

APRIL 9, 2012



MASTER PLAN

CHARTER TOWNSHIP OF LYON,
OAKLAND COUNTY, MICHIGAN

MCKenna
ASSOCIATES

**CHARTER TOWNSHIP OF LYON
OAKLAND COUNTY, MICHIGAN**

**RESOLUTION OF THE PLANNING COMMISSION
ADOPTING THE MASTER PLAN AND FUTURE LAND USE MAP**

At a regular meeting of the Planning Commission of the Charter Township of Lyon, Oakland County, Michigan, held on April 9, 2012, at 7:00 p.m. prevailing local time.

PRESENT: Blades, Campbell, Conflitti, Dolan, Enlow, O'Neil, Towne

ABSENT: None

The following Preamble and Resolution were offered by Commissioner Blades and supported by Commissioner Campbell :

WHEREAS, the Lyon Township Planning Commission, pursuant to the Michigan Planning Enabling Act (Public Act 33 of 2008, as amended), has studied and prepared recommendations for the development of the Township; and

WHEREAS, the Planning Commission has developed a Master Plan consisting of research and analyses dealing with land use, demographics, retail and office uses, Ten Mile corridor development, industrial development, transportation, community facilities, recreation, and other pertinent topics; and

WHEREAS, the Planning Commission has used the Master Plan analyses to prepare a Future Land Use Map that allocates land in appropriate amounts for the future development of residential uses, commercial and office uses, industrial uses, public and institutional uses; and

WHEREAS, the Master Plan incorporates recommendations from the Lyon Center Vision Plan, which will promote the revitalization of the New Hudson area; and

WHEREAS, the Planning Commission held a public hearing on February 13, 2012, and considered all comments and concerns of the public; and

WHEREAS, the Planning Commission recognizes that the Master Plan and Future Land Use Map are flexible guides for public and private decision-making that will keep the Township in motion toward its vision to maintain outstanding quality of life for all residents.

NOW, THEREFORE, BE IT RESOLVED that the Planning Commission of the Charter Township of Lyon hereby adopts the Master Plan and Future Land Use Map, with the revisions outlined in the McKenna Associates letter dated March 27, 2012, which is attached hereto, and resolves to use the Plan and Map together a guide to the overall development of the Township.

PRESENT: Blades, Campbell, Conflitti, Dolan, Enlow, O'Neil, Towne

ABSENT: None

RESOLUTION DECLARED ADOPTED

I hereby certify that the foregoing is a true and complete copy of a resolution adopted by the Planning Commission of the Charter Township of Lyon, Oakland County, Michigan, at a regular meeting held on April 9, 2012.



Michele Cash, Township Clerk

6/12/2012

Date



Sean O'Neil, Planning Commission Chairman

6/11/12

Date

Master Plan

for the

Charter Township of Lyon Oakland County, Michigan

Adopted: April 9, 2012

Prepared with assistance by
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ACKNOWLEDGEMENTS

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Michele Cash, Clerk
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INTRODUCTION

The land use decisions that Lyon Township makes over the next several years will have a fundamental impact on the character and quality of life in the Township. The Township is located at the leading edge of development in southeast Michigan. Several properties have changed ownership in recent years as developers position themselves to address the needs generated by expanding urbanization.

Residents of the Township have long been concerned about maintaining the quality of residential life. A survey in 1990 revealed that many residents believe “quality of life” is closely related to quality of the natural environment and preservation of rural features. This plan is intended to protect and preserve those qualities on which residents place such great value, while recognizing that growth will create needs that must be addressed.

Legal Basis for the Master Plan

The Michigan Planning Enabling Act (P. A. 33 of 2008) expressly authorizes cities, villages, and townships to engage in planning and zoning. The Act states that the general purpose of a master plan is to guide and accomplish development that satisfies all of the following criteria:

- (a) Is coordinated, adjusted, harmonious, efficient, and economical.
- (b) Considers the character of the planning jurisdiction and its suitability for particular uses, judged in terms of such factors as trends in land and population development.
- (c) Will, in accordance with present and future needs, best promote public health, safety, morals, order, convenience, prosperity, and general welfare.
- (d) Includes, among other things, promotion of or adequate provision for 1 or more of the following:
 - (i) A system of transportation to lessen congestion on streets.
 - (ii) Safety from fire and other dangers.
 - (iii) Light and air.
 - (iv) Healthful and convenient distribution of population.
 - (v) Good civic design and arrangement and wise and efficient expenditure of public funds.

- (vi) Public utilities such as sewage disposal and water supply and other public improvements.
- (vii) Recreation.
- (viii) The use of resources in accordance with their character and adaptability.

The Act also requires the Planning Commission to “make careful and comprehensive surveys and studies of present conditions and future growth of the municipality.”

Public Input

A key goal of this plan is to protect and preserve those qualities on which residents place great value. In 1990 a Community Planning survey was conducted, which solicited residents’ views and preferences on a wide range of community growth and development issues, including housing, the environment, utilities, transportation, and recreation. Through the years, the results of the 1990 Community Planning Survey have been verified in public hearings and elections where residents have consistently spoken and voted in favor of maintaining the country or rural environment and other values expressed in the survey.

The survey revealed that the most liked features of Lyon Township relate to its country or rural environment. Other features which residents appreciate include proximity to the freeway, access to work, shopping, and parks, the large lots and open space, friendly people, low population density, and low crime.

The survey also found that there are some features of the Township that residents dislike. Respondents most frequently cited "growth and development" issues as the most disliked features. Also topping the list of disliked features were poor condition of roads and excessive traffic. Additional features of the Township that were particularly displeasing to respondents included high taxes, the school system and administration, the landfill, lack of certain public services, increased crime, and the appearance of the Township.¹

The challenge to community leaders over the next several years will be to preserve and enhance the rural environment and other desired features of the Township, and to resolve existing and potential concerns cited by respondents. The response to a question concerning potential problems found that roads and traffic are chief among the concerns which must be resolved. Residents are also concerned about potential increases in breaking and entering, crime, and groundwater pollution.

The survey obtained respondents' opinions about the quality and scope of various public services. Public safety services were generally rated favorably, although a majority of

¹Since 1990, many of the displeasing features of the Township have been addressed, if not completely resolved. The school system is on solid footing and has been proactive in addressing the need for new and renovated schools. The landfill is closed and converted into a park. Public water and sewer services have been developed and blighted structures throughout the Township have been removed using CDBG funds.

respondents indicated the need for increased patrol of residential areas. Almost eighty percent of the respondents indicated a willingness to participate in a "citizen watch" program.

