

PART 6

NATURAL FEATURES

6.01 Introduction

Significant natural features, including woodlands, wetlands, floodplains, topographic features, and waterways, exist within Lodi Township that contribute to a unique Township-wide character and wildlife habitat. These natural features will be preserved to the maximum feasible extent. This means preservation, not only of the specific natural feature, but also of the surrounding eco-system, which supports it.

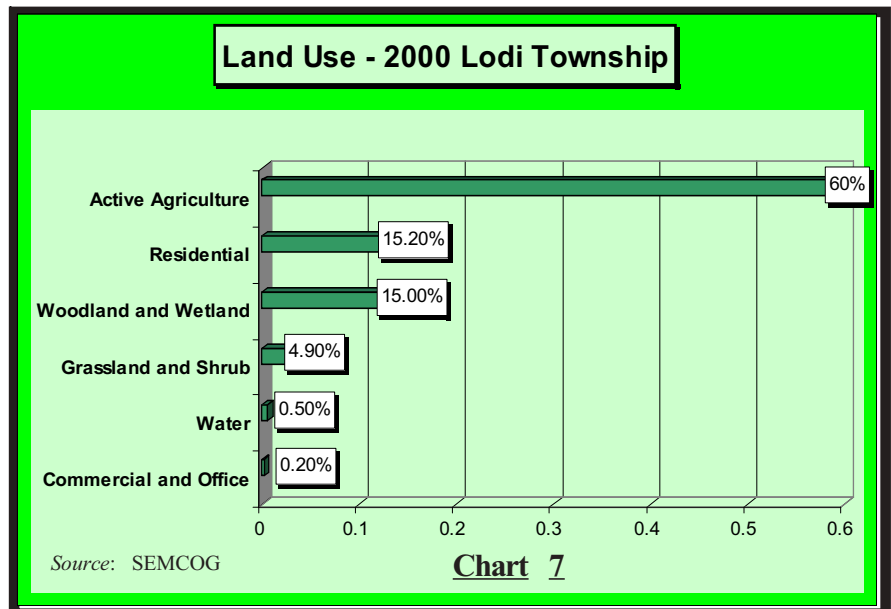
Woodlands, stream corridors and wetlands will be preserved in their present extent and condition. Stream corridors and fence rows, where feasible, will be used as connecting links among wetlands, woodlands, and other open space areas. New connection corridors will be created where needed and possible. Stream corridors and wetlands will be used as parts of the natural drainage system and to help recharge groundwater aquifers. The system will be augmented where possible with open drainage courses

and storm water retention facilities. Open drainage courses and retention areas will be developed as part of the natural landscape. Groundwater recharge areas will be protected to the extent consistent with sound land development policies.

Also natural features, which exist in areas proposed for future development, will be integrated into overall development patterns so that they will be preserved and properly respected. It is understood that all natural features do not need to be accessible to be of benefit to residents. Their presence alone provides visual and environmental benefits.

6.02 Woodlands

Large, mature forested areas exist within Lodi Township that should remain undeveloped if possible. These areas enhance the rural nature of the Township, contribute to a unique environmental character, and provide significant areas for wildlife habitats and timber production.



In 1979 Lodi Township had 11.43% of its land area in woodlands. There were 76 individual woodlands greater than 5 acres in size. The breakdown of woodlands at that time included: 17 woodlands between 5 and 10 acres, 36 woodlands between 11 and 40 acres, and 23 woodlands that were greater than 40 acres in size.

It is difficult to compare current figures for the year 2000 since land use figures for both woodlands and wetlands are combined into the same category. Approximately 15% of the township's land area is designated within this combined category as seen in chart number 7. Also grassland and shrub is depicted in a separate category which accounts for 4.9% of the township's land area in the year 2000. Even though some woodlands have been reduced since 1979 they continue to be prominent within the township. These types of natural resources can support a wide variety of wildlife and can act as a community within themselves.

