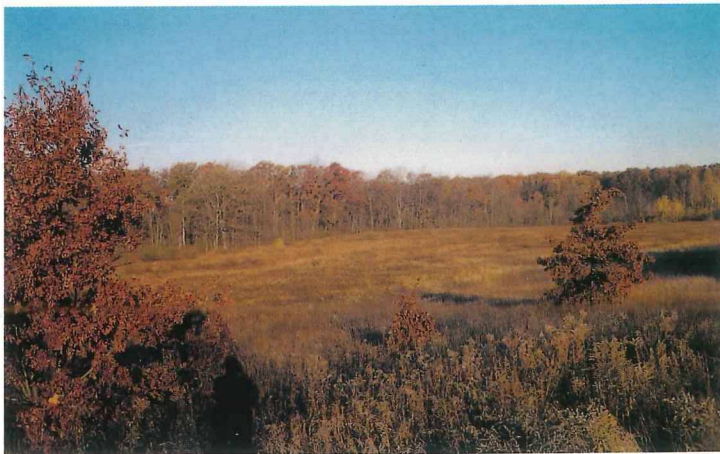


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Chapter IV – OPPORTUNITIES PLAN

Natural Areas Opportunities Plan

A Natural Areas Opportunities Plan was developed for the S&H Project area. The plan identifies opportunities to establish a natural resource based open space system of linked natural areas throughout the six-community study area. This plan classifies and maps three elements of conservation opportunity



A. Wetland Riparian Systems including rivers, streams, lakes, wetlands, and flood prone areas.

**Upland
Landscape
Fabric**

B. Upland Landscape Fabric with associated natural landscape patches and corridors.



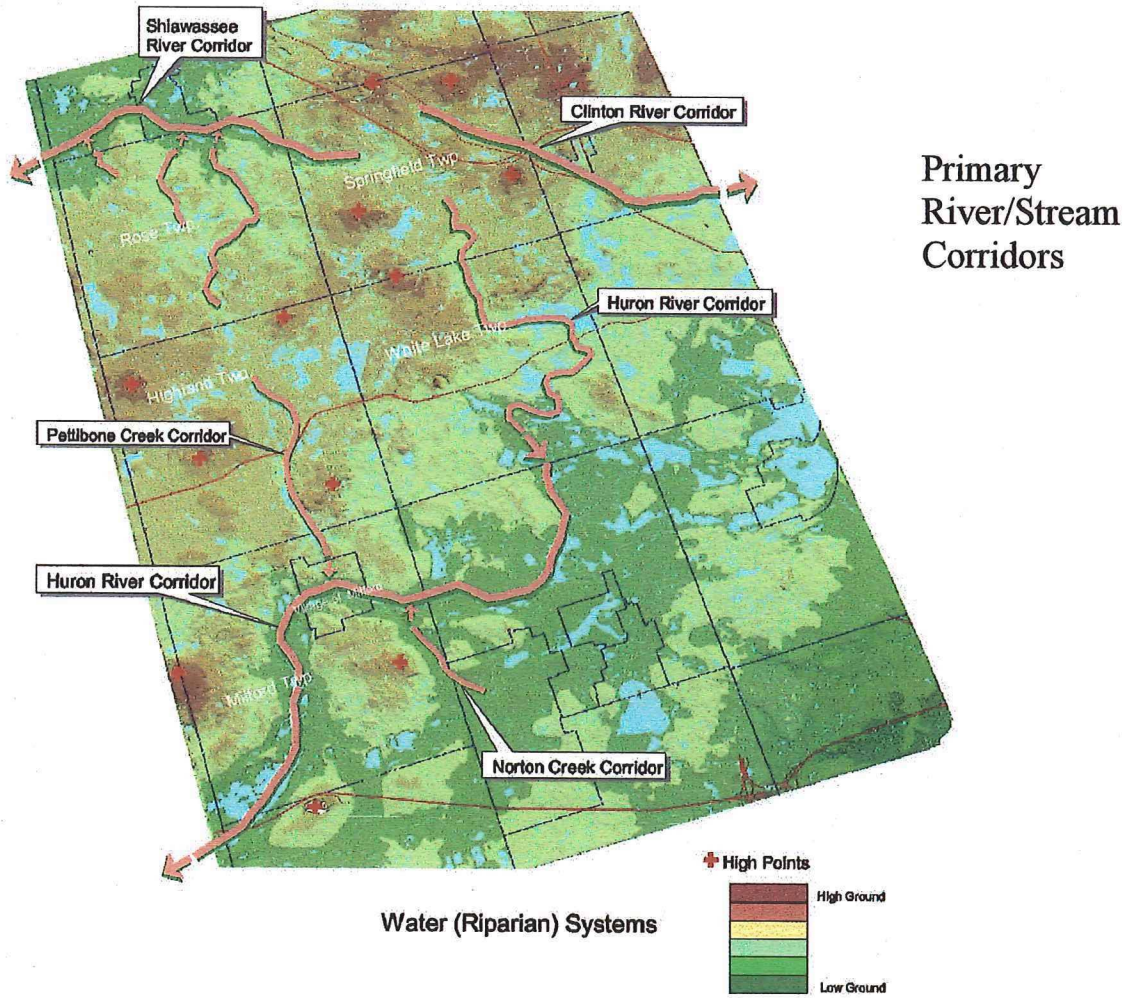
C. Potential Natural Areas including identified and ecologically ranked natural resource areas and ecosystems.

The three elements reflect the variety and range of landscape character present in the S&H Project area. All three areas are inter-related. Each element supports and sustains the others and all are impacted, to varying degrees, by the built environment. The extent and degree of landscape fragmentation resulting from development further defines the extent of conservation opportunities present. The plan acknowledges a full range of open space conditions from pristine pre-settlement landscapes to those more intensely developed and fragmented. The plan points to locations where implementation/action strategies can begin to maintain, improve, or restore natural habitat and water quality.

