional planned unit developments. Furthermore, PUD's are usually located in more urban or suburban areas to counter traditional subdivisions rather than as an alternative to strip residential development often seen in rural areas (Wyckoff).

Three fundamental components characterize open space zoning. The first is that a significant portion of the site is protected as permanent open space. Second, the clustering of residences maximizes the quality and quantity of open space on the site. The last component of open space zoning is that the site maintains a low visual impact especially along the public roadway. The third component is particularly important because the rural character that a person perceives of a specific area is largely formulated on the experience along a roadway corridor. If the corridor changes from the natural rural character to one more dominated by strip residential development then the perception of the character has been altered dramatically (Wyckoff 8).

Open space zoning has many other benefits besides creating a good living environment and protecting the rural character. Open space brings visual order to an area and can act as a visual and physical buffer. The protected common areas break up large developments and increase the sense of privacy to the residences by minimizing through traffic. Preserving natural land protects sensitive or important features including wetlands, forests, shorelines, and steep slopes. Features like these are very difficult and quite costly to replace once they are gone. Developing parks encourage many forms of recreation especially when linked together through a path system for pedestrian and bicyclists (Land Design 40). Providing open space throughout a residential development enhances the character of the design as well as the overall value of the community. Open space zoning allows farmers to continue farming in protected open space areas, while receiving the value of the land for residential purposes. It also assures the existing rural residences of the maintenance of long term rural character currently found in the area (Wyckoff 8).

High Density Condominium Development

High density condominium developments look at protecting the rural character of the area in a similar way to conservation development. In this context, condominium refers to dwelling units that are attached and share a common wall. A single building contains only a few units and each unit is owned separately. While each dwelling is purchased separately, the surrounding land is held in a trust by the condominium association charged with maintaining the land. Each dwelling unit owner is part of the association and pays a monthly fee for the upkeep of the grounds.

With the dwelling units each sharing one or two walls with another unit, special considerations are needed to accommodate the automobile. Single family detached homes incorporate parking into the overall design with driveways; condominiums require parking lots. This feature detracts from the visual effect of the streetscape if not minimized from the viewsheds of both the dwelling
INTRODUCTION

units and street. The placement of small garages or carports in parking lots help to break up the rows of parked cars and even hides them from view. Planted islands also effectively screen the views (Land Design 61).

Condominiums help preserve the rural character of the area by protecting more of the natural features and agricultural land. Less infrastructure is needed for automobile traffic and less land is used for development. Condominiums are not a common rural characteristic and too many of them can detract from the existing conditions.
GEOGRAPHIC CONTEXT

Setting
Context
Site
Project Setting

Northern Michigan is known for its rural character consisting of an extensive, beautiful shoreline, numerous towering forests, breathtaking vistas, and abundant wildlife. These attributes form the basis that attracts tourism and seasonal residents. With an increased demand for access to the natural areas, a corresponding demand for residential growth has taken place. Families travel to northern Michigan and want to settle down. With all of the available land open for development, families purchase a few to several acres and build a house. Those acres then become private property for only that family and a few relatives to enjoy. The increased demand also results in developers looking less at the landscape and natural characteristics and more at the number of lots that can fit on a site. This causes a conflict between the preservation of natural characteristics of the land and the demands of residential development. Without the presence of regulations or exemplars to control residential development, the natural, rural areas of northern Michigan are left unprotected and in danger of elimination. The continuation of this form of rural sprawl promotes the extinction of northern Michigan’s natural features and rural character resulting in a loss for future generations (Arendt 1996 xviii).

The site for this project is located in Leelanau County, Michigan which, if picturing
Michigan as a mitten, occupies the tip of the pinkie finger. See Map of Michigan. In terms of area, Leelanau County is the second smallest county in the state at three hundred forty-one (341) square miles. Leelanau County is approximately four (4) hours northwest of Detroit and directly north of Traverse City, the largest city in the area. The population of Traverse City ranges between fifteen and twenty thousand (15,000-20,000) depending on the time of year. As seen in the map, both the state of Michigan and the county of Leelanau are peninsulas surrounded by the Great Lakes. The two islands located just off the coast of the county to the northwest are part of Leelanau County but are owned by the national government as part of the Sleeping Bear Dunes National Lakeshore. The national lands also extend across the water into Cleveland, Glen Arbor, Empire, and Kasson.
Townships. Most of the park is found within the first three townships with the exception of a few scattered areas located in Kasson. See Map of Leelanau County. Other large tracts of public land in the county include the Pere Marquette State Forest and the Leelanau State Park.

Winter weather is a key issue for development and character in Leelanau County and the rest of northern Michigan. During the average winter season, Leelanau County receives one hundred thirty-five (135) inches or approximately eleven feet of snow with the county high recorded in 1995-1996 at two hundred thirty-one (231) inches. This creates a large accumulation of snow on the ground and roads. With consistently cold weather in northern Michigan, the snow melts slowly, if at all before April, leaving the ground covered for most of the season. Because of this, the road crews must be very efficient and timely when it comes to clearing the frozen crystals from the road in order to keep ahead of the. Trucks and crew are out before the first snowflake lands but with the large quantity collecting on the roads, only highways and major county routes are cleared completely. Minor routes and residential streets are often covered with compacted snow. Travelers learn to drive on these conditions and plows rarely reach the pavement to do serious damage to chip and seal construction roads. When the snow finally does melt with the encroachment of warm weather, water is channeled to the numerous lakes and percolates the ground rather quickly due to the sandy soil.

The accumulation of snow and cold weather also creates great opportunities for outdoor sporting activities in Leelanau County. A few of these include skiing, both downhill and cross-country, snowshoeing, outdoor ice skating, and ice fishing. Conditions are excellent for skiing in northern Michigan with a little cold weather, varying topographic changes, and lots of snow. Snowshoes emerge soon after and take to the trails around the county. Outdoor ice rinks appear in the villages creating a winter scene right off a postcard. A flat park is flooded with water, freezing the surface and creating a rink, while piles of snow define the edges. Ice fishing begins as soon as the interior lakes are covered with a thick layer of ice. Snow adds a frozen element to the rural character of the area in the winter while creating sporting opportunities most southern cities do not experience.