A majority of respondents cited several public services that they would like to see expanded, including road paving, trash removal (if arranged through a private hauler), a source separation program, park development and parkland acquisition, and senior citizen programs. Innovative financing for expanded services will be required, however, since the survey revealed that residents are generally not in support of increased millage to pay for the services.

With respect to park development, the survey gave respondents the opportunity to identify facilities they would like in the new Township park or elsewhere in the community. The top facilities cited by respondents were an outdoor ice rink, nature trails, picnic shelter, and playgrounds.

Several questions focused directly on the type of development desired by respondents. Based on survey response, one overriding development goal in the master plan should be preservation of natural features, such as wooded areas, wetlands, farmlands, and unique wildlife habitats. The strength of respondents' convictions on this issue is reflected by the fact that over sixty percent of the respondents indicated that the Township should selectively purchase lands for the purpose of preserving valuable natural and historic resources.

Over eighty percent of the respondents were in agreement that, by and large, the Township should be developed as a low-density single-family residential community. Two-thirds agreed that the southern part of the Township should be developed at a maximum density of one house per acre. Almost sixty percent indicated that single-family development on 1/3 to 1/2 acre lots are appropriate in the northern part of the Township.

The survey also sought residents' opinions regarding various residential development alternatives. Approximately 57 percent indicated they are in favor of open space zoning, which allows developers to concentrate houses in one portion of a parcel so they can preserve open areas, woodlands, and other natural features located elsewhere on the parcel.

Most respondents think that commercial development should be confined to the three areas where it is already present: south of South Lyon, at the Milford/I-96 interchange, and along Grand River Avenue. Almost half of the respondents indicated that commercial development should serve primarily only the residents of the community. However, when asked what businesses are needed in the Township, respondents cited some businesses, which typically serve a regional market, such as a major discount store. Other businesses desired by respondents include a major supermarket, restaurants, drug stores, and fast food or carryout establishments.

Approximately sixty percent of all respondents were in agreement that industrial development should take place along Grand River Avenue, between New Hudson and the Township's east boundary (Napier Road).

Charrette

Another means of collecting public input is a charrette – a multi-day workshop during which ideas are developed and sketched out, with the goal of putting together a plan for a specific area. Citizens are invited and encouraged to come in any time during the charrette to offer their ideas, critique the plan, and generally shape the plan.

A charrette was held for the purpose of developing a plan for the New Hudson part of the Township, resulting in the Lyon Center Vision Plan.

Residents who participated in the charrette agreed on a plan that calls for creation of a compact, walkable downtown, with a hamlet at its center, and high density residential adjacent to the hamlet on the south. The hamlet, consisting of individual building on individual lots, is intended to mimic the way New Hudson historically developed and provides a way to seamlessly integrate the new and old structures.

Looking beyond the hamlet, residents agreed that the southwest quadrant of downtown, but within the ring road, should be developed with a combination of multiple family at 12 to 14 units per acre and single family at 7 to 8 units per acre.

On the east side a downtown, the charrette resulted in a substantial amount of land being set aside for civic use on the land use plan. At the entrances to the downtown, the plan proposes Gateway Corridor land uses, which are intended to consist of low impact office and service uses in redeveloped single-family homes.

Goals and Policies

The opinion survey provides information about community values. These values provide the basis for a set of goals and policies, which, in turn, provide the foundation for the master plan. The goals and policies reflect the development concerns of the community, give direction regarding the physical environment desired by the citizens of the Township, provide direction for more detailed analysis and eventual changes in zoning, and establish a barometer to assist the various boards and commissions in assessing the impact of their planning and zoning decisions.

General Planning and Development Goals

1. **Balance of Land Uses:** Provide for a balance and variety of land uses, including commercial, office, industrial, open space, and recreational uses in locations that will enhance the quality of the residential environment.

2. **Master Physical Planning:** Maintain complementary land use relationships, which promote a harmonious, attractive community; preserve natural resources and the rural character; promote a sound tax base; and provide for manageable traffic conditions.
3. **Roads and Transportation:** Develop an orderly program for improvement, maintenance, and expansion of the road system in order to meet increasing traffic demands, provide smooth traffic flow, and provide proper access to all properties in the Township.
4. **Property Maintenance:** Encourage owners to maintain their properties, and work toward removal of blighted structures.
5. **Fiscal Stability:** Promote the development of a financially sound government that can continue to provide all necessary services (municipal, educational, etc.) to residents and businesses in an efficient manner.
6. **Urban Design:** Promote development that is consistent with the urban design concepts described in the Master Plan and Lyon Center Vision Plan, especially along Grand River Avenue and in New Hudson.
7. **Planning Innovation:** Permit innovation in land use planning where innovation would:
 - more effectively implement the goals set forth in the Master Plan,
 - achieve a higher quality of development than would be possible under conventional zoning regulations,
 - result in development that is compatible with surrounding uses, and
 - produce recognizable and substantial benefits for the community that would not otherwise be achieved.

Innovation should not be encouraged, as a means to increase the intensity of development or to simply develop land in a manner that otherwise would not be permitted.

8. **Preservation of Natural Features.** Lyon Township is fortunate that it is well-endowed with natural features, such as wetlands, woodlands, open spaces, and farmland. Preservation of these natural features should be a prevailing objective in all future development. The implications of this policy differ depending on the land being developed. The Township should strive for minimal alteration of natural features in the rural areas. In planned settlements, such as subdivisions, significant features should be preserved, recognizing that the overlay of a residential development pattern will alter the topography, vegetation, drainage patterns and other natural features of the site. Development of non-residential uses may severely alter the natural features of the site,

although the Township should use the site plan review process to encourage development that reflects the appreciation of the natural environment.

