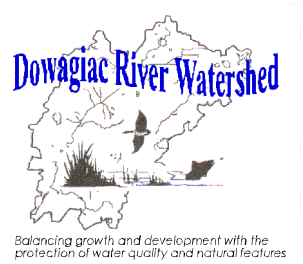


Watershed Resource Paper #5
Environmentally Sensitive Areas Protection

There are some features in any community that any resident would readily recognize as important to the character of the area and to their personal quality of life. These features are often the ones that residents will use to identify or connect themselves to a community. Some of these features may be cultural, such as a downtown business district, historic buildings, lighthouses, or other similar man-made features.

Other features used to connect a community to its residents will be natural; lakes, woods, wildlife, views, and other similar features. How these environmentally sensitive elements are included in the fabric of a community can have a profound influence on their value. Generally, the value of natural features are either recognized as needing preservation, or they may simply be folded into the community and integrated into the cultural (man-made) landscape.

Natural Resources and Environmental Protection Act (NREPA)
Michigan Public Act 451 of1994, as amended (formerly PA 245 of1929)

Purpose: To restrict development in areas with identified, significant natural features.

Permits: Land and Water Management Division (LWMD), Michigan Department of Environmental Quality (MDEQ); and local building/zoning regulations, as applicable.

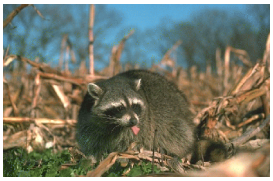
In Michigan, natural features are regulated through the Natural Resources and Environmental Protection Act (NREPA), known as Act 451 of 1994, as amended. Under the Act, the State of Michigan and, in some cases, local communities, have the power to regulate land uses in sensitive areas.

Protection of Environmentally Sensitive Areas - Preservation and Integration

With the wealth of environmentally sensitive features in the Dowagiac River Watershed, a policy of simply setting these lands aside and preventing development is not practical. Beyond the legal protections concerning compensation to private property owners for the public protection of lands are other, more practical considerations. Even if all of the sensitive lands were identified as being critical to the watershed, there simply are not the funds available to guarantee their ultimate protection.

Accordingly, it is necessary to develop a more reasoned approach. Clearly there are some resources which, if lost, would significantly detract from the environment and the community as a whole. But there are other resources which, while also valuable, can play other roles within individual developments and the community. This introduces the dual concepts of preservation and integration of natural features.

Environmentally sensitive natural features can either enhance or restrict development, depending on the type and extent of the feature. For example, the crest of a hill may provide a view which adds appeal to a site. Construction on the hillside can create the need to mitigate erosion, which can dramatically increase development costs. However, the cost to the community could be the loss of a natural view. On the other hand, using natural features to accent the development can substantially increase the marketability of the project and enhance its value to the developer.



Preservation measures apply to those features which are so sensitive or valued that any alteration may have negative impacts on aesthetics, property, or environmental quality. Development should either be prohibited or restricted to those projects which have only a slight effect on these features. An identified habitat for endangered plants or animals is an example of lands requiring preservation techniques. In many instances, the value of these features is so great that specific legislation has been enacted for their protection.

In areas where the natural features are an integral part of the community's character, but where minor changes only slightly impact the quality of life, *integration* may provide adequate protection. Integration allows natural features to co-exist with development, yet remain largely undisturbed. The community should carefully monitor land use in areas rich in these features.

Whether preservation or integration is desired, several of the tools that will be referred to in this paper are most effectively implemented by ensuring adequate site plan review requirements and standards are in place. The Zoning Acts state that a community may "require the submission and approval of a site plan before authorization of a land use or activity regulated by the zoning ordinance." Before a site plan can be required, however, the ordinance must state which land uses or activities will need approval. Site Plan Review is required for all Special Land Uses and Planned Unit Developments.