Water plays an important role in the character of the county, in the liquid state as well,
even without considering the county as a peninsula. Surface water coverage of Leelanau County is 8.2 percent or approximately eighteen thousand one hundred (18,100) acres. Another 4.2 percent of the area is considered wetlands increasing the dominance of water in the area. A large majority of the water is contained in Lake Leelanau running north/south through the county and the wetlands area directly to the south of the lake. The other large water surface area is Glen Lake located in the western portion of Leelanau County. All of this water, including the Great Lakes, creates several thousand miles of shoreline for residential development, aesthetic pleasure, and wildlife habitat.

Area Context

This shoreline creates the greatest attraction for tourists and full time residents. It is because of this that the population numbers of Leelanau County have continued to rise over the years. More and more people are starting to make the county their place of full time residency. Since the 1980 census, the population has grown approximately twenty-four percent (24%) from fourteen thousand (14,000) persons to eighteen thousand four hundred (18,400). The majority of this growth occurs in four townships, Bingham, Elmwood, Solon, and Suttons Bay, which are centered on Traverse City. Leelanau County has benefited greatly from its close proximity to this major city. Much of the new residential development occurring north of Traverse City has expanded into Leelanau County and the four growing townships mentioned above. The other townships continue to grow but the distance away from a major city and the location and extent of Sleeping Bear Dunes National Lakeshore along the west coast have limited the amount of development.

Three incorporated villages are found in Leelanau County: Northport, Suttons Bay, and Empire. See Map of Leelanau County. An incorporated village is governed by a village council and government officials with defined boundaries and a post office. All three are located on the water though only Northport and Suttons Bay have marinas. Of the three incorporated villages in the county, Northport has the highest population within the county, roughly three thousand (3,000).
population with approximately 625 people living within its boundaries. Suttons Bay follows close behind with approximately 600 people and Empire finishes off with approximately 400 people. The lower population numbers of Empire are relative to the size of the village. With the Sleeping Bear Dunes National Lakeshore to the north and south of Empire, little room is left for expansion and growth.

Several unincorporated villages inhabit Leelanau County. An unincorporated village is simply a population center governed by the next level of government, which, in this case, is the township. It also has a name and a post office for easier mailing in the county. Because these villages are not incorporated and have no defined boundaries, census information cannot be separated out for them and all population numbers are estimates. The unincorporated villages in the county include Cedar, Greilickville, Leland, Maple City, and Peshawbestown. Leland and Greilickville have the highest
population numbers at approximately two hundred (200) people each with Leland housing most of the county governmental buildings and Greilickville acting as an extension of Traverse City. The other three villages mentioned have a population of approximately one hundred (100) people. Peshawbestown is Native American tribal land covering six hundred acres (600) and is technically a separate nation outside the jurisdiction of the state of Michigan.

The site for this project is located one and a half (1½) miles east of Suttons Bay at the base of another peninsula, Stoney Point. Two residential areas exist near the site creating population centers of approximately one hundred (100) people. One lies directly east of the site, Stoney Point Homes, composed of single family detached homes situated on one acre or larger lots near the water. The second, York Apartments, is located three miles south of Suttons Bay creating the only apartment complex in the county.

The site resides in Suttons Bay Township, one of the fastest growing in the county in terms of population, and consists of one hundred ninety-seven (197) acres. It is situated in a prime location for development in Leelanau County with Suttons Bay village less than two miles to the west, a new housing development across the street to the east, and Traverse City only thirteen miles to the south, just a short distance for a job commute. This site is not far from the water and close to a major county maintained road allowing for easier access during all seasons. See Context Map.

Most residential growth that occurs in Leelanau County happens along the shore of the
Great Lakes and all land locked lakes. Following the current trends of building along the shoreline, little or no land will be available for new development in the future. Decreasing available land and the ever-increasing cost of water front property is causing more development to occur away from the water. The site has no direct contact with water, and only one place for a visual connection, but is close to several public access sites. The site also contains several natural characteristics with hardwood forests, open fields, and orchards, all of which help define the rural character of the area.
Project Site

The site itself is shaped like an upside down L with the exclusion of three acres in the southeast corner. See Site Map. Vegetation on the site includes hardwood forests, open fields, and apple and cherry orchards. With the area known as the Cherry Capitol of the World, orchards are located everywhere. The cherry orchards on the site vary in age from mature and dying trees to young saplings. A working cherry farm resides on the property and is part of an enterprise that harvests several hundred acres around the area. The topography of the site is gently rolling with one high point on the east and west side. The roads surrounding the site are made with chip and seal construction with the speed limit set at thirty-five miles per hour. New subdivisions line the site on the southeast side and are divided into approximately one-acre lots. A few residential units, a cherry orchard, and the continuation of the hardwood forest surround the site to the south. Hardwood trees line the site to the west while a few more trees and orchards define the border to the north and northeast.
ESSENTIAL PROJECT ELEMENTS

Client
Assumptions
Goal / Objectives
Program Elements
Client

The project client is a developer wanting new and innovative designs for his residential projects. He works closely with the owner of the site who would like to develop the site while protecting as much of the orchards and woodland as possible. As the owner and operator of the farmstead located on the site, Leon Olmstead, places strong importance on the protection of the farm buildings located in the center of the site and the surrounding orchards for economic and life sustaining reasons. With this in mind, the client would like to see the development maintain a net density of two acres per home without creating a large disruption in the owner’s harvesting practices.

Assumptions

The following assumptions were developed before the site was chosen and are, therefore, not site specific but rather region specific.

Based on demographic trends derived from the census data, available economic information, and conversations with local officials, it is assumed that the residential growth will continue in Northern Michigan and the market for new homes will persist. It is understood that the community will be receptive to an environmentally sensitive design consisting of single family detached housing. The new development would be open to children and adults of all ages and will cater to year around residents.
Goal / Objectives

Goal:

To develop a housing development in a rural setting in Northern Michigan that protects as many natural features as possible while accommodating development expectations in a harmonious manner.