Residential and Agricultural Development Policies

1. **Density.** Consistent with residents' opinions, strive for low density single family residential development. Single family development at a density of approximately 2 to 3 units per acre is generally appropriate in the northern part of the Township, but single family development should generally not exceed a density of one house per acre in the southern part. The exception to these density standards is in New Hudson, where the Vision Plan calls for development of up to 14 units per acre in some multiple family locations.
2. **Availability of Public Services.** Permit residential development in accordance with the availability of necessary public services, including road construction and maintenance, police and fire services, governmental administrative services, and educational services. Consider the costs of both construction and maintenance of capital improvements necessary to serve proposed developments.
3. **Water and Sewage.** Base the density and location of residential land use on the adequacy of the water supply and wastewater treatment system.
4. **Land Use Incompatibility.** Separate residential areas from intensive, incompatible land uses. Where residential uses are located adjacent to industrial uses, encourage the phasing out of incompatible nonconforming residential uses.
5. **Preservation of Natural Features.** Design new residential developments to be compatible with the underlying natural features of the site. Preserve significant topographic features, tree stands, wetlands, and other natural features. Encourage rural open space planning where it would retain the rural character of the land.
6. **Amenities for Higher Density Housing.** Locate high- and medium-density housing where it can be adequately served by public and private services without unreasonable disruption to the level of services enjoyed by other residents. For example, provide higher-density housing with direct access to major thoroughfares, and locate such housing in proximity to shopping areas and recreation opportunities.
7. **Housing Code Enforcement.** Follow a policy of stringent code enforcement in all residential areas. The perceived quality of the residential environment is affected by the overall level of maintenance of houses and residential sites throughout the Township.
8. **Revitalization of Aging Residential Areas.** Facilitate revitalization of aging residential areas. Encourage self-initiative in upgrading property. Work toward improving the

- roads, street lights, and other amenities in older subdivisions. Use Community Development block Grant funds to aid low and moderate income residents with minor home repair and housing rehabilitation.
9. **Capital Improvements in Residential Neighborhoods.** Continue to work with residents and County agencies to identify and implement needed capital improvements in residential areas. Such capital improvements may include drainage and road improvements, for example.
 10. **Housing Compatibility.** Encourage housing development that is compatible in size, quality of materials, and quality of construction, with existing newer residential developments in the Township.
 11. **Housing for Elderly Residents.** Work toward providing a sufficient supply of affordable housing alternatives for elderly residents to encourage them to remain in the community, balancing and diversifying the population.
 12. **Farmland Preservation.** When reviewing development plans, explore alternative layouts to minimize conflict with nearby farming operations. Promote use of open space zoning to facilitate farmland preservation.
 13. **Lot Splits.** Discourage lot splits that result in the development of frontage along main roads, impairing adequate access to vacant lands to the rear.
 14. **Coordinated Road Patterns.** Require road connections between adjoining residential developments, provided that cut through traffic in residential neighborhoods can be avoided.
 15. **Residential Design Standards.** Require any new subdivisions or other residential developments to meet high standards of visual attractiveness, health and safety, and environmental sensitivity.

Commercial Development Policies

1. **Future Allocation of Commercial Land.** Base the future allocation of commercial land on residents' needs for shopping and office facilities.
2. **Commercial District Development.** Permit the development of commercial and office uses in the following locations: South of South Lyon on Pontiac Trail; in the New Hudson area; on the south side of Ten Mile Road, in the vicinity of Johns Road; and at the northwest corner of the Ten Mile Road/Milford Road intersection. Develop the New Hudson area as the center of commercial activity for the north part of the Township.

3. **Design.** Design commercial uses in Lyon Township to reflect thorough and careful analysis of the site and a sincere effort to improve the overall appearance of the district, consistent with the urban design guidelines set forth in the Master Plan.
 - Traditional architectural design is preferred in Lyon Township.
 - Buildings should be designed with varied architectural details to provide visual interest. Blank walls and reflective glass curtain walls should be avoided, particularly on the street side of buildings.
 - Large and garish signs should be prohibited.
 - Loading, parking, and storage areas should be located behind buildings or screened, preferably with landscaped screening or a combination of landscaping and walls.
 - Parking areas should be landscaped to provide visual relief to large paved areas.
 - Safe pedestrian access ways should be provided on every site.
4. **Variety of Commercial Uses.** Use commercial land wisely to satisfy the needs of residents. Work with developers to encourage recruitment of retail and office services for which there is a need. Discourage the inefficient use of land for commercial uses for which the demand has already been met.
5. **Linkages between Commercial Developments.** Require service drives, access easements and pedestrian/bicycle linkages between adjoining developments in the interest of traffic safety.
6. **Screening and Transitions.** Contain impacts from commercial developments on the site through careful site design, landscaped screening, and other measures. Where necessary, place transitional uses between commercial uses and nearby residential uses.
7. **Code Enforcement in Commercial Areas.** Enforce building and maintenance codes. Renovate or repair deteriorated buildings, signage, landscaping, and parking areas on a timely basis. Bring new uses into compliance with Township building and zoning codes.
8. **Relationship to the South Lyon Commercial District.** Satisfy the community's retail and service needs through the coordinated growth and development of both the Township's commercial districts and the South Lyon commercial district.

Research and Industrial Development Policies

1. **Balanced Research and Industrial Development Strategy.** Research and industrial growth strengthens the tax base and increases employment opportunities. Balance these economic benefits with the Township's environmental objectives and overall development goals.
2. **Types of Uses.** Work toward diversity in the industrial base, recognizing that Lyon Township is a good environment for high technology, research, and light industrial operations.
3. **Allocation of Research and Industrial Land.** Consistent with residents' opinions, confine *future* research and industrial development generally to the Grand River Avenue corridor, between the east roundabout and the Township's east boundary, where a growing industrial based has already been established. Immediate access to I-96 assures that the impact of research and industrial traffic on the remainder of the Township will be minimal.
4. **Environmental Capability.** Monitor the pace and type of research and industrial development to be certain it is in keeping with the Township's overriding goals for preservation of the natural environment and resources, and protection of residential areas. Light manufacturing and research firms would be best suited to Lyon Township, because such firms generally produce low levels of waste, noise, traffic, air and water pollution, and other undesirable impacts.
5. **Availability of Public Services.** Permit future research and industrial development only in accordance with the availability of utilities and public services, including adequate road construction and maintenance, police and fire protection, and general municipal administrative and regulatory services. Consider the ongoing cost of providing such services, as well as the cost related to initial construction.
6. **Research and Industrial Design Standards.** Seek high quality industrial design, including development within planned industrial parks.
7. **Aesthetics.** Require ample landscaping and screening around storage areas, loading areas, and trash disposal, particularly along Grand River Avenue, a main gateway to the community.
8. **Industrial Regulatory Enforcement.** Enforce codes and regulations applicable to industrial areas to prevent air, water, and soil contamination and exposure to unnecessary threats to health or safety.