Site plan review requirements detail what information must be included on a site plan when it is submitted for review. Although requiring significant natural features to be shown on a site plan is a first step in identifying environmentally sensitive features, this is not a means of preservation. *Site plan review standards*, on the other hand, are the criteria that a Planning Commission must use when reviewing all site plans. These standards help establish guidelines on how environmentally sensitive features on a site are to be treated. An example of such a standard related to natural features is as follows:

> *Landscape Preservation - The landscape shall be preserved in its natural state, insofar as practicable, by minimizing tree and soils removal, and any grade changes shall be in keeping with the general appearance of neighboring developed areas. The Planning Commission may require that landscaping, buffers, or greenbelts be preserved and/or provided to ensure that proposed uses will be adequately buffered from one another and from surrounding property.*

It is important to remember that site plans are not generally required for individual home sites, but rather for larger sites consisting of many homes, or commercial or industrial development. Thus site plan requirements and standards are not considered to be comprehensive preservation or integration tools.

The following discussion uses both preservation and integration methods for the various environmentally sensitive areas within the Dowagiac River watershed.

WETLANDS

Part 303 of the Natural Resources and Environmental Protection Act (NREPA) defines a wetland as:

> *'Land characterized by the presence of water at a frequency and duration sufficient to support, and that under normal circumstances does support, wetland vegetation or aquatic life and is commonly referred to as a bog, swamp, or marsh.. "*

"Wetland" is the collective term for marshes, swamps, bogs, and similar areas often found between open water and upland areas.

In the past, people viewed wetlands as wastelands --sources of mosquitoes, flies, and unpleasant odors. They believed wetlands should be avoided, or better yet, eliminated. This negative view, combined with the demand for more developable land, resulted in the destruction of large areas of wetlands. Owners and developers drained their wetlands, and converted them to farmland, or filled them for housing developments or industrial facilities.

Of the estimated 11 million acres of wetlands that stood in Michigan 150 years ago, only 3 million acres remain. Only one-fourth of the original 400,000 acres of coastal wetlands now line Michigan shores.

Of the estimated 11 million acres of wetlands that stood in Michigan 150 years ago, only 3 million acres remain.

Attitudes towards wetlands have changed with the discovery that wetlands are valuable natural resources providing many important benefits to people and their natural environment. Wetlands help improve water quality, provide important fish and wildlife habitat and support hunting and fishing activities.

Wetlands contribute to the quality of other natural resources, such as inland lakes, ground water, fisheries, and wildlife, as well as to the Dowagiac River and its tributaries. Wetlands store excess water and nutrients; control floods, and slow the filling of rivers, lakes and streams with sediment. In addition, acre for acre, wetlands produce more wildlife and plants

than any other Michigan land cover type.

More specifically, benefits of wetlands include:

C Reducing flooding by absorbing runoff from rain and melting snow and slowly releasing excess water into rivers and lakes. (One-acre, flooded to a depth of one foot, contains 325,851 gallons of water.)

C Filtering pollutants from surface runoff, trapping fertilizers, pesticides, sediments, and other potential contaminants and breaking them down into less harmful substances, improving water clarity and quality.

C Recharging groundwater supplies when connected to underground aquifers.

C Contributing to natural nutrient and water cycles, and producing vital atmospheric gases, including oxygen and serving as nutrient traps, when next to inland lakes or streams

C Providing commercial and recreational values to the economy, by producing plants, game birds (ducks, geese) and fur-bearing mammals. Survival of certain varieties of fish directly depend on wetlands, requiring shallow water areas for breeding, feeding and escape from predators.

State Regulation

Part 303 of NREPA seeks to protect wetland resources through regulating land which meets the statutory definition of a wetland, based on vegetation, water table, and soil type. Certain activities will require a permit from the MDEQ on a site which satisfies the wetland definition, including:

C filling or placing of material in a wetland;
C draining of water from a wetland;
C removal of vegetation, including trees, if such removal would adversely affect the wetland;
C constructing or maintaining a use or development in a wetland; and/or
C dredging or removing soil from a wetland.

NREPA Wetland Protection

Purpose: To provide for the preservation, management, protection, and use of wetlands.

Permit: LWMD, MDEQ; U.S. Army Corps of Engineers, Detroit District Engineer's Office; local regulations.