Woodlands are a valuable natural resource from both environmental and aesthetic points of view. They play an important role by stabilizing soil and slowing runoff and erosion resulting from flooding and high winds. Needless destruction of trees and the conversion of woodlands to other uses must be discouraged. Woodlands that are within designated areas intended for future development must be part of the overall development concept. Woodlands are dispersed throughout Lodi Township and are depicted on Map 5.

6.03 Drainage

Three drainage basins exist within Lodi Township – Mill Creek, Honey Creek, and Saline River. Numerous streams and drains flow into these systems and they often link various types of natural resources such as wetlands, wooded areas, and organic soils. This encourages an overall, continuous open space system throughout the Township.

The majority of drainage within the Township flows generally south into the Saline River Basin. Lands in the northwest flow north into the Mill Creek basin and a small portion in the north central portion of the township flows north within the Honey Creek basin.

The streams and drains in Lodi Township are generally headwaters of these three drainage basins and are therefore important to protect water quality and prevent significant increases in the volume of flow.

These drainage systems must be protected from pollution including runoff that is usually too warm, contains toxic nutrients and sediments, and enters streams in flushes that are not synchronized with natural water flow. Of special concern is limiting the total amount of impervious surface (impervious surfaces are those which do not permit the infiltration of precipitation into the ground, and include such materials as road pavement and roof tops). Impervious areas contribute to extremes in the volume and velocity of water flow and to increased water temperatures. Studies have suggested that when impervious surfaces reach 10 to 20% of the watershed, the communities of aquatic organisms in streams begin to decline and pollution increases. It is the goal of this Master Plan to keep total impervious surface in every section of the Township below 10% to prevent any degradation in water quality, flow rate, volume and temperature which could adversely affect downstream communities. In addition, it will be important to ensure areas along streams and drains have dense vegetative cover that provide filtering of runoff entering the watercourse and to prevent building construction and pavement close to them.

A. Flood Plains

A flood plain is an area adjoining a lake, stream, river, or pond that receives excess water from flooding. Floods are a natural occurrence in the hydrologic cycle. A well defined flood plain is

produced when flooding recurs with some frequency and predictability on the same area. Water exceeding the normal average level is stored as a temporary water reservoir across a flood plain. As long as the overflow remains on the flood plain, this volume is not added to the floodwater moving downstream. When flood plain storage is prevented by restricting the water flow to a channel, the volume and size of the flood may be increased downstream causing higher water levels and more damage.

Flood plain areas are measured or “delineated” to indicate the chance of a flood occurring at a given location. This measuring or delineating is done regarding the probability of flooding, usually once in 50, 100, or 500 years. Flood plain delineation is required for home and business construction loans and the Federal Flood Insurance Program. The National Flood Insurance Program accepts the 100 year flood plain as the minimum standard for protection. A 100 year flood is a flood which has a probability of reaching a given elevation once in 100 years, or a 1% chance of occurring in any given year.

All of Lodi Township has not been evaluated or mapped regarding flood plain areas along its creeks and drains. When development plans are submitted, it is the responsibility of the developer to accurately map flood plains and submit this information as part of site plan review. Flood plains should not be altered regarding their potential to hold flood waters and reduce flooding to downstream areas.

B. Groundwater Recharge Areas

Water stored in, and slowly filtering through, geologic formations is referred to as ground water. An aquifer is a geological formation that contains sufficient ground water to supply wells, lakes, springs, streams and/or wetlands. Precipitation reaches an aquifer by downward percolation from the surface. A land surface which readily permits water to move downward into an aquifer is referred to as a ground water recharge area.

Underground aquifers serve three major functions:

1. They are natural reservoirs of groundwater for human consumption and for irrigation.
2. They are natural filters for groundwater, but they can be easily polluted by unsound land use practices in the recharge area.
3. They interconnect with surface water systems and help stabilize surface water levels. They help reduce high water levels during wet periods and add water to surface water bodies during dry periods.

A large groundwater recharge area is located in the southeastern portion of the township, north of the City of Saline. Much of this area has developed as single family residential with on site septic facilities.