Objectives:

Several objectives are needed to reach this goal beginning with the protection of the natural features. The design will protect the woodland areas and open fields as much as possible. These features help create the rural character of the area and blend the new development with the existing conditions. Preservation of the focal viewsheds will occur in the development with the layout of individual parcels. The parcel layout will allow the views to be enjoyed by all residents in the development not just a select few. The viewsheds also help to protect the existing rural character. Another element considered in the protection of the natural features is the farmland consisting of orchards. The design will preserve most of the farmland for agricultural use while buffering the fields from the new development. This will add to the safety and aesthetic value of the design. Strong emphasis is placed on the natural features because of their identity with the rural character and their importance to the surrounding context.

The other group of objectives confronts some of the characteristics of the development. The design will minimize the number of curb cuts along county maintained roads for the use of individual driveways. This will help eliminate the repetition of houses along the road that disrupt the viewshed. The road structure of the design will not contain dead end streets, such as cul-de-sacs, for safety and community purposes. Dead end streets create a neighborhood feeling only along that street. Without them, a neighborhood feeling will develop throughout the entire residential area creating a united community and not several divided communities. The development characteristics help protect the rural character and natural feel in the area.
**Program Elements**

After discussing the goal and objectives with the client and county officials, several program elements were established for the residential development. These elements were broken into two groups consisting of development features and recreational trail requirements. The first development feature confronts the residential lots. A specific lot size was not established but the net density will fit the zoning ordinance of two acres per home. Access into the site is another development feature and will only occur from the county roads along both the east and west borders. An entry feature will identify the new development at each of these access points. Both the client and county officials agree that the roads running throughout the site will consist of chip and seal construction to match the surrounding county roads. These roads will not have curbs, making snow removal easier, but will have a ditch on both sides for sufficient water drainage. All of these features help establish a residential development that follows the character of the area.

The client also wanted to include a recreational trial into the development. This trail will be by walkers, joggers, cross county skiers, or snowshoers. For this reason, the trail will not be a hard surface that absorbs heat, consequently, melting the snow in the winter. The trail surface will consist of crushed gravel for use during all seasons while still maintaining a natural feel through the development. The trail will connect with most residential lots for easy access. Conservation easements will be established in situations where the trail crosses through or along a residential lot. Conservation easements restrict the construction of buildings in the natural environment and limit the destruction of existing vegetation. They also help maintain protective corridors for animal migration and habitat. These requirements will help established a safe and natural feeling trail in the new development.
SITE INVENTORY AND ANALYSIS

Residential
Tree Vegetation
Orchards
Open Fields
Topography
Views
Synthesis Map
Residential Development

by the Committee, the development, due to the strength of the City Map.

large-scale development of residential development. The surrounding areas of the development...
Residential

An existing farmhouse is located just northeast of the site center. It is a working farm operated by the owner who harvests a large majority of the cherry orchards in the Suttons Bay Township peninsula. These buildings should remain on the site because of their strong influence in the area. It helps to strengthen the cherry orchard identity on the site and rural characteristics of the area. See Residential Map.

The other residential dwellings surrounding the site are situated on lots two acres in size or larger. Those to the south have a narrow width and a long length, as do those to the north. The dwellings to the east begin the new Stoney Point Homes development, which extends to the water. The surrounding residential units fit the zoning requirements and are an example of rural strip residential development.
Tree Vegetation

Two areas of hardwood forest exist on the site, one in the northwest corner and the other in the far southern end. The vegetative makeup of both consists mainly of maples and birch with a few beech and oak trees. Though the trees only cover approximately 11 percent of the one hundred ninety-seven (197) acre site they are important elements on the site because they connect with areas surrounding the property and help define the rural character of the area. Destroying this hardwood vegetation cover would destroy an important piece of the natural features on the peninsula and change the perception of rural character.

The other hardwood trees on the site exist in a single row, running north and south, which divides the middle eighty (80) acres of the site in half. The trees are poplars and define separate areas of the site while also showing a piece of history. The straight line might have defined the boundaries of an orchard or agricultural field in its past. Their columnar shape enhances the narrow wall they create and should remain in tact as much as possible to connect with the past and break up the development.

A single clump of willows comprises the last small area of canopy cover, with the exception of the vegetation surrounding the farmhouse. These willow trees supply the last piece of mature shade trees and would be a valuable asset to a new residential development. For this reason, the willows should be protected as much as possible from removal or destruction in the design. See Vegetation Map.
Orchards

Orchards cover approximately ninety acres of the site and consist of apple and cherry trees. The apple orchard is small and occupies the northwest corner of the site. The other clearly defined tree rows on the site are made up of cherry trees. The orchards consisting of cherry trees are divided into three categories according to age. The first category includes the trees found in the northeast corner of the site. These trees are young seedlings and still have an entire lifetime of cherry production ahead of them. The next category consists of those trees found south of the farmhouse entry road and east of the willow patch. The mature trees found here are past their prime in cherry production. These trees can either be replaced with new saplings or removed and the land used for a different function. The removal of several trees has already occurred in this field because of old age and safety reasons. The last category of cherry trees are those not classified as saplings but still have several years left of great cherry production before they are past their prime. The remaining cherry orchards on the site fall into this category. The first and last categories of cherry orchards should be protected from development in the design. They are an important identity element for the rural character of the entire area as well as a great natural feature that enhances the site and connects with the surrounding context. See Orchard Map.

The orchards on the site and in the surrounding area are important to the economy of the township. Suttons Bay Township has the second largest agricultural economy base in the county at forty (40) percent. Bingham is the first with forty-five (45) percent. This means that the orchards on site not only add to the rural character of the area but they also support the survival of many township residences. The strong agricultural economy base adds to the support of protecting the orchards as much as possible.
Open Fields

The remaining land on the site is open field that enhances the natural rolling topography of the site while providing a variety of colors throughout the summer. This land possesses the greatest opportunity for residential development since it offers the least amount of destruction of natural features on the site, though the characteristics of the fields should be integrated into the design so as not to eliminate the element altogether. Along with the mature orchard, these fields create a large piece of land needed for the residential development. By using this land, more natural features and vistas are preserved on the site for all to enjoy. See Open Field Map.
Open Field Map
Topography

The topography of the site slopes down toward the northwest corner with two slight plateaus in the center and northeast areas of the site. The northeast portion of the site contains the greatest topography change covering the woodland, apple orchard, and some cherry tree fields. Two high points exist on the site, one in the southwest and the other in the southeast. The high point in the southwest is located at the bottom edge of the site and overlooks the open field, tree row, and part of farm buildings. Woodlands, open fields, cherry orchards, and the farmhouse are included in the panoramic view from the high point in the southeast. The topography allows for development to occur in the center of the site and still be blocked from the road. This helps protect the rural character of the area and discourages non-residential traffic through the development. See Topography Map.
Views

Most of the views into the site from the road are blocked by vegetation in the form of hardwood trees or cherry trees. The topography also helps block these views by varying the elevation inside the site as compared to the road. The views into the site should remain filtered because they enhance the rural character by limiting the visual impact of the built environment. Any development occurring on the site should, therefore, be screened from view by passing travelers.