Certain activities are exempt from permit requirements. In general, exempt activities include: fishing, trapping or hunting, hiking and similar activities; existing, established farm activities; and harvesting of forest products.

Wetland areas subject to regulation by the MDEQ include wetlands, regardless of size, which are contiguous to, or are within 500 feet of the ordinary high water mark of, any lake, stream, or pond; wetlands which are larger than five acres and not contiguous to any lake, stream, or pond; and those wetlands which are not contiguous to any lake, stream or pond, but are essential to the preservation of natural resources.

Generally, wetlands must be identified through individual site determinations. Accordingly, the low lying areas or wetlands shown on the Environmental Features map are for planning purposes and represent only indications of where some of these areas may be located.

Local Regulation

Wetlands that are not included within the state's regulatory authority may be subject to local controls. A comprehensive regulatory program at the local level requires a community to accurately map all of the wetlands that will be subject to local regulation. Regulations pertaining to wetland protection generally mirroring the state's are permitted if such an inventory is conducted.

Another, less comprehensive, and sometimes equally effective process, will include a requirement for a wetland determination. This determination can be conducted by the Michigan Department of Environmental Quality (MDEQ) or a qualified firm or individual and be submitted as part of any site plan review. Wetlands found during the determination that are not subject to state regulation may be identified.

The zoning ordinance may include a number of provisions that would encourage developers to preserve unregulated wetlands. Normally, the most effective methods are based on an incentive process that would give developers either full or partial credit for wetland areas in density calculations. For example, the density for a 20 acre site with 3 acres of wetlands could be calculated by giving full density credit for the 17 unaffected acres, and 50 percent credit, or 1½ acres for the wetlands area, for a total site of 18½ acres for which density is calculated.

Similarly, "bonus densities" could be provided for preserved wetland areas. This process works well in Open Space Development regulations that provide incentives for preservation of open space and/or natural features.

SURFACE WATER QUALITY and GROUNDWATER QUALITY

(See Resource Paper #3, Surface Water and Groundwater Resources & Protection)

WOODLANDS

Unlike certain critical environmental areas, woodlands have been relatively ignored, despite their benefits to the public. As buffers and moderators of flooding, erosion, and noise and air pollution, woodlands are important to the region's quality of life. Much of the woodlands within the township lie either in small parcels, usually left from agricultural clearing, or in larger areas where farms have not been established and where intensive development has not yet occurred.

Some of the values of woodlands include:

C Providing a varied and rich environment for plants and animals. Forest layers, including canopy, branches, trunks, shrubs, and plants on the forest floor provide breeding, feeding, and refuge areas for many species of insects, birds, and mammals.

C Protecting watersheds and soils. Forest vegetation moderates the effects of winds and storms, stabilizes and enriches the soil, and slows runoff, allowing the forest floor to filter groundwater.

C Serving as buffers to the sights, sounds, and odors of civilization. Forests mute noise from freeways and factories, and absorb air pollutants.

C Providing visual relief along roadways. Aesthetically pleasing roadways with natural vegetation tend to be more popular than those with little vegetation or highway clutter.

The question should not be whether or not to develop woodlands, but rather how development will occur. Hillside protection ordinances and erosion and sedimentation regulations play a part in protecting woodland resources. However, there are few provisions specifically directed at maintaining the health of forests or significant stands of trees.

Trees within the public domain are managed, to some degree, such as trees growing along streets. Mature roadside trees are sometimes considered hazardous, but always seen as attractive and valuable. To the extent possible, road improvements should respect and maintain these important landmarks, and their contribution to community identity.

Woodlands existing on private land deserve greater concern. Some of these are large enough to support commercial forestry, while others are small stands threatened by encroaching agricultural, commercial, or residential development. Many stands of trees are the result of *not* clearing land for agricultural use, where pockets of poor soils made farming impractical.

Without tree cutting regulations, a community risks losing its forest and tree resources. Damage to other resources resulting from the unregulated development of woodlands may require the use of tax dollars. Designed to prevent these losses and expenses, woodland regulations can identify the specific benefits woodlands provide to the community.