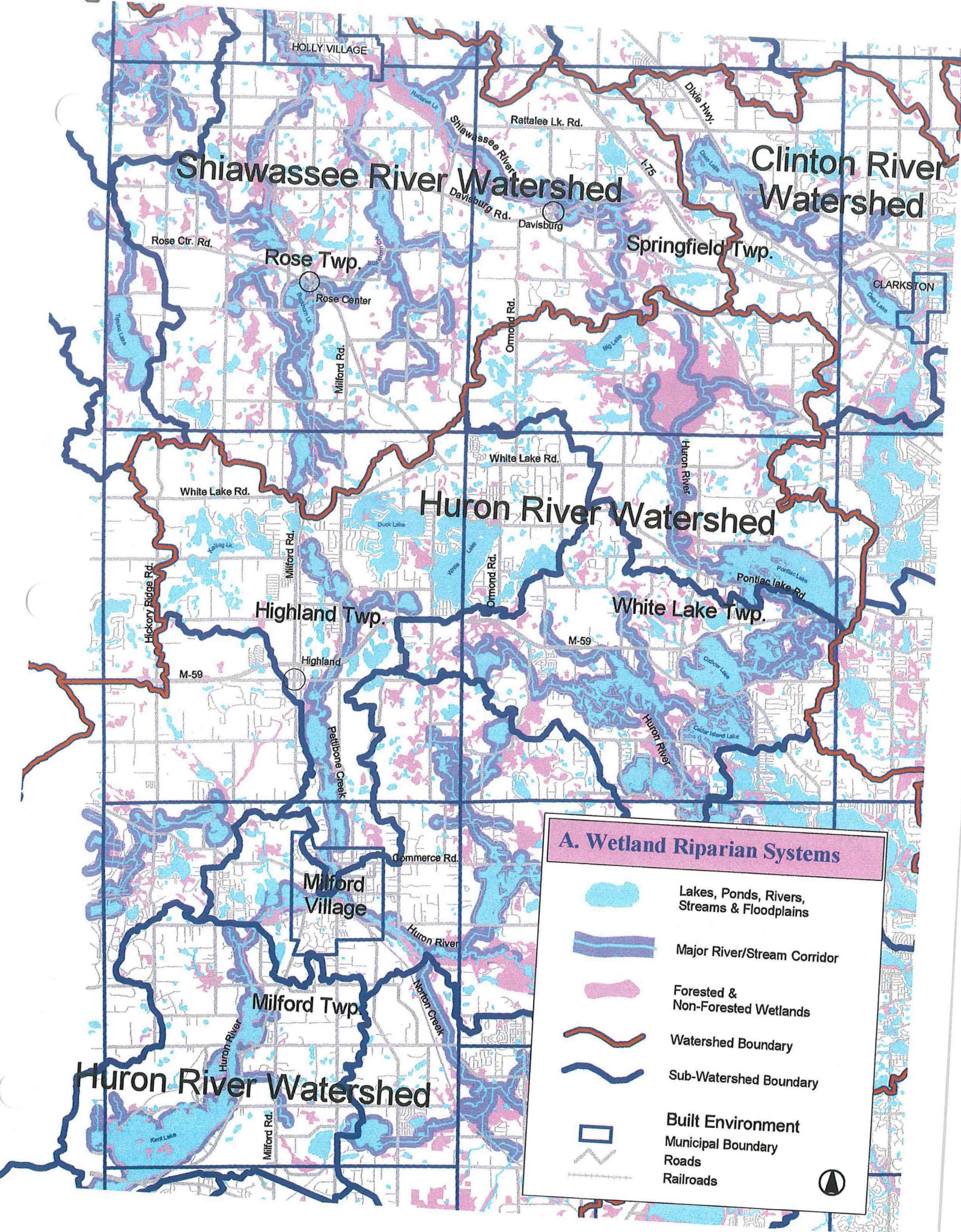
A. Wetland Riparian Systems

Lakes, rivers, streams, and wetlands not only sustain the health and vitality of our lowland natural areas but also play a key role in the physical health of our citizens and the economic health of our county. Since much of the S&H Project area relies on groundwater for its drinking supply, water quality is a prime consideration

The water in these systems not only flows to and through natural areas on the surface, but also interacts with the subsurface groundwater. Natural areas and their plant and animal communities depend upon a clean and balanced flow of water both on and below the surface. In some instances, a fen for example, natural communities depend upon a unique composition of minerals and water for their very existence. Plant and animal communities in turn do their part by filtering pollutants.



Illustrated above are the primary river and stream corridors found in the study area.