Environmental Policies

1. **Protection of Natural Features.** Consistent with residents' opinions, seek preservation of wooded areas, roadside trees, wetlands, scenic views, farmlands, and unique wildlife and bird habitats, provided that people's property rights are protected.
2. **Pollution Control.** Take all reasonable steps to prevent surface and ground water pollution, contamination of the soils, air pollution, light pollution, and noise pollution. Toward this end, continue to adopt and enforce up-to-date performance and environmental standards where the Township has jurisdiction.
3. **Intergovernmental Cooperation.** Continue to cooperate with federal, state, and county agencies for the purposes of enforcing environmental regulations which are under the jurisdiction of outside agencies, such as wetlands and soil erosion control regulations.
4. **Floodways and Flood Hazard Areas.** Implement measures to protect floodways and flood hazard areas, consistent with the Floodway District and Flood Hazard Areas Ordinance.
5. **Energy Conservation.** Promote energy-conserving subdivision and building development.

Transportation Policies

1. **Road and Street Classifications.** Make development of a *road network* the primary objective of transportation planning in Lyon Township. Accordingly, base transportation system planning on a functional hierarchy of local, collector, and arterial roads and highways.
2. **Right-of-Way Widths.** Limit development in the existing and future rights-of-way indicated on the Master Right-of-Way Plan for Oakland County.
3. **Land Use/Transportation Relationships.** Strive for a balanced relationship between the transportation system and land use plan. Study new development proposals to determine the amount of traffic generated and the effect on the transportation system.
4. **Access Control.** Encourage the use of service drives to provide access between adjoining properties in commercial and industrial districts. Restrict the number of driveways penetrating onto major thoroughfares.
5. **Pedestrian/Bicycle Transportation.** Continue to develop a system of pedestrian/bicycle safety paths to link residential areas with schools, recreation areas, commercial districts, and other attractions.

Recreation Facilities Policies

1. **Multiple-Use Concept.** Develop the Township's recreation system based on the multiple-use concept, whereby the main Township park provides a total recreation experience for the entire family. Under this concept, the James F. Atchison Memorial Park is intended to serve virtually the entire Township with facilities for active and passive recreation, competitive sports, facilities for children and adolescents, and picnic areas.
2. **New Park Development.** Acquire additional land for future recreation development. Facilities will be needed in the south part of the Township and a waterfront park would be desirable.
3. **Special Facilities.** Provide special recreation facilities on a community-wide basis to meet the recreation needs of residents. Based on the Community Planning Survey, residents are most in need of bicycle paths, an ice rink, nature trails, picnic shelter, playgrounds, and hiking and cross-country ski trails. Facilities for senior citizens and the handicapped should also be included in Township parks.
4. **Coordination with Other Agencies.** Cooperate with other public and private organizations to provide recreation services and facilities and to avoid unnecessary duplication.
5. **Huron Valley Trail Connections.** Link open spaces and natural areas with the Huron Valley Trail and a network of continuous greenbelts throughout the Township.
6. **Environmental Compatibility.** Design parks to be compatible with the environment on and surrounding the park sites. Distinctive natural features on park sites should be preserved wherever possible. Design parks so they contribute to the aesthetic quality and rural character of the Township. These principles apply most notably to the "Elkow Farms" park parcel, located at the northeast corner of Milford Road and Eleven Mile.
7. **Funding for Parks and Recreation.** Implement sound fiscal planning for park acquisition, development, and maintenance. Consider various methods of funding and/or cost-reduction, including the use of volunteers, continued use of state and federal grant programs, user fees, fund-raising committees, and other methods.
8. **Privatization.** Consider working with the private sector to develop desired recreation facilities that the Township cannot afford to provide itself.
9. **Recreation Areas within Residential Developments.** During plan review encourage the preservation of open land areas and significant natural features as an integral part of any new residential development.

10. **Recreation Facilities Evaluation.** Establish an ongoing program of recreation facility evaluation so that the purpose and function of the recreation program can be adjusted to meet changing needs. Monitor services provided and the level of usage, residents' preferences, changes in population age structure and lifestyle, changes in popular types of recreation, changes in the level of recreation services provided by other agencies, and the cost of operation in relation to the benefits provided.

Community Facilities Policies

1. **Municipal Services.** Develop a system of quality municipal services that is responsive to the needs of the Township's residential, business, and industrial population. Design the municipal service base to provide services necessary to maintain the attractiveness of the community.
2. **Public Safety.** Provide facilities necessary to provide the community with high quality police and fire protection. Evaluate fire protection facilities on a regular basis as new development occurs to determine if modifications or additions to facilities are needed.
3. **Capital Improvements Program.** Prepare a six-year capital improvements program, as required by Michigan Public Act 33 of 2008, as amended, to plan for the expenditure of capital funds in an orderly manner, consistent with available funding.
4. **Historic and Cultural Resources.** Promote identification and preservation of buildings and sites that have historic or cultural significance.

EXISTING LAND USE

General Overview

Historically, development in Lyon Township has been influenced by several key parameters, including the predominance of agriculture, major transportation corridors, railroads, proximity to the City of South Lyon, proximity to the Detroit metropolitan area, soil limitations, natural features and resources, and development of the Kensington Metro Park. The most significant impact on development in the Township in recent years is the availability of public sewer and water utilities.

For most of its history, agriculture has been the predominant land use in Lyon Township. Early settlement of the township consisted mainly of farms, which were cleared from the heavily timbered land. Early concentrations of development took place in three locations during the 1830's: Kensington, New Hudson, and South Lyon.

The Town of Kensington was established in 1832 at the junction of the Huron River and a toll road, which later became Grand River Avenue. Kensington's prosperity rose quickly as a stagecoach stop for travelers, but started to decline in the late 1850's and by 1890 Kensington was a ghost town. In the 1940's, the Huron River was dammed, Kensington was flooded, and Kent Lake was expanded for the creation of the present Kensington Metropolitan Park.