Two other ground water recharge areas are located in the western portion of the township as well as along the northern township border. These areas are depicted on Map 5.

Groundwater recharge areas are highly generalized and it must be emphasized that the boundaries are not precise. On-site evaluation and analysis must be undertaken to determine the extent and susceptibility of the areas. This would be a requirement during the site plan process if any development is initiated within the Township.

C. Wetlands

Wetlands are transitional zones between terrestrial and aquatic systems. The water table is usually near or covering the surface. They are characterized by very low topographic change, poor drainage, specific types of vegetation, and standing water. Marshes, swamps, and bogs are well known terms which are historically referred to as wetlands. Since wetlands are among the most environmentally sensitive lands, reliable information for the definition and classification is required.

Wetlands were mapped within Lodi Township using U.S. Geological Survey Quadrangles and then compared with aerial photographs. A generalized classification system was then developed by the Washtenaw County Metropolitan Planning Commission. The most important wetlands are those that are contiguous to lakes, rivers, and streams, and that are important for stormwater storage. These wetlands, designated as “first priority” by Washtenaw County are shown on Map 5. Significant wetland concentrations are located in the central and southeastern portions of the Township. Every section of the Township has some identified wetlands.

6.04 Topography

Topography is usually referred to in terms of slope. The natural stability of a slope is dependent on the interaction of vegetation, climate, soil, and underlying geology. In general, the greater the slope, the greater the sensitivity to disturbance. Natural slopes that have not been disturbed by human activity are generally stable, at least in the short run. Improper development practices on sensitive slopes can incur great economic and environmental consequences. Soil type, particle size, permeability, vegetative cover, organic matter, and moisture content will vary the rate of erosion on a particular slope. Slope of land is an integral part of the natural drainage system, it affects soil erosion, it adds visual interest to the landscape and helps make the landscape more attractive.

Within Lodi Township, topography ranges from relatively flat areas to gently rolling areas. The highest land in the Township is in Sections 2 & 3 and 10 & 11. The elevation drops from over 1,050 feet to approximately 800 feet in elevation in Sections 34 and 35, as can be seen from Map 6. Slopes ranging from 6 to 12 percent are located primarily in the northeastern and southwestern parts of the Township. Slopes ranging from 12 to 18 percent are located in the southwest portion of the Township, however a narrow band exists in sections 3 and 4 along the northern boundary of the Township.

6.05 Threatened Species and Unique Features

Several natural areas exist within the Township which are regarded as unique because they are a combination of forests, various wetland types, river, stream and drainage systems. These areas are of special concern both because of their size, and because they are a combination of different types of natural features. The large sizes of these areas provide improved habitat for wildlife requiring larger ranges, and provide a distinct interior of the habitat that is more protected than for smaller areas. Combinations of different natural areas usually support a wider array of biological diversity than individual components of similar size and conditions.

The Michigan Department of Natural Resources maintains a Natural Features Inventory of threatened and endangered species within certain parts of the State of Michigan and regional areas. If development is to occur within Lodi Township, the MDNR should be contacted by the developer to determine if any threatened or endangered species exist for that general area. There may be other vegetative species within the Township that may not be on an endangered list but nonetheless should be reviewed.

6.06 Soils

One aspect of soil analysis regarding natural resources is to identify those soils that should not be disturbed and should be protected from an environmental standpoint. Soils of this nature are found within the Township and are usually organic by nature and classified as muck and with high water tables. This analysis, based upon soil characteristics, taken generally at a four foot soil depth, is to be used only as guidelines regarding possible development. It is understood that the unsuitability of a soil could relate to a slope factor as opposed to an organic or high water table condition. Wetlands and flood plains most often characterize these soils. Due to the sensitive nature of these soils and the environmental function they perform, and the severe limitations they impose on potential development, they should be protected from development and/or alteration. These soils, classified as very severe for on-site septic systems, are primarily located adjacent to streams and wetlands. These soils generally contain high-water tables, have high organic content, or dense heavy clays, and pose severe limitations for the effective functioning of septic systems. As a result, Health Departments usually will not approve of septic systems on soils like these. Map 7 illustrates the limited portions of the Township where there are soils with slight or moderate limitations for on-site septic systems. Except for the southeastern and north central portions of the Township, many of the soils within the Township are classified as moderate to severe regarding limitations for on-site septic systems.