Views from inside the site are directed towards the woodland or orchard edges and the farmhouse. The best vistas are located on the high points of the site because a large expanse of the site can be seen from them. Visual sight lines to the farmhouse should main throughout the new development for the preservation of rural character and site history.

Views looking out of the site are just as important as those looking in. Sight lines off to the east are directed toward the hardwood trees or the water. The vista to the water is the only spot in the site where visual access to water is available. For this reason, and the importance of water to the area, the vista should be protected and made available to the most number of people. The rising topography and vegetation obscure other views out of the site and hide the residential units to the east and southwest. See Viewshed Map.
Synthesis Map

The following map layers all the important inventory features onto one site map. The grouping of orchards and vegetation clearly shows the relationships to each other and the location of open fields. The topographic high points and views into and out of the site are also included. The surrounding roads and residential units complete the inventory. See Synthesis Map.
Concepts

Concept 1: Current Township Development Trends
Concept 2: Conservation Development
Concept 3: High Density Condominiums
Concept Sections
Three development concepts were designed for this project, each using a different development technique. The first demonstrated what would happen if the current development trends of Suttons Bay Township continued. This explored subdividing the site into two-acre parcels to match the residential dwellings to the north, south, and west. The second technique illustrated conservation development and the protection of open space within the development. With this concept, the developed area concentrated in the southern portion of the site protecting the northern portion for agricultural use. The last development technique was high density condominiums that protected the natural features on the site. This focused the development into the center preserving the site borders.
Concept 1: Current Township Development Trends

Current development trends in Suttons Bay Township require a minimum lot size of two acres. In order to meet fully the guidelines for development, the site is subdivided into two-acre or larger lots with access roads to reach the interior parcels. See Current Township Development Trends. With the lot lines drawn in dashed lines, it is clearly visible that little of the rural character of the site is preserved. This type of development encourages rural sprawl through the private ownership of large parcels of land. With the exception of one cherry orchard field remaining in the northeast corner of the site, the strong agricultural base is lost to private homeowners. The farmhouse would be torn down, and with the farmer still owning the remaining orchards, no open space is available for community enjoyment.

Subdividing the site also increases private ownership of the site's natural features. The wooded areas to the northwest and south are not protected anymore and have the potential of being destroyed. They may remain on the site, but the final decision of how they are maintained is not based on the benefits for the development or the region but rather by the individual homebuyer. Current development trends may protect some of the vegetation but might destroy the connections to other vegetated areas.

Private ownership also affects the views. Views into and out of the site. With the numerous curb cuts along the county maintained roads for use of individual driveways, the visibility into the site is focused on the built environment instead of the natural features. The topography only enhances the homes along ridges and high points by making them focal elements in the landscape. The orchards that previously screened views into the site are replaced by homes that detract from the rural character of the area. Once in the site, the strong built focal element of the farmhouse is gone, along with the rural character and importance of agriculture to the economy. The clearly visible elements become the homes themselves and the character they bring with them. Views out of the site that remain unobstructed by rooftops are visible from only a few lots instead of available for everyone in the development to partake.

Continuing the current trends of the township would follow the existing development to the north, south, and west and protect some of the vegetation and orchards, but the feeling of a community or neighborhood is not evident. Nothing bonds the homes or lots together. The subdivision of the site is unplanned and without reason. Individual land pieces may sell at different times encouraging dead end roads and varying lot sizes and shapes. Current development trends encourage rural sprawl and the change of rural character in the area.
Current Township Development Trends
Concept 2: Conservation Development

Conservation development protects the natural features on the site by not developing the entire site. Areas are preserved for open space, or uses other than development, reducing rural sprawl. The residential units are clustered together onto smaller lots but maintain the overall net density required in the zoning ordinance on the site. This establishes open areas that can never be built upon without violating the ordinance. The lot layout is planned out before development occurs establishing a residential community on the site with open space for all to enjoy. Conservation development places emphasis first on the protection of the natural features and second on the residential component resulting in the protection of the area’s rural character.

The built area on the site, using conservation development, focuses the residential units into the open fields and the edges of the woodland areas. See Conservation Development. The open fields are used with the exception of the high point in the southeast section of the site, but the characteristics of the open fields are maintained along the roads and throughout the development. This helps blend the new development with the existing conditions. The woodland areas are also used for residential development with the least amount of trees removed or destroyed especially along the road. Most of the woodlands areas are protected to preserved the rural character, limit the visual impact of the development along the roads, and connect the site with surrounding forest ecosystems. Both the tree row running through the site and the clump of willows in the open field are protected as much as possible to add mature shade trees in the new development.

Most of the orchard fields on the site are maintained with conservation development. The cherry sapling trees and those in prime cherry production, along with the apple orchard, are preserved with this development technique because of their strong importance in the agricultural economy and in the rural character of the area. The farmhouse is saved to continue harvesting the orchards of the area, add identity to the development, and maintain the site’s central focus. The large cherry orchard field removed from the site is that in which the trees are old and past their prime in cherry production. Developing this area does not affect the agricultural economy of the area because these trees are not currently harvested for their fruit production. Mature cherry trees in this area that are in good condition and do not cause concern for safety will remain in the development to identify with the past and connect with the existing conditions.