Shiawassee River Watershed

Clinton River Watershed

Huron River Watershed

Huron River Watershed

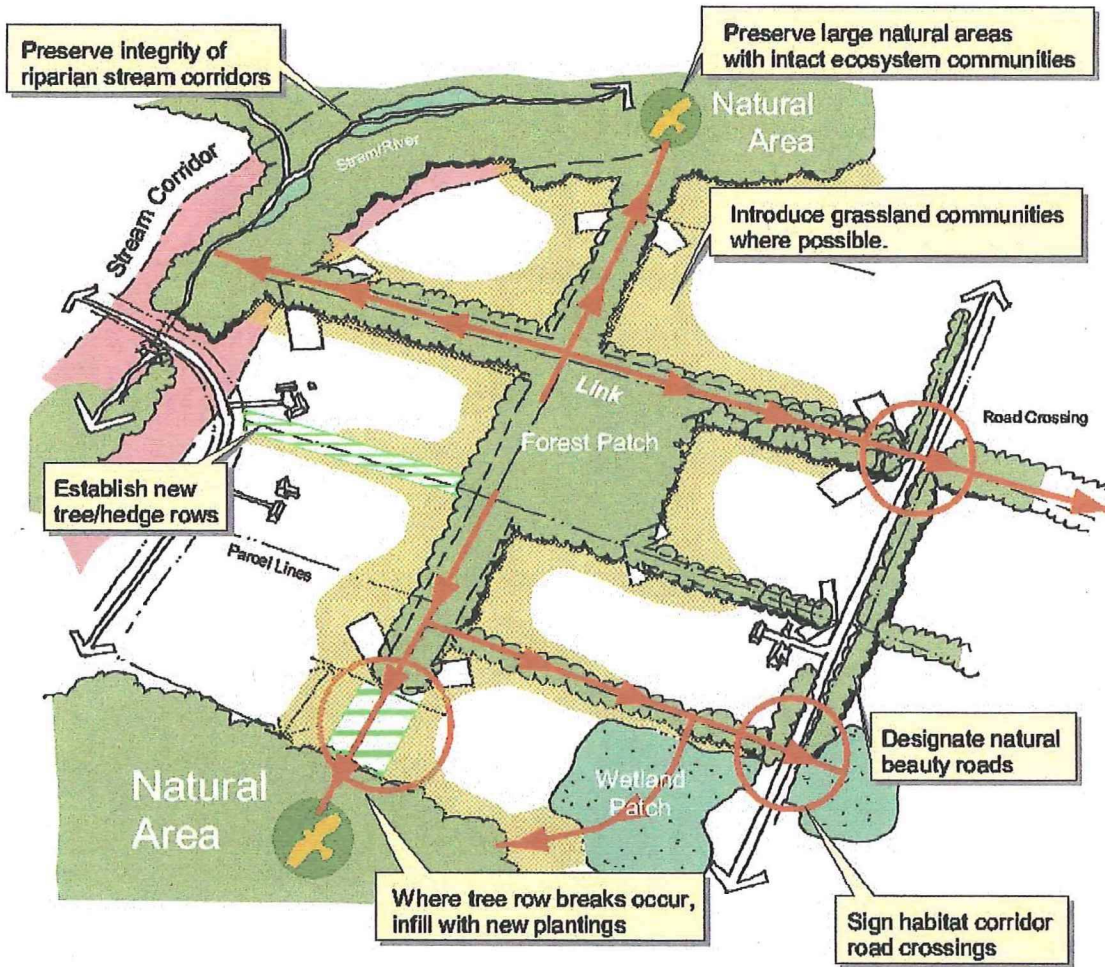
A. Wetland Riparian Systems

-  Lakes, Ponds, Rivers, Streams & Floodplains
-  Major River/Stream Corridor
-  Forested & Non-Forested Wetlands
-  Watershed Boundary
-  Sub-Watershed Boundary
-  Built Environment
-  Municipal Boundary
-  Roads
- Railroads



B. Upland Landscape Fabric

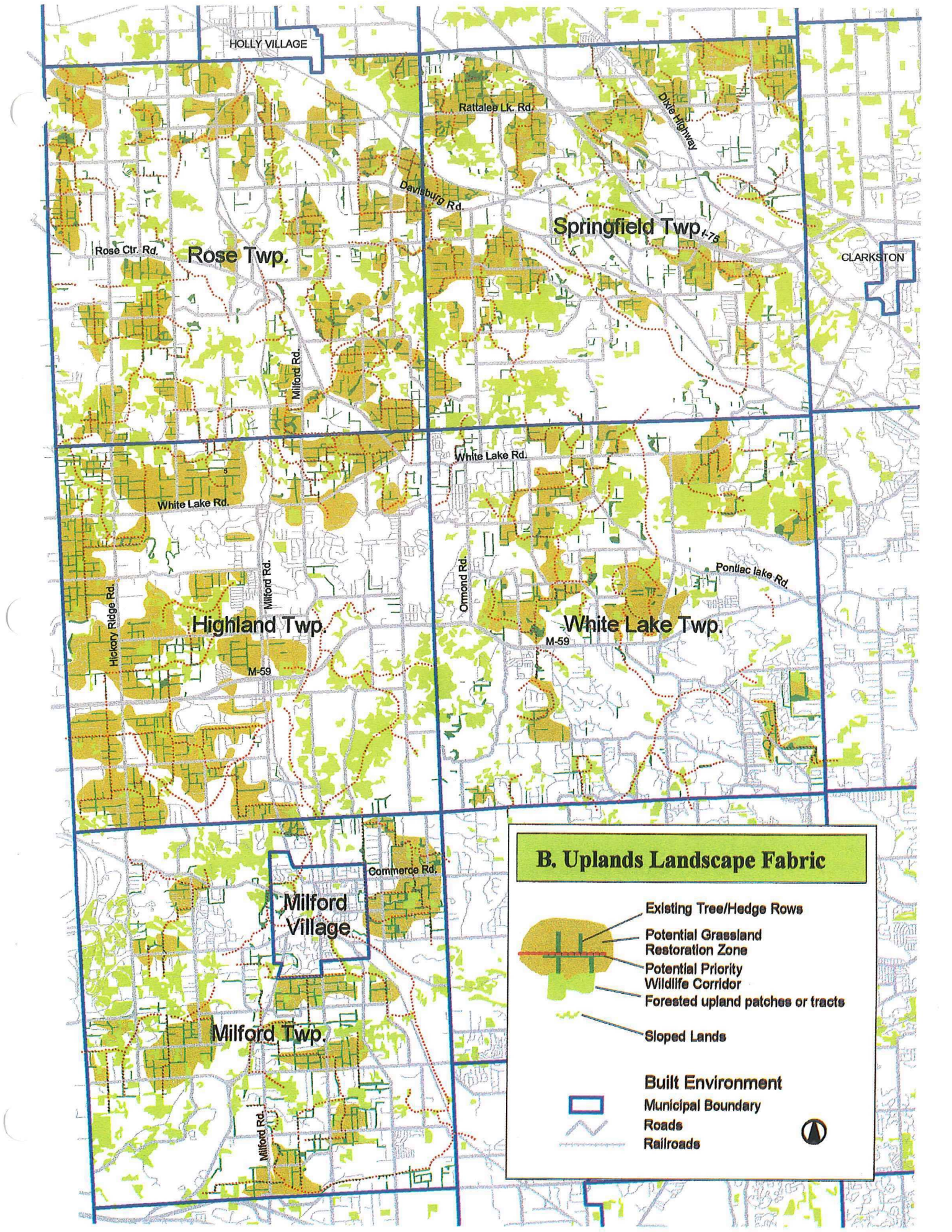
The original landscape fabric in Oakland County has been transformed over time. In the era of agriculture, woodlands were removed, wetlands were drained, and grasslands were plowed under to make way for croplands and grazing. Much of the landscape in Oakland County is now a patchwork mosaic of cropland fields, hedge/tree rows, and patches of woodlands or wetlands. These elements offer both opportunities and potential threats to sustaining the health of their associated natural areas.



Potential Natural Landscape Corridor Connections

Opportunities for establishing a network of natural landscape corridors linking patches, and natural areas by establishing habitat corridors are illustrated above. Linkages provide continuity between various areas of the landscape fabric.





B. Uplands Landscape Fabric

- Existing Tree/Hedge Rows
- Potential Grassland Restoration Zone
- Potential Priority Wildlife Corridor
- Forested upland patches or tracts
- Sloped Lands