New Hudson was settled in 1832 at the crossroads of Pontiac Trail, a state territorial road that was constructed in the 1830's and the primary north-south axis of the Township, and Grand River Avenue, which became the primary east-west axis. Like Kensington, New Hudson served as a stagecoach stop for travelers. When the Pere Marquette rail line from Detroit to Grand Rapids was constructed in 1871 New Hudson became a rail stop. Although New Hudson never incorporated as a city or village, it is now the home for the Township Hall and Fire Station No. 1.

In 1835 a settlement was established near a store and mill located in the southwest part of the township known for years as Thompson's Corners. In 1847, a post office was established in the settlement under the name of South Lyon. South Lyon, which was incorporated as a village in 1873, was an original stop on the Pere Marquette Railway, and it later became a rail stop for the Grand Trunk Western and Chesapeake & Ohio railroads.

Among the three original settlements, South Lyon experienced the most growth and development. The concentrated development in and around South Lyon serves the population of the Township as well as the City. However, the benefits of proximity to South Lyon have been offset by a series of annexations over the years, which have enlarged the City boundaries at the expense of the Township.

Development in the Township itself escalated during the past two decades, due in part to the construction of I-96, the availability of relatively low cost land, and the general westward push of development in the Detroit metropolitan area.

The construction of I-96, the major transportation corridor between Lansing and metropolitan Detroit, relieved Grand River Avenue as a major transportation corridor and made the Township easily accessible for residents who commute to the Detroit metro area. Two detrimental features have offset the improved accessibility. First, by removing traffic from Grand River Avenue, I-96 reduced the market for New Hudson businesses, contributing to its decline. Second, I-96 is a divisive force, separating the northern one-mile from the rest of the Township.

As the leading edge of development moved westward, assisted by I-96, Lyon Township became the new frontier for people seeking a spacious rural-like environment. The Township also became a destination for some industries in need of relatively low cost land with convenient freeway access. Proximity to the metropolitan area has also had some disadvantages, as Lyon Township became the target for unsightly landfills, contractor yards, and similar uses that are needed in an urbanized area but are typically located away from densely populated areas.

The construction of a wastewater treatment plant and extension of public water and sanitary sewer utilities unlocked the development potential of vast areas of the Township. Growth within the last decade has occurred at a faster rate, albeit not unchecked. Soil limitations and lack of public utilities continue to affect some areas of the Township, and while growth has not stopped, these limitations have caused new growth to occur at lower densities in areas where the soils are suitable for septic systems.

Wetlands have deterred development in certain parts of the Township, particularly along Grand River Avenue. Apparently the construction of I-96 altered drainage patterns, resulting in the formation of wetlands in the Township's prime industrial corridor. Consequently, although large expanses of land along Grand River Avenue are zoned for industrial use, only a portion of the land can actually be developed. The incorporation of Planned Developments in the Township Zoning Ordinance ensures development proposals will preserve and protect natural features and wetlands areas.

Gravel is another natural feature that has had a substantial impact on development in the Township. For many years, the gravel extraction operations south of Twelve Mile Road on the east side of the Township and west of Kent Lake Road retarded development on nearby properties. In 2003, Lyon Sand and Gravel completed the process of reclamation and

restoration of the lake edges, transforming the appearance of the former gravel pits under its jurisdiction.

As a result of the accelerated growth in the last decade, development plans covering vast areas of the Township have been approved. There are few agricultural parcels remaining, and open space is largely confined to parks and golf courses, with a few notable exceptions. The previous plan reported that the opportunity still existed to shape the Township to the form desired by residents. With this plan, that opportunity is substantially diminished.

Build-Out Analysis

The previous paragraphs described several physical parameters that have influenced development of the Township. Another extremely important parameter that has affected development is zoning. Zoning, in combination with physical and socio-economic factors, has produced a predominantly low-density single-family community consisting of 5,633 total housing units and 13,907 residents (SEMCOG 2009 Estimate).

A build-out analysis of an area provides a detailed look at the housing units, population and related services that could develop as a direct result of a community's existing plan or zoning regulations. By determining the potential residential population, the results of the analysis will not only provide insight into the impact a planned area will have on the existing uses but can also be used to calculate the demand the area will generate for municipal services and other supporting uses.

Methodology

Some data from the 2006 Build-Out Analysis is of value, but conditions have changed substantially with the addition of several Planned Developments, the recession, and new restrictions being placed on private roads in the Township. One impact of these changes is that costly land assembly of small parcels by developers is not as likely as in the past. When development revives, developers are more apt to search for 20, 40 and 80-acre parcels to develop. When the stock of these parcels is depleted, then the pursuit of 10-acre and smaller parcels may occur. Similarly, because of the Private Road Ordinance restrictions, it is likely that the Township will not see as many lot split proposals as in the past.

Based on the design of Planned Developments, it is now evident that every parcel cannot be developed to its maximum division potential. Topographic conditions, natural features preservation, unusual parcel shapes, and other features stand in the way of maximizing the development potential. Likewise, it is recognized that lot split potential on smaller parcels is substantially less than once expected.

The implications of these changes and information is that the estimate of the total number of dwelling units upon build-out has been reduced. The corresponding estimate of build-out population in Table 2-1 has been reduced.

The methodology to calculate units and population at build-out involved the following steps:

Step 1: Determine the Number of Existing Residential Units. This step involved counting every existing residential unit in the Township, based on the Existing Land Use Survey and aerial photographs. Single family lots occupied by a dwelling unit were counted whether inside or outside of a site condominiums. In addition, the number of units in multiple family structures were added to the total.

Step 2: Determine Potential Additional Dwelling Units. To determine potential additional dwelling units it is first necessary to study Planned Developments in the Townships. There are three categories of lots in the Planned Development: the total number approved by the Planning Commission, the total number actually developed (with water and sewer utilities and roads), and the total number actually built upon. The development potential is obtained by subtracting the number built upon from number approved.

Second, it is necessary to look at large vacant parcels (20-80 acres) and potential lot split parcels (vacant, less than 20 acres). The development potential on these parcels was calculated using the density specifications for the zoning district in which the parcel is located.

Step 3: Total Dwelling Units Upon Build-Out: The addition of the values for Step 1 and Step 2 produces the Total Dwelling Units Upon Build-Out.

Step 4: Build-Out Population. The Build-Out Population is derived by multiplying the values in Step 3 by 2.63 persons/household. The figure 2.63 person/household is a current projection provided by SEMCOG.