Implementing regulations assures that woodland development preserve the health of the forest and tree/woodland resources.

Tree preservation ordinances are sometimes difficult to enforce, if drawn too strictly. A general tree preservation regulation would practically require a site plan review for individual lots; something which is usually avoided. There are reasonable regulations which can be drafted which do not necessarily address trees on existing, individual lots, but rather examine the building site as a whole and attempt to restrict buildings to those areas most suited for development, thereby preserving natural features. Tree regulations should be part of an overall program to preserve all natural features on a site.

If the regulations are designed to be specific enough, site plans may be able to receive administrative approval by a building official or zoning administrator. Individual property owners would be required to provide additional information as to the resources available on their property, such as tree clusters, wetlands, etc. Hillside protection ordinances and erosion and sedimentation regulations can also assist in protecting woodland resources.

Site plan review standards are another means of preserving existing woodlands. Site plan review standards are used by a planning commission in reviewing all site plans. This can be an effective means of preservation, but is not as specific as a tree ordinance. For instance, a tree ordinance can specify the replacement of trees that are removed.

TOPOGRAPHY

The presence of changes in topography is not always readily identified as a natural resource. Steep slopes and rolling hillsides -- unlike other resources such as groundwater -- do not have clearly defined public benefits. If disturbed, these areas cannot be restored. Topography exists in a balance with vegetation, precipitation, and wind. Maintaining stable slopes helps prevent non-point source pollution of water resources (particularly soil erosion) while preserving a distinctive feature of the local landscape.

Topography within the Dowagiac River Watershed generally does not vary widely. For the most part, the watershed area's topographic differences range from flat to gently rolling. Some areas with steeper slopes (exceeding 12 percent) may be found in scattered areas. As a result, where greater topographic differences do occur, they are distinctive.

Managing Development

Development on steep slopes can have far-reaching impacts on land, water, economic, and aesthetic resources. Yet hillsides can be developed in a manner compatible with their ecology. Topographic relief can provide visual interest to an otherwise ordinary development project. Small hills and ravines can separate incompatible land uses and provide appealing views.

Elevation changes will occasionally restrict the use of certain properties. For example cropland, subdivisions, industrial sites, and commercial buildings generally favor level or gently sloping sites. Hilly sites work better for very low density residential and recreational land uses. Slopes more than 18 percent usually prohibit development due to the potential for erosion and the safety hazards presented. Where elevation changes are dramatic, development is often restricted because drainage, traffic circulation, erosion control, and building design may not be feasible to achieve.

As noted earlier, the uniformity of the topography in the watershed highlights areas where any elevation differences exists, making their preservation more important. Most zoning ordinances will require site plans to provide elevation lines to enable the community to properly review the development, particularly with respect to the need for drainage improvements. However, beyond drainage, topography can also play a valuable role in separating dissimilar land uses; grade changes can be nearly as effective as screen walls, landscaping, or other similar measures designed to make land uses compatible.

WILDLIFE HABITAT

A wildlife habitat is an area that offers feeding, roosting, breeding, nesting, and refuge areas for a variety of bird and mammal species native to the southwestern Michigan region. Michigan's wildlife is one of its most precious resources. Surveys consistently show that residents value wildlife as part of their quality of life. In addition, wildlife is valued throughout Michigan for the contribution it makes to tourism, recreation, hunting, and fishing. As a result, there is an increasing appreciation of the role that wildlife contributes to quality of life.

Similarly, some homebuilders and developers are also coming to realize that wildlife protection can make good business sense. Housing developments that include natural greenbelts, wildlife corridors, stream corridors, wetlands, and open space into their plans are in response to buyers who are willing to pay for those amenities.