Built Environment

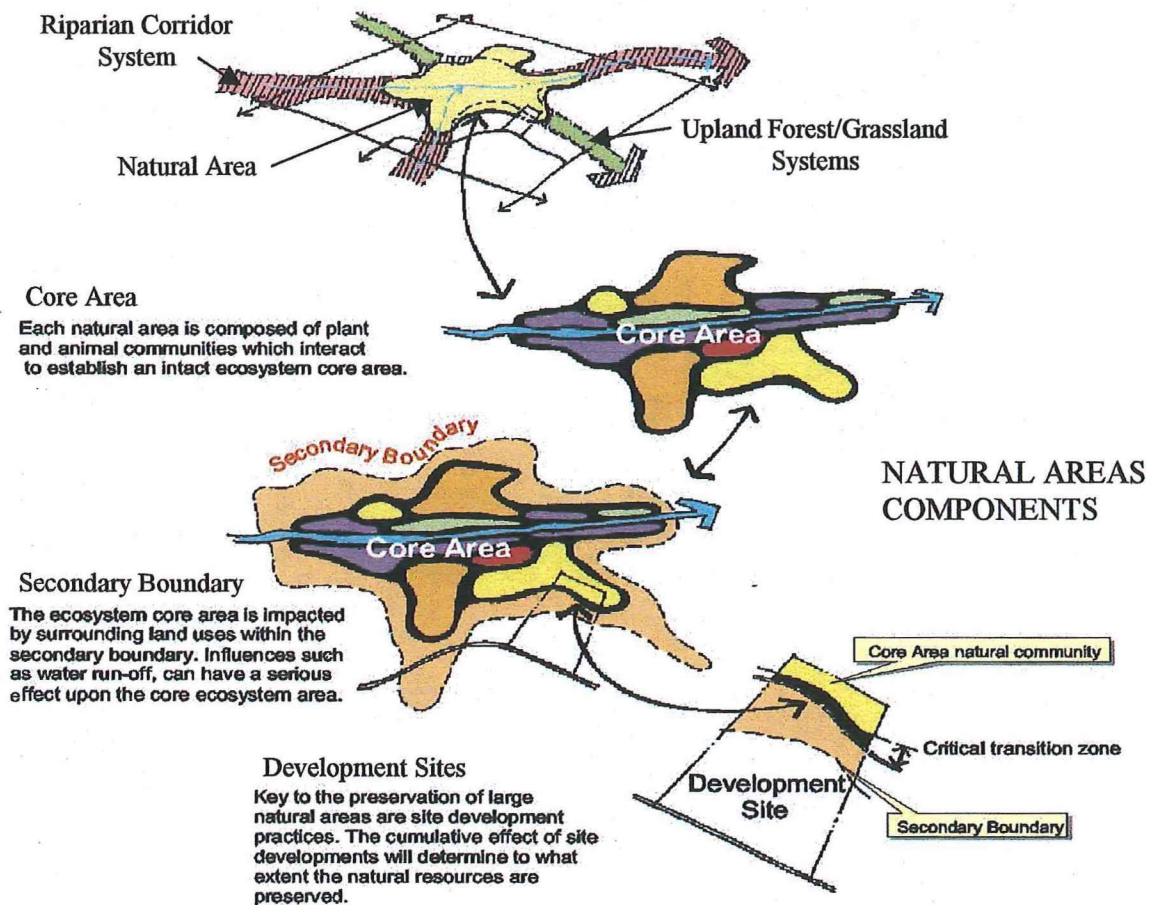
- Municipal Boundary
- Roads
- Railroads

The legend includes a north arrow and symbols for: Existing Tree/Hedge Rows (green vertical lines), Potential Grassland Restoration Zone (light green area), Potential Priority Wildlife Corridor (dotted red line), Forested upland patches or tracts (yellow-green area), Sloped Lands (light green area), Municipal Boundary (blue outline), Roads (grey lines), and Railroads (black lines).

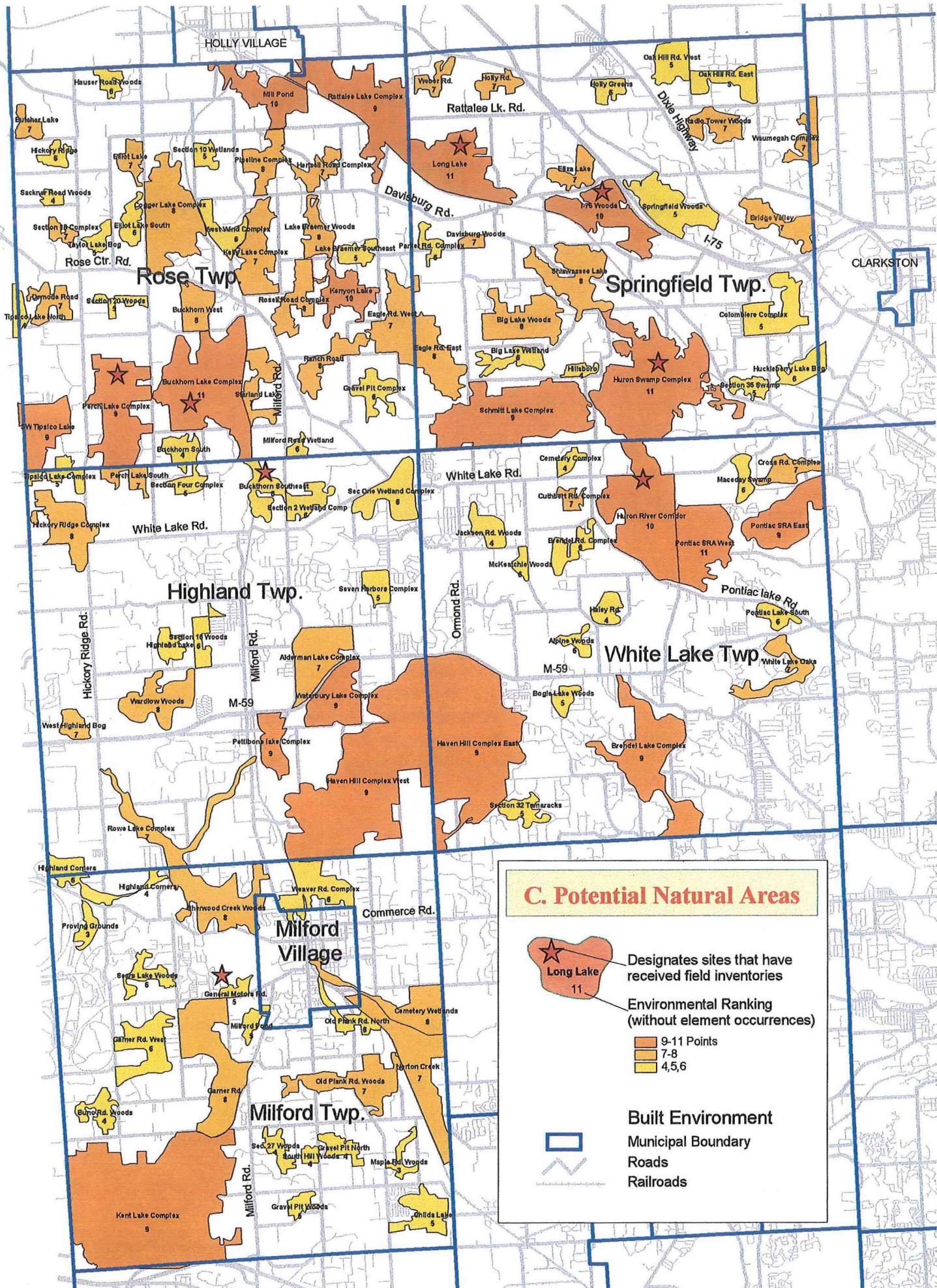
C. Potential Natural Areas

As described in *Chapter III*, 114 sites were identified as potentially significant natural areas by the MNFI. Eight of these sites have received field inventories to determine their ecological makeup and significance. The character and composition of each field-inventoried site varies. Each potential natural area may have both upland and wetland communities present, although in some sites one may be dominant. Natural areas with intact natural communities representing pre-settlement conditions are very significant but rare. Although the ecological significance of sites may vary, all sites have significance to their local setting. This is especially true if the setting has experienced a high degree of development and landscape fragmentation as was noted in the southern portion of the S&H Project area.