Table 2-1

UNITS AND POPULATION AT BUILD-OUT			
<u>Section Number</u>	<u>Potential Additional Dwelling Units</u>	<u>Total Dwelling Units Upon Build-Out</u>	<u>Build-Out Population</u>
1	0	8	21
2	284	440	1,157
3	47	173	454
4	285	761	2,001
5	168	639	1,680
6	200	201	529
7	148	393	1,034
8	275	631	1,660

Table 2-1

UNITS AND POPULATION AT BUILD-OUT			
<u>Section Number</u>	<u>Potential Additional Dwelling Units</u>	<u>Total Dwelling Units Upon Build-Out</u>	<u>Build-Out Population</u>
9	318	595	1,565
10	208	253	665
11	160	192	505
12	19	32	84
13	84	112	295
14	306	312	821
15 & 16	524	789	2,075
17	140	227	597
18	252	297	778
19	90	137	360
20 & 21	318	699	1,838
22	130	194	510
23 & 24	533	686	1,804
25	404	548	1,441
26	260	567	1,491
27	185	244	642
28	293	334	878
29	0	158	416
30	0	32	84
31	292	368	968
32	30	281	739
33	196	572	1,504
34	231	313	824
35	357	428	1,126
36	644	706	1,857
TOTAL	7,381	12,322	32,403

1. The Lyon Center Vision Plan calls for redevelopment in Section 4 to provide high density single and multiple family residential development, which could result in approximately 470 dwelling units and 1,236 residents. These numbers are not included in the above table.

2. Sections 15 & 16, 20 & 21, and 23 & 24 are combined in the above table to account for Planned Developments that cross Section boundaries.

3. The formula for determining build-out population is: (Total Dwelling Units Upon Build-Out x 2.63 Persons per Dwelling Unit). The 2.63 figure comes from SEMCOG projections.

Analysis of Existing Land Use

A detailed review of each category of land use follows. Current estimates of land use acreage are based on an update of the parcel-by-parcel inventory completed by McKenna Associates, Inc., in the early months of 2010. A perspective on the changes is provided by comparing the current data to land use data compiled in 1991 (Table 2-2).

Table 2-2

<u>Land Use</u>	Existing Land Use			
	<u>1991</u>		<u>2010</u>	
	<u>Area</u> <u>(acres)</u>	<u>Area</u> <u>(Percent)</u>	<u>Area</u> <u>(acres)</u>	<u>Area</u> <u>(Percent)</u>
Agriculture	3,437.20	18.20%	1,762.4	8.68%
Single Family Residential	3,823.30	20.24%	6,865.4	33.80%
Multiple Family Residential	47.90	0.25%	66.9	0.33%
Mobile Home Park	112.00	0.59%	136.0	0.67%
Commercial	158.00	0.84%	383.6	1.89%
Commercial Recreation (e.g., golf driving range)	126.70	0.67%	105.7	0.52%
Office	52.80	0.28%	41.6	0.20%
Industrial	375.30	1.99%	811.0	3.99%
Public/Quasi-Public e.g., churches, Township Hall, airport)	383.50	2.03%	390.9	1.92%
Recreation	0.00	0.00%	1,306.4	6.43%
Golf Courses (not including Lyon Oaks)	759.60	4.02%	876.6	4.32%
Utilities	6.50	0.03%	50.9	0.25%
Vacant	9,103.60	48.19%	6,087.5	29.97%
Site with Vacant Building	0.00	0.00%	13.9	0.07%
Open Water	0.00	0.00%	675.8	3.33%
I-96 Right-of-Way	0.00	0.00%	300.3	1.48%
Grand River Ave. Right-of Way	0.00	0.00%	61.7	0.30%
Additional Right-of Way not Accounted for else where	0.00	0.00%	357.3	1.76%
Railroad Right-of-Way	0.00	0.00%	20.0	0.10%
Extractive	380.70	2.02%	0.0	0.00%
Landfill	123.60	0.65%	0.0	0.00%
Total	18,890.70	100.00%	20,313.7	100.00%

Note and Sources: The 1991 land use survey did not compute road right-of-way, so the 1991 total land area is less than the 2010 total land area. The 1991 figures are from the 1991 Master Plan for Future Land Use. The 2010 figures are based on 2004 data and Oakland County Assessing data, updated to 2010 by McKenna Associates.

In 1972, Lyon Township was essentially comprised of vacant and agricultural land. During the next two decades this supply of land was tapped, primarily to develop residential home sites. Limited non-residential development occurred during the period, but in terms of acreage the non-residential development was minimal by comparison to the residential growth during the period. Whereas Lyon Township was generally characterized as a solidly rural community in 1972, Table 2-2 reveals that the transition from rural to a residential semi-rural exurb identified in 1991 has continued at a steady pace into the new millennium.

Substantial non-residential development has occurred. The most significant commercial development is Lyon Towne Center (approved in 2002), located at I-96 and Milford Road. Industrial development has occurred in the Grand River Avenue corridor, in the Lyon Industrial-Research Centre and the Quadrants Industrial-Research Centre.

The total acreage figures in Table 2-2 indicate a decrease in the size of the Township between 1991 and 2004, due to annexation of property by the City of South Lyon. The 2004 figure is consistent with Oakland County data, as well as land use data compiled by the City of South Lyon.

Residential Land Use

Residential land uses occupied about 7,068.3 acres, or approximately 33.8 percent of the total land area in the Township according to the 2009 survey (see Map 1 and Table 2-2). The amount of residential land increased by about 77.5 percent between 1991 and 2009.

Prior to 1991, most residential development occurred in conventional single-family subdivisions located in the northwest portion of the Township. Residential development began increasing in the central portion of the Township, due in part to the availability of public sewer and water, the build-out of adjacent communities like the City of Novi, and the construction of new schools on the north side of Ten Mile Road, west of Johns Road. There are a few subdivisions with lots that are one acre or larger, but most subdivisions in this part of the Township have been developed at higher densities, including some subdivisions with lots as small as 15,000 square feet.

Single-family development throughout much of the Township outside of Planned Developments and subdivisions, consists of development on acreage parcels along the mile roads or on private roads, where individual landowners exercised their development options through lot splits. Historically, this pattern of development resulted in an inefficient use of the land, characterized by restricted access to the vacant interior portions of the sections, lack of connections between private roads, and creation of flag lots and other odd-shaped lots. In 2009, amendments were made to the Private Road Ordinance that may reduce future lot split activity.