As with other environmental effects, it is important to remember that wildlife does not respect jurisdictional boundaries. As a result, it is important to coordinate activities with other local governments on the basis of biological or geographical boundaries rather than on purely political ones. In rural areas, there are significant opportunities for wildlife management, simply because of already existing, abundant wildlife habitat. This makes planning for wildlife habitat protection possible, by identifying areas of high wildlife value and encouraging development elsewhere. Even with the development of scattered rural areas, large open spaces still may be found through the Dowagiac River Watershed. This means that there is ample opportunity for movement of wildlife among habitat locations. It will require strong coordination of local governments and private landowners to ensure that wildlife considerations are included in the review of development plans.

In contrast, habitat protection in urban areas is considerably more difficult since much of the

landscape has already been subjected to development, limiting opportunities for effective wildlife management. Consequently, any remaining undeveloped areas become much more important.

Actions that can be taken to address habitats within the community can include:

- a habitat inventory;
- an active public education program and with some method(s) of ensuring property owner participation;
- intergovernmental coordination; and
- public/private partnerships with major landowners.

Wildlife Corridors

A wildlife corridor is a continuous natural protected pathway along which native wildlife species can move in relative security between high quality natural wildlife habitats. The land through which wildlife must pass when transiting between these habitats may, at times, consist of platted lots in private ownership and public roads and rights-of-way. Corridors work best when sparsely developed. The goal of establishing wildlife corridors is to maintain as nearly a contiguous greenbelt of native vegetation as possible, averaging 200 feet wide between various habitats.

Some interruptions in the corridors are inevitable because of existing roadways interposed between the habitats. Within this limitation, the objective is to locate corridor connectors to minimize the number of road crossings and maximize the greenspace available for protected wildlife transit. Wherever possible, the corridor should follow natural drainage corridors since this land offers more habitat value, is important for natural stormwater drainage, and is generally more difficult to develop.

Wildlife corridors can also be developed in coordination with other construction projects. For example, a utility corridor could be planned to provide a more natural system, rather than a swath of land devoid of natural features. Stormwater, flood management, and drainage control projects can utilize natural vegetation instead of man-made materials.

Where it exists, native vegetation should be left undisturbed. In areas with exotic vegetation, undesirable plants may be removed and native trees, shrubs, grasses, etc. (as appropriate), planted and maintained. Notice should also be made of fencing which may cut off or impede access through the corridor.

Landowners of properties in or near the corridors who wish to develop wildlife habitat on their properties should be provided with instructional materials and, if available, plants and volunteer assistance. Protection of proposed corridor lands should be enacted through:

- C cooperative agreements with the various local governments and state agencies overseeing public lands;
- C conservation easements with private landowners; and
- C acquisition of property that cannot be otherwise protected.

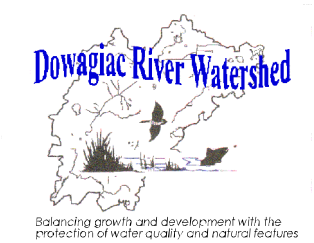
Implementing Wildlife Habitat Protection

Overlay zones may be the most effective method of protecting wildlife habitat and natural resource features for larger areas that include several underlying zoning districts. An overlay zone effectively eliminates the need to revise the regulations for each zoning district. Instead, it superimposes additional regulations specifically targeted to protect important physical characteristics of the land. For wildlife habitat protection, overlay districts may permit local governments to treat habitats specifically, without affecting the uses permitted in the underlying zoning districts.

Overlay zones can be particularly effective when they include provisions regulating:

- C protection of trees and other vegetative cover;
- C enforce setbacks from sensitive habitat areas, such as wetlands and streams;
- C require open space preservation (sometimes in exchange for greater densities of land use); and
- C protection of identified mating, nesting, and other critical habitat areas.

Other methods include many of those described in other Watershed Resource papers, such as conservation easements, purchase of development rights, and other similar techniques.



ACTION AND IMPLEMENTATION

Community_____

Environmentally Sensitive Areas Protection	Yes	No	Need to Know More
Site Plan Review (page 2)			
Tree Ordinance (page 2)			
Local Regulation of Wetlands (page 5)			
Overlay Zoning (page 6)			
Conservation Easement (page 9)			