Developing the site using conservation development matches the new residential subdivisions to the east and protects the viewsheds. The vegetation and orchards still block the views into the site while the farmhouse remains the focal element in the site. Viewsheds out of the site are protected and available to the entire community. Conservation development protects the natural features of the site for the benefits of the community and the rural character. While open space is designed into the development, homeowners still have their own lot for private outdoor space.
Conservation Development
Concept 3: High Density Condominiums

High density condominium development uses attached single family residential units to protect the natural features on the site and reduce rural sprawl. Open space is again protected and designed into the overall layout of the site. This development technique requires the integration of parking spaces, lots, or carports where the two previous techniques used driveways for parking. This clusters all of the hardscape surfaces together, though, and eliminates any unnecessary paving. Most of the site is protected as open space and available for the entire community, although little outdoor private space is designated for the individual homeowner.

The condominiums are focused toward the center of the site in the open fields and away from the roads. See High Density Condominiums. Not all of the open fields are used for the development leaving the natural conditions to preserve the rural character. Less blending of the natural elements occurs with the condominiums because the buildings are attached, placing more emphasis on the transitions between buildings. With the high density condominiums, none of the wooded areas are developed. The tree row separating the two development sections is only disturbed for the road and pedestrian connections. The trees divide the development while also binding the two in a unique environment. All of the vegetation on the site helps to preserve the rural character and screen the development from the road.

Similar to the wooded areas, none of the orchards on the site are removed with the condominium development. The old, mature cherry orchard field is replaced with young saplings and harvested along with the other fields. This new field helps to strengthen the agricultural economy of the area by adding to the acreage. Screening the development from the east access road is limited with the young trees but will increase with the age of the trees. Cherry trees add to the identity of the area and reinforce the rural character. The farmhouse also adds to the rural character and shows the importance of cherry harvesting on the economy.

More of the significant viewsheds are protected with high density condominium development. The two high points on the site are protected in open space and available for the entire community to view. The farm buildings still act as the central focus with a strong backdrop of cherry trees.
Concept Sections

The following sections each relate to one of the three concepts. They help show how the site would feel in terms of open space if each different development technique was used. For easier comparison, the same residential unit was used in each section. Notice the spacing between homes and compare the amount of open space for each concept.
CONCEPT COMPARISON

Concept Comparison
Numerical Comparison
Concept Comparison

All three concepts have their positive and negative areas. In order to help identify the best development technique for the site, they were compared to each other and evaluated using the same eleven criteria. The criteria were developed based on the needs of the site and client from the objectives, program elements, and key inventory features. See Matrix 1.

Several of the objectives were used to compare the three concepts. The woodlands, open fields, and viewsheds and how well they are preserved with each development technique, were the first areas to evaluate the techniques. After looking at the expanse of the developed areas in all three concepts, high density condominiums protected the all of the woodland areas and focal viewsheds while only preserving some of the open fields. Using the conservation development technique of open space zoning, most of the woodlands and open fields were protected, while all of the focal viewsheds were saved. Of these three evaluation categories, more emphasis was placed on the viewsheds because of the importance in maintaining the visual character from the road and in the site.

Another important objective used for comparison was maintaining the existing farmland for agricultural use in the form of orchards. With a strong emphasis on cherry production, maintaining the current level was important for the area identification. This category related closely to the one focusing on the individual orchards. Preserving them also plays a crucial role in the production of cherries. In both cases, high density condominium development enhanced the production level by replacing the mature, old trees with new, young saplings. This added to the farmland while increasing the orchards. Conservation development maintained the same area of farmland and productive orchards only removing the old trees that are past their prime. Current development trends destroyed most of the farmland and existing orchards. These two categories, although closely related, are very important to the rural character of the area and were given stronger consideration in the evaluation.

Limiting county road access for individual driveway use was the last objective used for comparing the three concepts. By following current development trends, the objective would not be fulfilled because of the numerous curb cuts. Both conservation development and high density condominiums fulfill the objective by creating no access points off existing county roads for individual driveways. These development techniques have all driveways extending from roads running through the site. This objective was not highly stressed in the final comparison.

Maintaining a net density of one home for every two acres was the first of two program elements to evaluate the concepts. All three development techniques meet the zoning requirements, but the open space zoning technique introduced a more creative design allowing for more options in preserving the natural features. This is an important evaluation category for the site and was highly stressed in the comparison. The second program element used was the preservation of
habitat on the site for wildlife. Current development trends saved little habitat while the other two techniques protected the corridors and saved some of the existing habitat. This is achievable through conservation easements and limited land division.

Property ownership is the first of three key inventory features used to help compare concepts. This category identifies the best development technique that blends an equal amount of private land and public open space on the site. Conservation development best suits the qualifications with a mix of both land ownership types. Current development trends establish only private land while high density condominiums have mostly public open space with little private land. The second key inventory feature is whether or not the type of development matches the surrounding context. Current development trends fit this category best, blending with development to the north, south, and west. The conservation development technique matches new development to the east while high density condominiums do not match any of the surrounding development. This category also received greater emphasis in the end because of the importance to the rural character and identity. The last category has the greatest importance in the comparison because it identifies the development technique that best protects the rural character of the area. Of the three concepts, conservation development using open space zoning was the most appropriate development technique for this category. This type of development limits rural sprawl and protects the views from the road. Continuing current development trends disrupts the view from the road and places emphasis on the built environment, which changes the existing rural character. This results in a loss of identity that is saved when developing with conservation strategies.
<table>
<thead>
<tr>
<th>Design Elements</th>
<th>Current Development Trends</th>
<th>Conservation Development</th>
<th>High Density Condominiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road Access</td>
<td>Numerous curb cuts</td>
<td>No curb cuts</td>
<td>No curb cuts</td>
</tr>
<tr>
<td>Woodlands</td>
<td>Some vegetation preserved under private ownership</td>
<td>Most of the vegetation preserved</td>
<td>All of the vegetation preserved</td>
</tr>
<tr>
<td>Open Fields</td>
<td>One field saved</td>
<td>Some of the fields saved</td>
<td>Some of the fields saved</td>
</tr>
<tr>
<td>Habitat Preservation</td>
<td>Little to no preservation</td>
<td>Continues corridors, protects most habitat</td>
<td>Protects most habitats</td>
</tr>
<tr>
<td>Property Ownership</td>
<td>Only private land</td>
<td>Mix between private land and public open space</td>
<td>Little private land, mostly public open space</td>
</tr>
<tr>
<td>Viewsheds</td>
<td>Available from only a few lots, street view of homes</td>
<td>Preserve view to farmhouse, topo hide development, focal viewsheds available to all, view from house all directions</td>
<td>Preserve view to farmhouse, topo hide development, focal viewsheds available to all, view from house not all directions</td>
</tr>
<tr>
<td>Orchards</td>
<td>No fields saved</td>
<td>Saplings and trees in prime production saved</td>
<td>All the orchards saved</td>
</tr>
<tr>
<td>Farmland for Agricultural Use</td>
<td>Decreases the agricultural economy</td>
<td>Maintains the agricultural economy</td>
<td>Maintains and adds to the agricultural economy</td>
</tr>
<tr>
<td>Zoning</td>
<td>Continues current zoning requirements</td>
<td>Creative design that fits the zoning requirements</td>
<td>Fits zoning requirements</td>
</tr>
<tr>
<td>Surrounding Development</td>
<td>Match most of the surrounding development</td>
<td>Match part of the surrounding development</td>
<td>Does not match any of the surrounding development</td>
</tr>
<tr>
<td>Rural Character</td>
<td>Disrupts view from the road, emphasis on the built environment</td>
<td>Protect rural character, limits rural sprawl, protects view from the road</td>
<td>Limits rural sprawl, protects view from road, not consistent with the rural character of northern Michigan</td>
</tr>
</tbody>
</table>
Numerical Comparison