LANDSCAPE SYSTEMS



Each natural area is composed of plant and animal communities that interact to establish an intact ecosystem core area. Those sites not surveyed should receive field inventories. Without detailed site information, it will be difficult to develop meaningful conservation management plans that direct the preservation of these unique natural areas.



C. Potential Natural Areas

- Designates sites that have received field inventories
- Environmental Ranking (without element occurrences)
 - 9-11 Points
 - 7-8
 - 4,5,6
- Built Environment
 - Municipal Boundary
 - Roads
 - Railroads

Natural Areas Opportunities Plan

The purpose of the Natural Areas Opportunities Plan is twofold: first to provide a general vision regarding conservation opportunities throughout the six-community study area, and second to identify application areas. These application areas demonstrate a process for developing a comprehensive conservation management plan at the municipal, neighborhood, and site levels. The application areas are described in *Chapter VII*. Conservation opportunities, as outlined previously, have been mapped following an eight step process for natural resource conservation planning. The process is included on the natural resources display board systems provided to each municipality for use in their local conservation planning efforts.

The eight steps are:

1. Identify the significant plant and animal communities and ecosystems within the study area.
2. Map and quantify this information.
3. Compare the information to local master plans and zoning ordinances and identify conflicts.
4. Develop local conservation policies.
5. Develop a land development suitability map based upon policy.
6. Establish conservation priorities.
7. Develop a natural resources conservation plan based upon the policies and priorities identified including opportunities for linkages between resource areas.
8. Outline preferred tools & techniques to accomplish the goals and objectives of the natural resources conservation plan including regulatory measures and site development conservation alternatives.

In addition to the eight steps outlined, a **ninth step** needs to be included: **to measure and track results**. Without a means of measurement and tracking, it will be impossible to determine if policies are kept and goals are being reached.

The Natural Areas Opportunities map for the study area is limited in detail and does not specify the actions necessary to manage ground resources. It is a starting point offering direction toward the next level of planning necessary; that of developing municipal, neighborhood, and site natural resource conservation management plans. This process can and should be completed at each level to document the natural resources present, outline development suitability, and present a plan for natural resource conservation management.

The **Natural Areas Opportunities Map** (see page 73) was developed following the eight step process outlined.

Step 1 involved the identification of natural resources including the wetlands riparian system, uplands landscape fabric, and potential natural areas.

Step 2 mapped these resources for the study area (see maps on pages: 63, 65, and 67).

Step 3 the identification of conflicts with local municipal master plans and zoning ordinances was felt best accomplished in more specific planning initiatives at the local level.

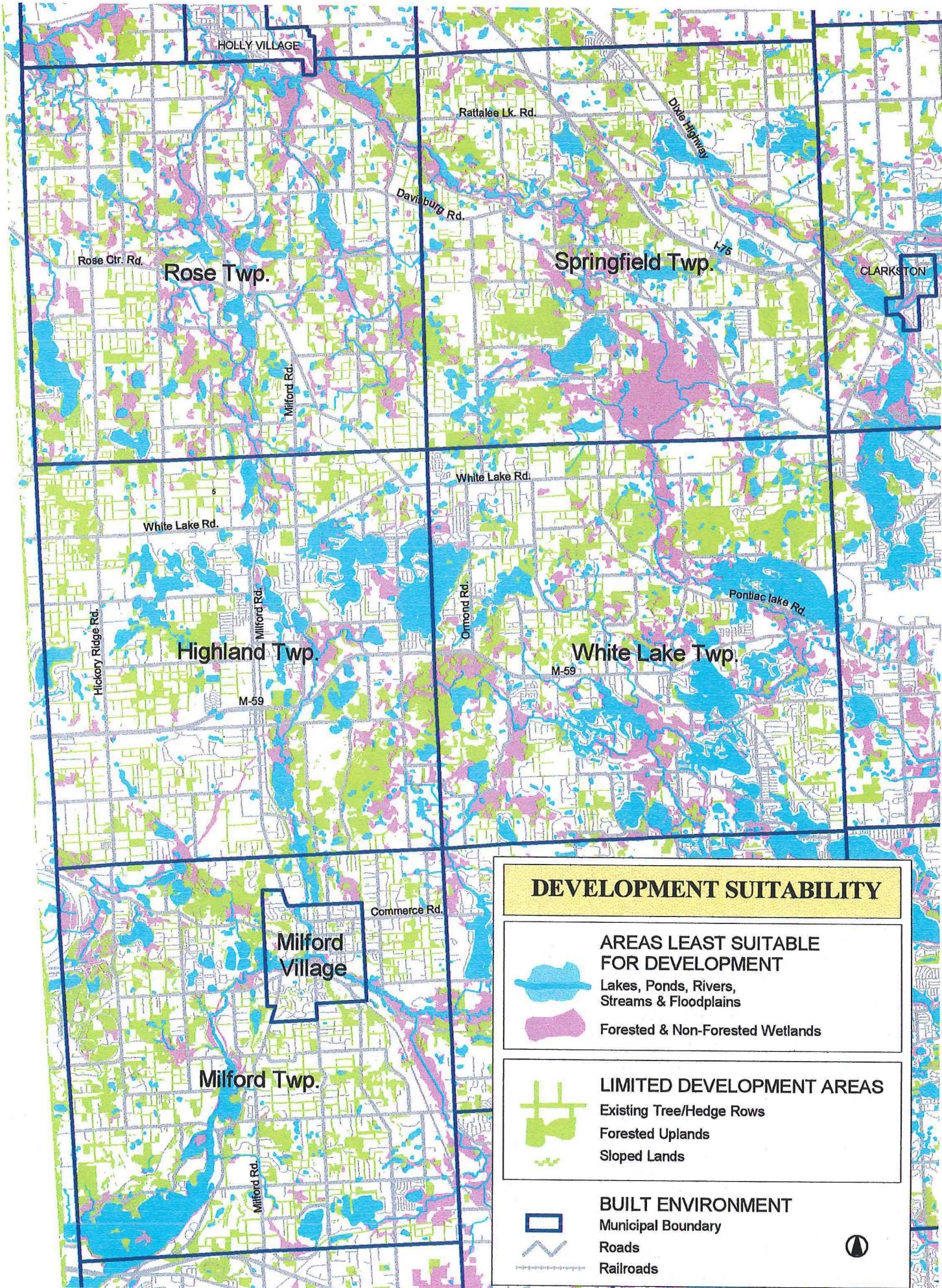
Step 4 assumed the general policy positions that all elements in the wetland riparian systems were least suitable for development, all elements in the upland landscape fabric should have limited development, and all potential natural areas should be field inventoried to determine development suitability (Note: eight sites have already received inventories as part of this study.)