Also highly productive soils for agricultural production must be protected for long term agricultural activities. Map 8 depicts Class II soils that are highly productive for agricultural production.

6.07 Goals, Objectives, and Strategies

Goal A: Preserve and manage existing natural features within Lodi Township.

Objective 1: Protect the quality of surface water, wetlands, ground water, and ground water recharge areas.

Objective 2: Protect woodlands, landmark trees, and wildlife habitat.

Objective 3: Protect steep slopes of twelve percent or greater from adverse impact from development.

Objective 4: Maintain existing and strategically create new open space areas for nature conservation and/or recreational use.

Objective 5: Preserve and protect the current interconnected systems of natural environmental areas, including wetlands, woodlands, flood plains, and open areas as needed to create a diverse and viable habitat for wildlife.

Strategies

- a. Utilize Lodi Township Zoning Ordinance to regulate preservation of these natural features.
- b. Coordinate with other local, regional, and State authorities to address these areas.

Goal B - Ensure that development projects are designed and constructed in a way that preserves or enhances the integrity of natural systems.

Objective 1: Maintain and create attractive natural views along all Township roadways, with special attention to entryways into the Township.

Objective 2: Utilize existing natural resources to buffer low intensity land uses from more intense land uses.

Objective 3: Encourage developers to use innovative design techniques to help protect or enhance natural systems.

Objective 4: Reduce the amount of storm water runoff, surface flooding and erosion.

Objective 5: Establish strong open space and natural resource linkages with new development.

Strategies

- a. Review and modify the Zoning Ordinance to help reduce the overall amount of impervious surfaces.
- b. Develop regulatory incentives that encourage the reduction of impervious surfaces proposed with new development.
- c. Develop regulatory incentives that encourage the enhancement of natural areas on sites proposed for development (i.e., removal of invasive species and the introduction of native species, restoring a wetland, improving floodplain function, etc.)
- d. Support design techniques, such as clustered developments and storm water best management practices, which would minimize impacts to natural systems on and off a site.
- e. Ensure that any development proposed preserves the natural and scenic character of the area.
- f. Develop methods to assure the long-term maintenance of natural systems on development projects during the site plan process.
- g. Support and coordinate with the Saline Sustainability Circle, Washtenaw County Office of Strategic Planning, adjoining city and township municipalities and other governmental agencies with regard to establishing open space and natural resource linkages.
- h. Request that linkages be made to existing and proposed parks, open space and natural resource areas and corridors when new development is proposed.

Goal C: Reduce the Negative Impact and Minimize the Long-Term Continuation of Sand, Gravel, and Other Extraction Operations and Processing.

Objective 1: Continue coordination with extraction operators regarding their mining operations and the implementation of approved restoration plans.

Strategies

- a.** Maintain Township ordinances regulating mining, excavation, stockpiling, quarrying, processing and the dumping/disposal of off-site and/or comparable material.
- b.** Work closely with the Washtenaw County Road Commission in evaluating haul routes and the associated long-term impacts to roadways and adjoining land use activities.
- c.** Continue to require sand and gravel operations to obtain a special use permit for continued operation along with an approved restoration plan.
- d.** Evaluate the adoption of “sunset provisions” which would set time and/or extraction limits for sand and gravel operations.
- e.** Establish zoning language which prohibits secondary gravel and/or accessory operations, i.e. asphalt plants, concrete plants and similar operations.
- f.** Consider an overlay zone technique which examines the sphere of influence or impact of sand and gravel extraction operations on existing land use activities.
- g.** Increase code enforcement/inspection efforts to assure compliance with development guidelines.