Since the development of the Tanglewood Planned Development in the early 1990s, the Township has offered the Planned Development option to encourage innovative residential development proposals. The Planned Development option provides the Township the flexibility necessary to permit development proposals that would otherwise not be achievable, such as mixed-use developments that offer a variety of housing options, sometimes with a commercial component but always with an open space component. Planned development proposals approved in 2003-04 include Elkow Farms, Woodwind, Copperwood, Lyon Ridge, Hornbrook Estates, Saddle Creek, Pinehurst, Kirkway Estates, and Mill River (resulted in a consent judgment).

Historically soil conditions restricted higher-density residential development in the Township. Multiple-family developments are located in two areas, around Lake Angela and south of Kent Lake near I-96 in the northwest corner of the Township. There are two mobile home parks in the Township: adjacent to the multiple-family in the northwest corner, and on Eight Mile Road west of Griswold Road.

Vacant or agricultural lands, fueling the drive for continued residential development, occupy approximately 38.7 percent (7,849.9 acres) of the Township. Following the extension of sanitary sewers in 1999, residential development proposals have been prevalent. The Orchards of Lyon and Pendleton Park were the first residential developments on sewers in the late 1990's.

Commercial and Office Land Use

Land used for commercial purposes increased 143 percent between 1991 and 2009. Even with the substantial increase in commercial land use over the last decade, it only accounts for 1.89 % of the total amount of land in the Township or 383.6 acres.

Commercial development in the township is concentrated in two areas: the New Hudson area and on Pontiac Trail south of South Lyon. Commercial nodes are located outside of these two areas: at the northwest corner of Milford and Ten Mile Road; and within the Copperwood Planned Development, on the south side of Ten Mile Road at Johns Road. Additional small-scale commercial development is located on Grand River Avenue, west of Napier (Brainer's Greenhouse); Ten Mile Road, west of Milford Road (Raney's Greenhouse); and Pontiac Trail, south of Silver Lake Road.

Until the mid-1990's, commercial uses in Lyon Township did not provide for the basic needs of residents for several reasons:

- The commercial districts in Lyon Township lacked certain businesses that were needed on a day-to-day basis by residents, including a supermarket, hardware store, and so forth.
- The commercial districts in Lyon Township were not cohesive. Industrial, residential, and utility uses interrupted the continuity of the commercial districts.
- Some of the commercial buildings and sites were in a state of deterioration. Older buildings and uses had not been modernized to serve the needs of the current population.

Commercial development in the mid-1990's and early 2000's changed the retail profile of the Township. Lyon Towne Center businesses in New Hudson include Wal-Mart and Lowe's (approved in 2004), several banks, restaurants and service businesses. At the south end of the Township the Kroger shopping center developed, with a Kroger supermarket and several small retail businesses.

Even with the increase in the commercial facilities within the Township, residents continue to travel to adjoining communities for certain goods and services. This is known as "leakage" -- expenditures for retail goods and services by Township residents are leaking into adjoining communities rather than being spent in the Township. Analysis of "leakage" and the potential for new commercial development or redevelopment is provided in the Retail and Office Analysis.

When existing properly-zoned commercial sites are redeveloped, particularly in the New Hudson hamlet, the Township should strive to obtain a higher quality of retail and services uses and building and site design, in accordance with the Lyon Center Vision Plan. With respect to new commercial development, the Township should focus its efforts on preventing strip development.

Land used for office purposes slightly decreased by about 21.2 percent between 1991 and 2009. Office land use comprises 41.6 acres, which is 0.2 percent of the total of the Township. Office uses are primarily located on the north side of Grand River, and west of Old Plank Road.

Industrial Land Use

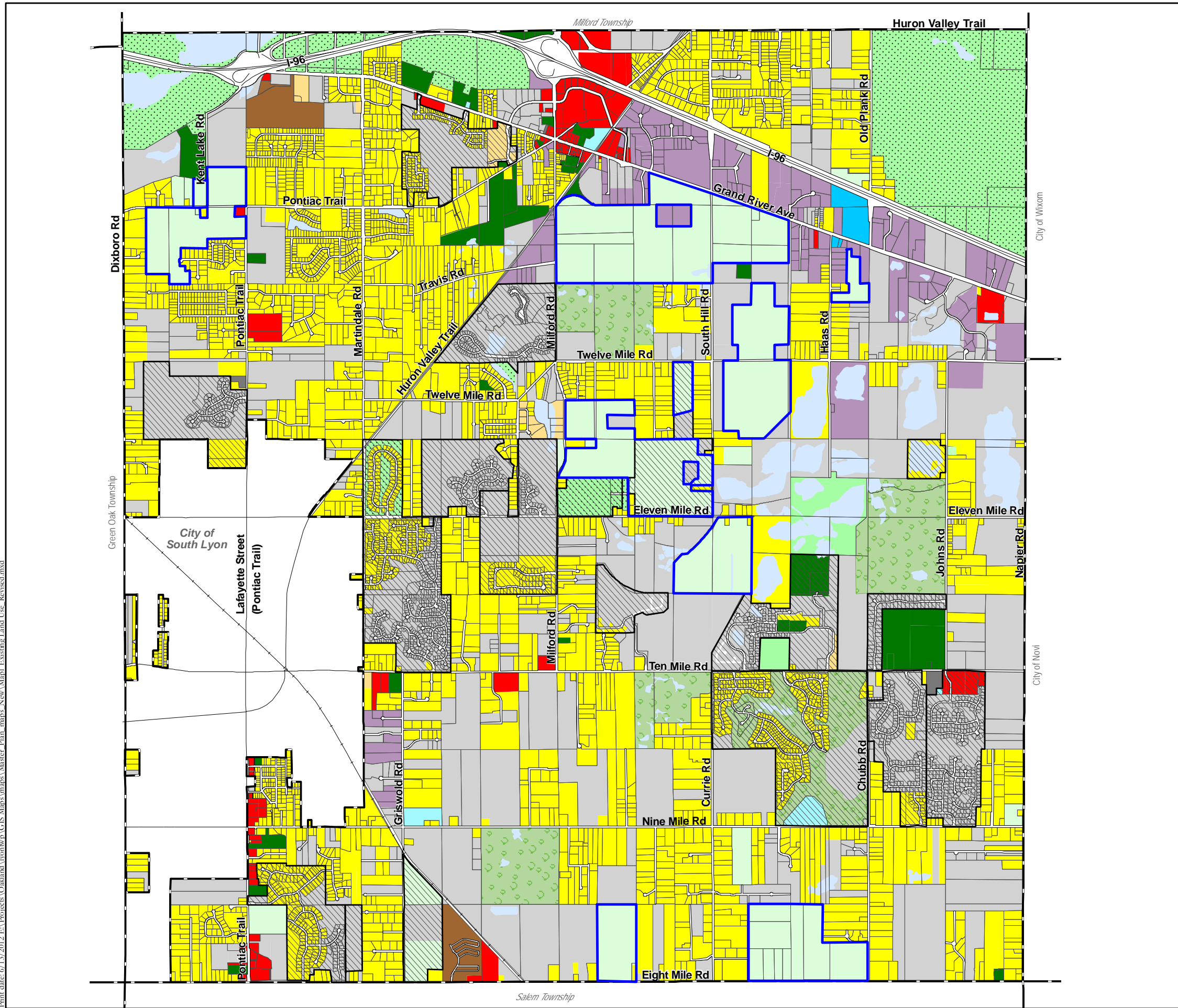
Industrial land uses occupied about 811 acres, or about 3.99 percent of the Township's total land area, according to the 2009 land use survey. Industrial land uses doubled between 1991 and 2009.