Step 5 mapped the policy positions on a development suitability map (see map page 70)

Step 6 assumed site priorities are reflected by their ecological rankings as defined in *Chapter III* (Note: Locally established priorities based upon field investigation, local conditions, and influences may take precedent when developing local management plans.)

Step 7 mapped the potential natural area sites with their priority (ecological ranking) and suggested general opportunities for resource linkages. Management plans developed at the local level may identify alternative priorities and linkage opportunities.

Step 8 established three areas targeted to demonstrate the process for comprehensive conservation management planning, including the selection of preferred tools and techniques for natural areas preservation, management, and tracking at the local and site level



DEVELOPMENT SUITABILITY

AREAS LEAST SUITABLE FOR DEVELOPMENT



Lakes, Ponds, Rivers, Streams & Floodplains



Forested & Non-Forested Wetlands



LIMITED DEVELOPMENT AREAS

Existing Tree/Hedge Rows
Forested Uplands
Sloped Lands



BUILT ENVIRONMENT

Municipal Boundary
Roads
Railroads



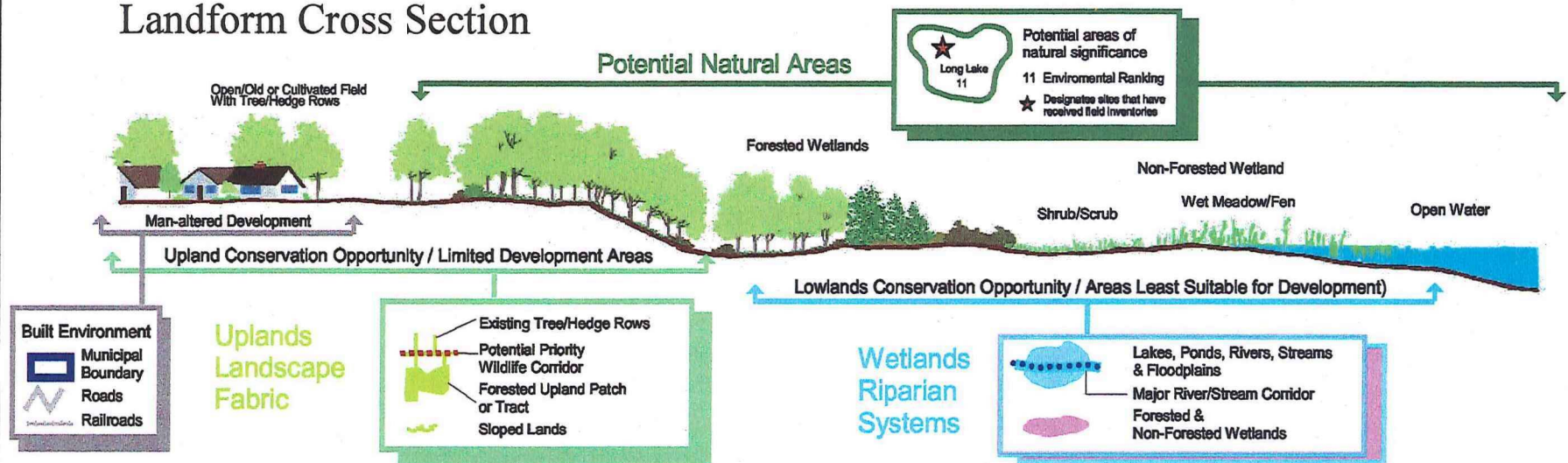
The Natural Areas Opportunities Plan map and its corresponding legend are located on the following pages.

Natural Areas Opportunities Plan Legend

The **Potential Natural Areas** outlined on the map below offer the greatest opportunities for preserving intact ecosystems and their natural plant and animal communities. Ecological field inventories are needed to determine each site's natural significance. Presently eight of the 114 sites have been inventoried (see sites marked with stars).