To compare the techniques statistically, a numerical value was given to each concept. Each concept received a number between zero and two in every category depending on how well it met the objective or program element, or protected the key inventory feature. The points were then totaled for easier identification of the best development technique for the site. The complete results of the comparison are shown in Matrix 2.

After all the categories were totaled, the second concept of conservation development using open space zoning ranked the highest with seventeen (17) points. High density condominiums followed close behind with fourteen (14) points. The difference separating the two concepts was only three points, but the conservation development technique gained a larger lead when the categories emphasized more in the design were weighted heavier in the comparison by doubling the numerical value. These categories included the viewsheds, orchards, farmland for agricultural use, zoning, surrounding development, and rural character. The lead over high density condominiums then increased to six points. The concept using current development trends also increased in value but was still far behind the other two development types. With the best development technique identified through the matrixes, the objectives, program elements, and key inventory features helped developed a site plan that blends with the existing conditions and harmonizes with the natural features.
## Concept Comparison

<table>
<thead>
<tr>
<th>Design Elements</th>
<th>Current Development Trends</th>
<th>Conservation Development</th>
<th>High Density Condominiums</th>
</tr>
</thead>
<tbody>
<tr>
<td>County Road Access</td>
<td>0</td>
<td>2</td>
<td>1</td>
</tr>
<tr>
<td>Woodlands</td>
<td>0</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Open Fields</td>
<td>0</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Habitat Preservation</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Property Ownership</td>
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<td>2</td>
<td>4</td>
</tr>
<tr>
<td>Viewsheds</td>
<td>0</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>orchards</td>
<td>0</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td>Farmstead for Agricultural Use</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Zoning</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Surrounding Development</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Rural Character</td>
<td>2</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Totals</td>
<td>16</td>
<td>16</td>
<td>11</td>
</tr>
</tbody>
</table>

Note: The numbers represent the frequency or importance of each element as perceived in the different development trends. The table shows a comparison across county road access, woodlands, open fields, habitat preservation, property ownership, viewsheds, orchards, farmstead for agricultural use, zoning, surrounding development, and rural character.
SITE PLAN FOR ORCHARD HOMES

- Residential Development
- Recreational Trail
- Natural Features
- Ownership
- Rural Character
The design of Orchard Homes uses open space zoning and incorporates ninety (90) residential lots, including the existing farmhouse, on ninety-eight (98) acres of land. The remaining ninety-nine (99) acres, consisting of natural features ranging from woodland and open field to working farmland are completely preserved. Preserving this much land creates a net density on the site of 2.18 acres per home, which meets the current zoning requirements. Orchard Homes protects 52.5 acres of farmland for orchard fields, preserves 21.5 acres of woodland for resident enjoyment, and saves 31 acres for open space scattered throughout the development. These numbers total more than the original one hundred ninety-seven (197) because many of the natural features overlap with the new development but are protected with a conservation easement. The concept of the conservation easement is further explained with the details of the recreational trail.

The development technique chosen for the project was conservation development using open space zoning. The natural features and open space on the site were the primary focus, receiving attention over the recreational trail and the clustering of residential homes. After the open space preservation and the recreational trail was the secondary focus of the designing the layout of Orchard Homes. Placing this much emphasis on the trail assured that it would travel through a variety of ecosystems and have access to the greatest viewsheds on the site without the disturbance of residential homes. The last design element was the clustering of homes and layout of the roads. With the first two focus items already identified on the site, little variation was left for the homes. The site plan is explained in further detail according to these three focal areas, the natural features, residential trail, and residential development. For ease of explanation, the areas are described in the opposite order they were focused on in the design, starting with the residential development. See Orchard Homes Site Plan.
Residential Development

The new development on the site covers 92.5 acres with residential lots ranging in size from half an acre to one acre. The exact homes were not designed but homeowners are encouraged to include attached garages and front porches in a one or two story design. The porches help create a community feel and match the rural character of the area. In plan, the property lines of each lot are defined on the sides by a line with two dots and in front by the road right-of-way. The back lot line varies depending on the location of the property. Back lot lines are defined by the site boundary for those lots found along the site edges while lots with the trail running along the back extend to the trail. Properties with the trail running along the length of the lot also end at the trail creating a side boundary.

Along the west edge of the site, lots were established away from the road and are partially hidden by the sloping topography. This helps buffer the views from the street and creates some privacy for the residents. Orchard fields with abutting lots are buffered from the new homes with a vegetative screen. See Section Through Backyard and Buffer. This means a deciduous tree row is possible because harvesting and spraying do not occur during the winter month when the trees are without leaves. This vegetative screen is also needed along the east border of the site to hide the new homes from the street. Leaving a few of the mature cherry trees that do not create a safety hazard may help establish this buffer. Though the development may seem large, street views and orchard fields are protected from the new changes with some vegetative buffers.

The roads through Orchard Homes are not curbed for easier snow removal and added rural character. Preserving the rural character is also achieved by using chip and seal construction on the roads which matches the surrounding roads of the area. The streets consist of two twelve (12) foot lanes, one in each direction. On either side of the road is a three foot grass shoulder used for bikes or parked cars. Past the shoulder is a ten foot wide turf or vegetative ditch for water drainage and snow pile storage in the winter. The front yard begins after the ditch and ends at the home. The dimensions vary with the length of the front yard because the setback varies allowing for diversity within the development. The dimensions are visible in the section of the road on the following page.

Orchard Homes contains four entrances with two established as main entry points. Access into the site occurs only along the east and west boundaries with two entry points on each side. One road runs through the entire site and is defined as the main road with entry features at both entrances. The other established roads provide minor access with one end beginning or ending at the main road. Small open spaces were created opposite the intersection of the main road with the minor roads. This creates a pleasing view at the end of each road for the driver and guarantees that no home will have car lights shining in their windows at night.
SITE PLAN FOR ORCHARD HOMES

Section Through Backyard and Buffer

Section Through Road
Most of the streets through Orchard Homes follow the topography keeping the slope at a minimum. This also allows the roads to run along, but not disrupt, the woodland edges. By following the topography the high points are saved and emphasized by the recreational trail and pedestrian instead of the automobile and driver. Two focal views are available to the automobile and they are located close to the two main entrances. Driving into the site from the west main access allows a panoramic view of the site from atop the high plateau just before the homes begin. Leaving the site from the east main access provides a view over the trees to the water beyond. These views are protected and available to everyone not just limited to a few homes.
The two main access drives into the site are identified with a stone entry sign. The sign consists of Michigan fieldstone pillars, to match some of the surrounding homes, with a limestone face in between. Orchard Homes is etched into the limestone with Orchard on one sign and Homes on the other. See Entry Feature. The two pieces line both sides of the road, facing out, with evergreens and ornamentals providing a backdrop. Planted in front are small evergreen shrubs and low ornamental grasses for color and interest in the winter. See Entry Section and Plan. Annuals could be added in the summer for more color and attention.

*Entry Section and Plan*
Recreational Trail

The recreational trail running through Orchard Homes was the second element emphasized in the design. The users of the trail include walkers and joggers in the summer and cross country skiers and snowshoers in the winter. Because of the multi-seasonal usage of the trail, the material consists of crushed stone gravel to blend with the natural environment and reflect the heat of the sun in the winter. Keeping a six foot wide trail with four feet of prairie vegetation maintained on both sides also helps create a natural feel without disrupting the existing conditions too much. This produces a fourteen (14) foot wide trail in the winter after the snow falls, creating more room for the cross country skier or snowshoer. See Trail Detail.

The 2.6 miles of trial on the site travel in loops through several different ecosystems including open fields, woodlands, and orchards. The loops create unique trail connections as can be seen in the Trail Connection Section and the Trial Connection Plan. Eco-system diversity allows for a variety of visual changes to occur that hold the attention of the user along the trail. The diversity increases with the ever-changing seasons. Each of the different ecosystems contains a small node along the trail for resting and greater detailed observations. Each small stop contains a seating bench and trash receptacle for user convenience. Two large nodes also exist along the trail, one at the south edge of the site and another in the northeast corner of the site, featuring grill sites and fire pits.
trail, each identified with a pavilion. The first node is located at the high point in the southeast corner of the site. This node contains a small pavilion with seating benches for a great view to the water. The other pavilion is larger and located in the open field on the west edge of the site. Picnic tables, small grills, and a water pump are also found at this node creating a great place for group gatherings. See Pavilions. Both nodes have panoramic views of the entire site.

**Pavilions**

ALL WOOD CONSTRUCTION WITH FIBERGLASS SHINGLES
CONCRETE BASE

- SMALL PAVILION ALONG THE TRAIL FOR
- RESTING AND VIEWING THE WATER.
- LOCATED ON THE HIGH POINT IN THE
- SOUTHEAST CORNER, THE POLE
- OVERLOOKS THE SITE AS WELL. CONTAINS
- THREE SEATING BENCHES AND A RAILING
- ON THE SOUTH.

- LARGE PAVILION ALONG THE TRAIL FOR
- PICNIC EATING AND RESTING. HOLDS
- SEVERAL PICNIC TABLES AND A SMALL
- GRILL.

As mentioned earlier, many of the property lot lines abut the trail. In order to preserve the trail and its users, a conservation easement was established along the trail where it runs along a residential property. The easement forms a no build zone along the while protecting the existing vegetation. The conservation easement dimensions vary depending on the lot and location. See Winter Section Through Backyard and Trail. The two large woodland areas and the tree row are also protected by the conservation easement. Easement guidelines limit existing tree removal and protect the vegetation even though it is under private ownership. The conservation easement is necessary for the new development if recreational use of the trail is encouraged.

**Winter Section Through Backyard and Trail**
Natural Features

Preserving the natural features on the site was the first priority for the design and were identified as the woodlands, orchards, open fields, and viewsheds. Most of the woodlands were protect with the layout of the homes and with the help of the conservation easement. Part of the two large woodland areas are preserved through the easement while the tree line is only broken for the road and trail to cross through. The large willow clump remains intact located within an open space area among the residential lots. Preserving the woodlands helps to connect the site with the surrounding areas and maintain the existing wildlife habitat.

The apple orchard and cherry orchards in prime production are also preserved with the design. They are remaining as productive fields for the farmer to harvest each year. The old cherry field in need of replanting was removed, but several of the mature trees could remain in individual yards. These trees add to the buffer strip along the east road and are available for harvesting by the community. Keeping these trees adds to the identity of the area and provides a history for the community.

Much of the open prairie remains intact with the new development. Unlike the other two natural features, the open field is scattered throughout the development. Most of it lies along the western edge with several pockets amongst the lots. The open spaces are also found at the intersections of the major road with the minor ones. These spaces belong to the community and are available for recreational use by all residents. The open fields also help to protect the two high points located on the site.