C. Potential Natural Areas

Landform Cross Section

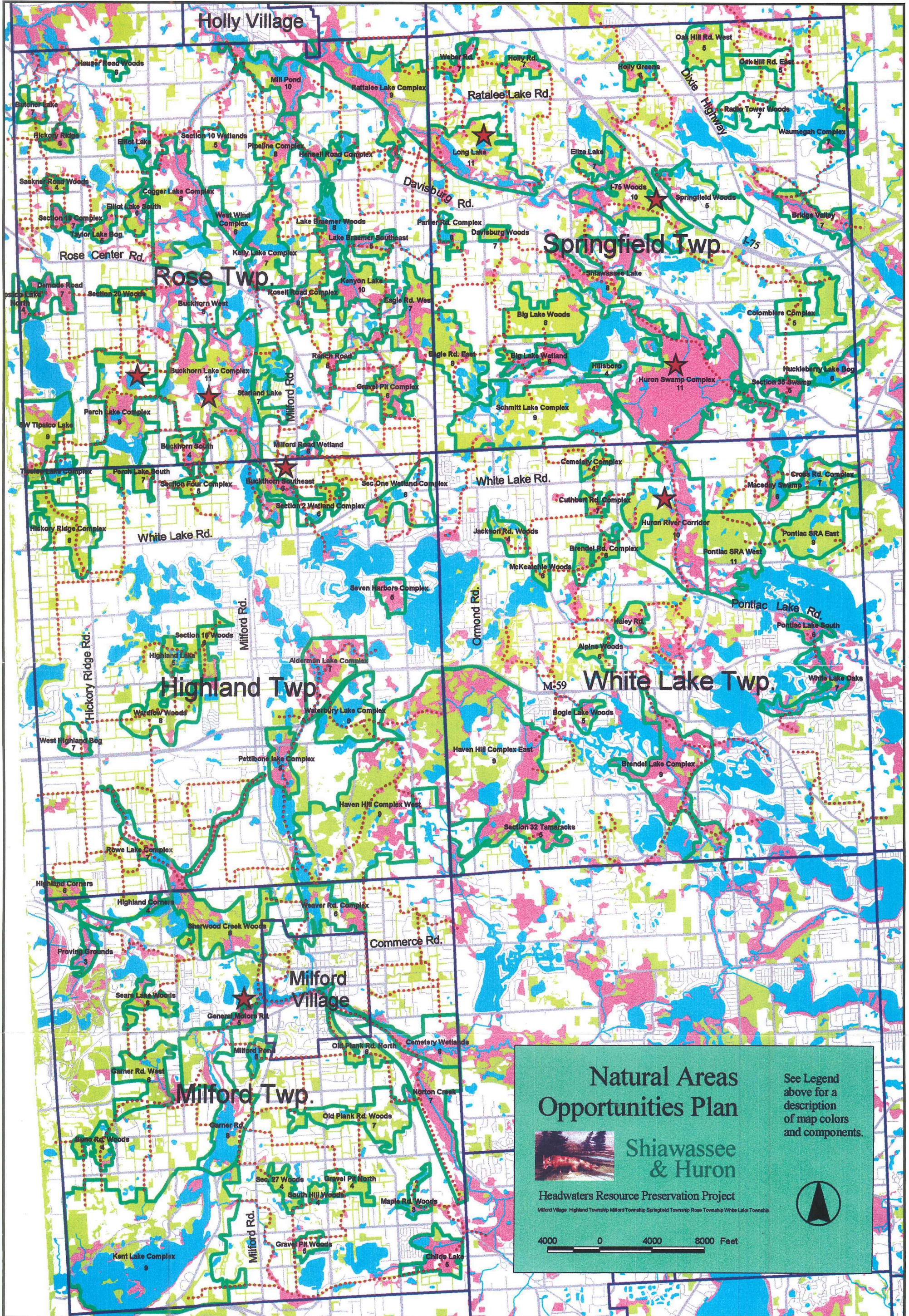


B. Uplands Landscape Fabric

The elements of the **Upland Landscape Fabric** are illustrated on the map below. Generally development in these areas should be limited to the extent needed in order to preserve/conservate the natural resources present.

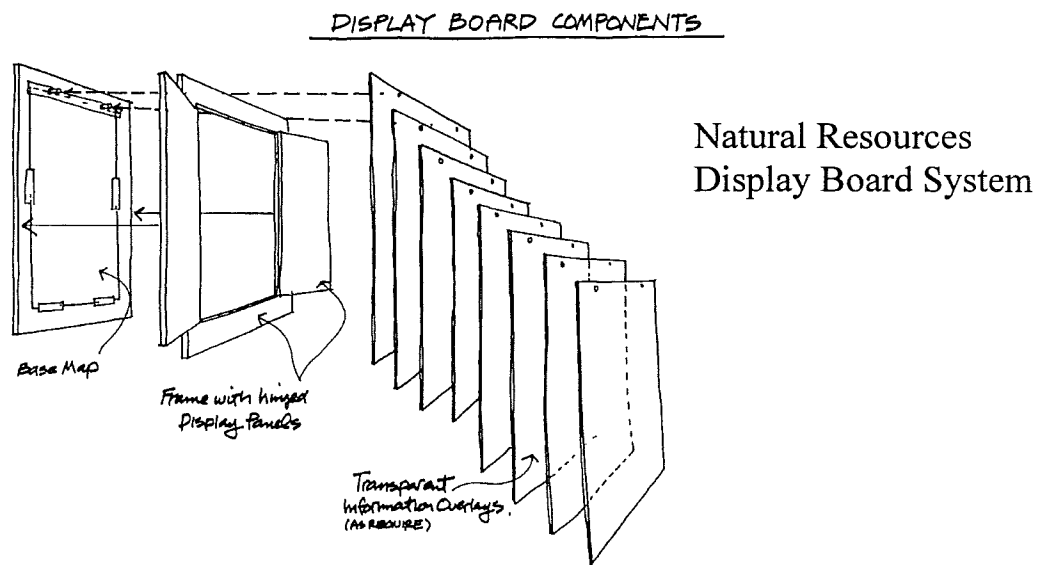
A. Wetland Riparian Systems

The elements of the **Wetland Riparian System** are illustrated on the map below. These areas are very sensitive to disturbance and are least suited for development.



Local Conservation Planning & Management

The eight step conservation planning process, outlined earlier in this chapter, should be completed by each municipality. Each of the communities has been provided with a natural resources system display board with multiple transparent overlays depicting the components of the natural system. Included on the display board wing panels is the eight step planning process. The process and display board information have also been compiled in a user's manual and is included on the project compact disk. These tools along with the Natural Areas Opportunities Plan will enable each community to advance the conservation opportunities locally. These locally refined plans should be coordinated with those of their neighboring municipalities.

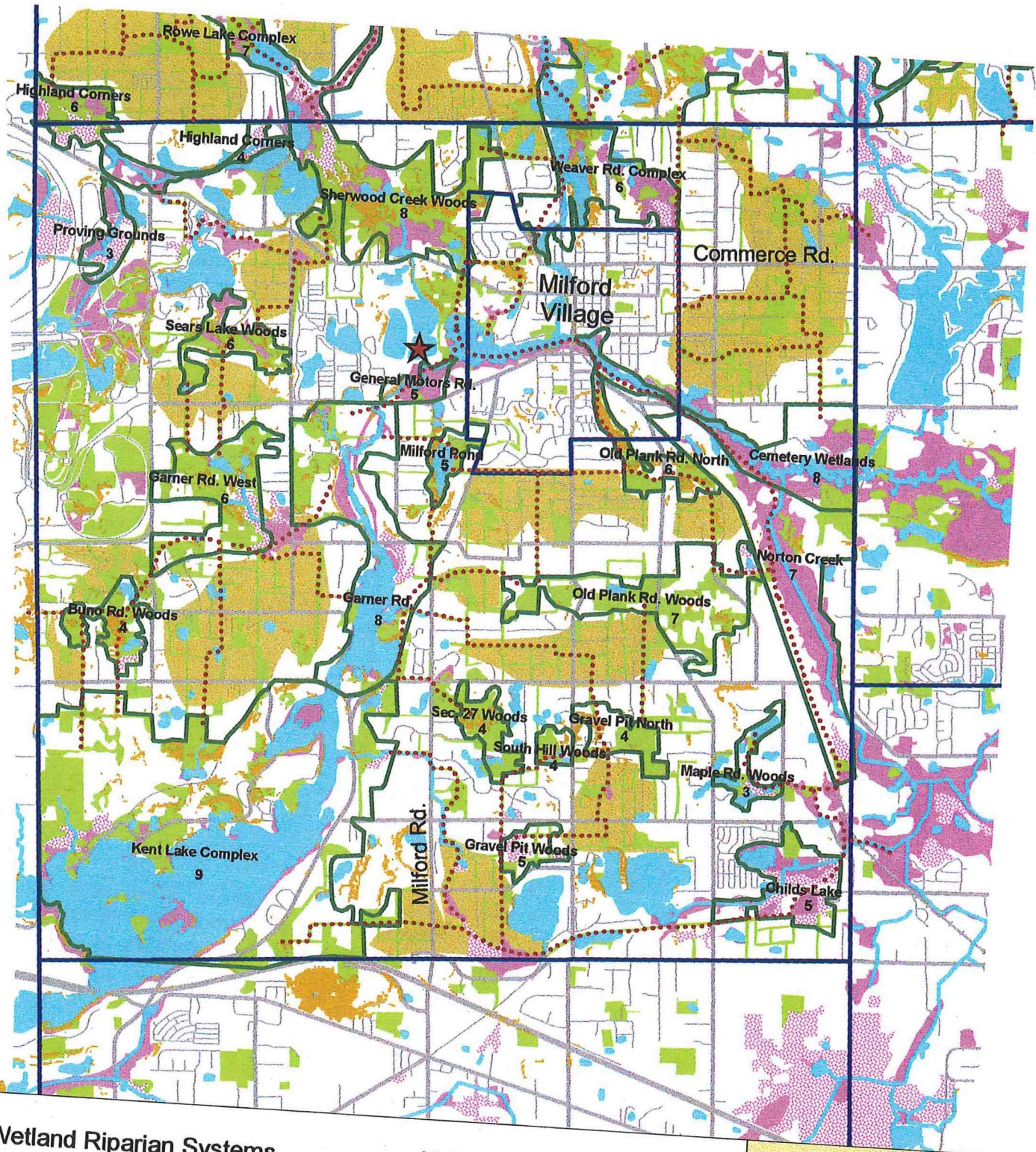


Key References




Listed below are key references available to assist the development of natural resource conservation and management plans. These references offer processes and guidelines for the development of comprehensive management plans. (See Bibliography for specifics)

1. Ecology of Greenways
2. Landscape Restoration Handbook
3. Managing Michigan's Wildlife. A landowner's guide
4. Consensus Agreement on Model Development Principles to Protect Our Streams, Lakes, and Wetlands
5. Better Site Design. A handbook for changing Development rules in your Community



Local comprehensive management plans should begin with an inventory of the natural resources present in the community. See the example of a community's composite natural resource inventory on the next page.



Wetland Riparian Systems

-  Lakes, Ponds, Rivers, Streams
-  Non-Forested Wetlands
-  Forested Wetlands




Potential Natural Areas

-  Sites having received field inventory
-  Environmental Ranking

Upland Landscape Fabric

-  Existing Tree/Hedge Rows
-  Potential Priority Wildlife Corridor
-  Potential Grassland Restoration Zone
-  Forested Uplands
-  Sloped Lands

Built Environment

-  Municipal Boundary
-  Roads
-  Railroads

Natural Areas Opportunities

MILFORD TWP.



Conservation Approaches

The Landscape Restoration Handbook, one of the key reference documents, offers a listing of major principles and guidelines for natural landscape management. The reference states:

“Maintaining and restoring natural diversity to our increasingly fragmented landscape is a challenge. Diversity can increase in an area even when the creation of a large preserve is not possible. If created, small preserves can play an important role in restoring our natural heritage without diminishing the intended human use of the land.

The intricate interdependencies of living things dictate that restoration and conservation efforts be focused on the habitat and natural community levels. The principles and designs outlined here can be used to increase species diversity, increase the population of a particular species, and assist in the restoration of specific ecosystems.

Diversity is not the only goal however. It is important to maintain or restore the natural communities that occur in a region. The key to planning and management for all species of wildlife is to know the species' habitat requirements and provide a variety of habitat components in a desirable combination that will meet the needs of as many species as possible. Animals require food, shelter from predators and weather, and breeding habitats to ensure the best chances of securing mates, nesting, and raising young. The challenge with managed areas is to restore or retain sufficient characteristics of the natural community to maintain a high diversity of plants and animals and at the same time allow human use of the area.”

As communities develop their own local management plans, they should reference the following question checklist, which was abstracted from the *Landscape Restoration Handbook*. It is important to address each point or guideline in sequence.

Have You?

1. ...preserved as many large natural communities as possible in single tracts for each ecosystem, or increased the size of existing patches to the minimum size needed to sustain viable wildlife populations?

Large areas of natural communities sustain more species than small areas.

2. ...increased the number of small community patches, where there is no opportunity to preserve, increase, or create large natural community patches?

Many small patches of natural communities in an area will help sustain regional diversity.

3. ...modified or designed the shape of natural community patches to create more interior habitat? If space is limited, a circular area will maximize interior habitat.

The shape of a natural community patch is as important as the size.

4. ...avoided fragmentation of large patches of natural vegetation? Even a narrow access road through a forest can be a barrier to movement of small organisms, eliminate interior habitat, and introduce unwanted species.

Fragmentation of habitats, communities, and ecosystems reduces diversity

5. ...minimized the isolation of patches? Corridors and an increased number of patches can prevent isolation.

Isolated patches of natural communities sustain fewer species than closely associated patches.

6. ...maintained or developed many corridors of similar vegetation to connect isolated patches of the same or similar community types? Opportunities exist along roadways, rivers and streams, urban ravines, fencerows, hedgerows, railroad rights-of-way, to name a few. Wider corridors provide more wildlife benefits and protect water quality better than narrower ones. Breaks in the corridor should be avoided.

Species diversity in patches of natural communities connected by corridors is greater than that of disconnected patches.

7. ...restored the mosaics of natural communities on large parcels, as the diversity of the landscape allows? Smaller parcels should be evaluated within a regional context with the goal of developing such mosaics on the landscape.

A heterogeneous mosaic of natural community types sustains more species and is more likely to support rare species than a single homogeneous community.

8. ...allowed transition zones between adjacent plant and animal communities to naturally develop? The amount of area these transition zones include can be increased by expanding the interspersion of community types on a given parcel. However this should not be done at the expense of reducing interior habitat.

Transition zones between natural communities are needed and they support a variety of species from both communities, in addition to species specific to the transition zone.