Viewsheds are the last natural feature preserved on the site. The focal viewsheds are saved with the protection of the high points and are available to all residents, either by foot or automobile. Keeping the farmhouse maintains the focal point within the development while vegetation protects the views from the road. These are important for the residents in establishing a sense of community and identity.
Ownership

The ownership of the site is divided into three areas: land under private ownership, land owned by the housing association, and orchards where the nature conservancy owns the development rights. Each of the residential lots is owned by the individual resident placing the land under private ownership. This includes any existing woodland areas found within each property boundary, although they are protected with a conservation easement. With the establishment of a housing association, all of the open spaces and trail within the development becomes community owned. The association maintains the open spaces and recreational trail with annual fees collected from the residents, allowing residents twenty-four hour access to all of the areas. The remaining land areas of the site are donated to the local nature conservancy and are maintained according to their current use. This land includes the apple and cherry orchards and the northern section of woodland. The farm owner can continue to harvest the cherries for profit while selling the development rights, placing deed restrictions on the property.

Rural Character

Even with extensive development occurring on the site, the design manages to preserve the rural character of the site to match the surrounding areas. This was achieved by blending elements of the new development with existing context. This includes maintaining the surrounding density levels. To the east, the size of the residential lots matches those at Orchard Homes. These smaller lots reduce rural sprawl and protect the natural features while the larger lots promote sprawl and change the existing rural character. Keeping the same road materials throughout the development also helps to blend the new with the old. This creates an easier transition between the two areas.

Another way Orchard Homes protects the rural character is through the preservation of the existing views into the site from the street. This can have a large impact on a person's first impression when they visit the site. The impression is usually from the street and the design protects the viewsheds as much as possible. From the west, the existing woodlands remain while the rising topography helps to hide the new built structures. Views from the north and south remain the same with the continuation of cherry orchards and woodlands. Protecting the orchards also helps views from the east. Preserving some of the mature cherry trees from the old field and incorporating a buffer strip along the road softens other views from the east. These small details help maintain the existing rural character and enhance the new development.
CONCLUSIONS
The growth pressures in Leelanau County and Suttons Bay Township have resulted in the continuation of rural sprawl. This has led to development on hundreds of acres of forests, dunes, open fields, and orchards. With the continuation of current development trends, the relationship between the built and natural environment begins to change leading to a loss of rural character.

As more and more development is forced away from the water’s edge, the need arises for development techniques that protect the natural features and rural character of Leelanau County. Orchard Homes provides a prime example for land locked development that protects the area’s natural features and rural character through conservation development using open space zoning. Conservation development reduces the rural sprawl currently occurring in the area. Clustering homes while providing open space also helps preserve the rapidly declining natural features of northern Michigan. Farmland used for agricultural purposes is also protected with this development technique. The overall effects of this change in development result in the preservation of the area’s rural character.
BIBLIOGRAPHY
BIBLIOGRAPHY

Arendt, Hannah

Calthrop, A.

Daniel, H.C.

Land, J.

Meshel, J.

O'Malley, F.

Pivo, L.

Residues (1981)

Residues (1982)

Sander, E.

Unterman, C.

Wentle, W.

Whyte, J.

Wyckoff, W.H.C.

Yaro, J.
APPENDIX
### Land Use Percentages for 1990
*Provided by the Leelanau Planning Department*

<table>
<thead>
<tr>
<th>Land Use</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wooded Land</td>
<td>39.7%</td>
</tr>
<tr>
<td>Agricultural Use</td>
<td>24.3%</td>
</tr>
<tr>
<td>Open Land</td>
<td>15.6%</td>
</tr>
<tr>
<td>Surface Water</td>
<td>8.3%</td>
</tr>
<tr>
<td>Urban Land</td>
<td>6.3%</td>
</tr>
<tr>
<td>Wetland</td>
<td>4.2%</td>
</tr>
<tr>
<td>Barren Land</td>
<td>1.6%</td>
</tr>
</tbody>
</table>

### Percent of Economy Based on Agriculture
*Provided by the United States Bureau of the Census*

<table>
<thead>
<tr>
<th>Township</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bingham Township</td>
<td>45%</td>
</tr>
<tr>
<td>Centerville Township</td>
<td>32%</td>
</tr>
<tr>
<td>Cleveland Township</td>
<td>10%</td>
</tr>
<tr>
<td>Elmwood Township</td>
<td>24%</td>
</tr>
<tr>
<td>Empire Township</td>
<td>10%</td>
</tr>
<tr>
<td>Glen Arbor Township</td>
<td>4%</td>
</tr>
<tr>
<td>Kasson Township</td>
<td>24%</td>
</tr>
<tr>
<td>Leelanau Township</td>
<td>34%</td>
</tr>
<tr>
<td>Solon Township</td>
<td>22%</td>
</tr>
<tr>
<td>Sutters Bay Township</td>
<td>40%</td>
</tr>
</tbody>
</table>

### Population Estimates for 1996
*Provided by the Northwestern Michigan Council of Governments Townships*

<table>
<thead>
<tr>
<th>Township</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Bingham</td>
<td>2,400</td>
</tr>
<tr>
<td>Centerville</td>
<td>975</td>
</tr>
<tr>
<td>Cleveland</td>
<td>925</td>
</tr>
<tr>
<td>Elmwood</td>
<td>3,500</td>
</tr>
<tr>
<td>Empire</td>
<td>950</td>
</tr>
<tr>
<td>Glen Arbor</td>
<td>750</td>
</tr>
<tr>
<td>Kasson</td>
<td>1,275</td>
</tr>
<tr>
<td>Leelanau</td>
<td>1,875</td>
</tr>
<tr>
<td>Leland</td>
<td>1,900</td>
</tr>
<tr>
<td>Solon</td>
<td>1,475</td>
</tr>
<tr>
<td>Sutters Bay</td>
<td>2,475</td>
</tr>
</tbody>
</table>

### Incorporated Villages

<table>
<thead>
<tr>
<th>Village</th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northport</td>
<td>625</td>
</tr>
<tr>
<td>Sutters Bay</td>
<td>600</td>
</tr>
<tr>
<td>Empire</td>
<td>400</td>
</tr>
</tbody>
</table>