There are two industrial areas in the Township: the Grand River Avenue corridor and Griswold Road. Most industrial development is located along the Grand River Avenue corridor, with some spillover along Milford Road. Industrial uses are diverse, including small heating and cooling businesses, manufacturing operations, warehousing and wholesale operations and research and prototype development. There are also a number of contractor storage yards and builder's supply businesses with outside storage.

Several new industrial operations were established in the Township in the late 1990's and 2000's, including Cummins, U. S. Food Service (a wholesale facility), Pratt & Miller Engineering, Nailco, Richard Tool, and others. The Township is attracting more diverse manufacturing and research/manufacturing operations. Walbridge-Aldinger owns 505 acres of prime industrially-zoned land on the south side of Grand River Avenue, east of Milford Road. Although this land does not currently show up in the "industrial" column of the existing land use table because it is vacant or farmed, it represents a huge opportunity for future industrial/research development.

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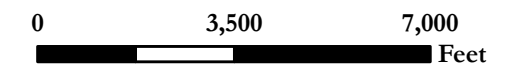


Map 1 Existing Land Use

Charter Township of Lyon,
Oakland County, Michigan

-  Planned Developments & Consent Judgment (Mill River)
 -  Contiguous Agriculture
 -  Open Water
- Existing Land Use**
-  Vacant
 -  Agriculture
 -  Single Family Residential
 -  Multiple Family Residential
 -  Mobile Home Park
 -  Office
 -  Commercial
 -  Industrial
 -  Public/Quasi-Public
 -  Recreation
 -  Golf Course
 -  Commercial Recreation
 -  Vacant Building
 -  Utility

Base Map Source: Oakland County, GIS, 2006
Data Source: McKenna Associates, Inc., 12/09



McKenna
ASSOCIATES

4/9/12



The Griswold Road industrial district consists of only seven or eight businesses on the west side of Griswold Road, between Nine and Ten Mile Roads. This industrial district is zoned "General Industrial", a classification which provides for outdoor storage. Consistent with the zoning classification, uses along Griswold Road include vehicle salvage yards, RV storage, and contractor storage yards. Very little new industrial development has occurred along Griswold Road in recent years, perhaps in part because of more stringent environmental regulations governing salvage yards and similar uses, lack of visibility, the poor image cast by existing industrial uses, and potential conflicts with adjoining residential uses. The South Lyon Community School's bus garage relocated to a site on Griswold Road near Nine Mile Road. With the paving of Griswold, the industrial district is poised for redevelopment.

Extractive Land Use

Extractive land uses consisted of sand and gravel mining and a few oil and natural gas pumping operations. Sand and gravel mining ended in 2000, so the land is classified as vacant. Vacant land characteristics are discussed later in this chapter.

Most gravel excavating operations were located on the east side of the Township between Ten and Twelve Mile Roads. Previously reclaimed excavation sites included the Haas Lake Park campground, which is situated around water bodies formed from previous gravel and mining operations.

In the long term, sand and gravel excavating operations can be an asset to the community provided that proper reclamation procedures are followed. Future reclamation of former excavation sites will present unique challenges for the Township as these sites become ripe for development. The opportunity exists to transform the excavated areas into beautiful residential environments provided that sufficient land area is left around the lakes, steep slopes are properly graded, obsolete equipment and junk have not been dumped into excavated areas, and sufficient topsoil has been retained to cover the entire excavated area.

The largest gravel extraction operation, Lyon Sand and Gravel, completed extractive work in the early 2000's and reclaimed the lake edges in 2003. Lyon Sand and Gravel continues to operate an asphalt plant and concrete batch plant on the south side of Twelve Mile Road, west of Napier Road.

Public and Quasi-Public Land Uses

Public and Quasi-public uses occupied approximately 390.9 acres of land or about 1.92 percent of the Township's total land area in 2009. Public uses include public schools, the Township Hall, the Township library and community center, cemeteries, and the Oakland/Southwest Airport. Churches are the principal quasi-public use.

Recreation Land Use

In the 1991 survey, Commercial Recreation and Public/Semi-Public categories were combined. To better quantify and evaluate recreation land use, a separate category for recreation was established, consisting of 1,306.4 acres of land or approximately 6.43 percent of the total land area of the Township. Kensington Metropark and Lyon Oaks County Park comprise the majority of recreation land in the Township. The James F. Atchison Memorial Park, which is located on the closed BFI landfill, celebrated its “official” grand opening in July 1996, consists of a total of 110 acres, and provides a number of amenities including ballfields, playground equipment, and walking and biking trails. Approximately 62 acres of land have been set aside for a park at the northeast corner of Milford and Eleven Mile Roads. This park land was made available to the Township as a result of the Elkow Farms Planned Development. The 62 acres consists of approximately 30 acres for active recreational uses with the remainder for natural resource conservation.

Commercial Recreation Land Uses

There is one private campground, Haas Lake Park located at the south end of Haas Lake Road, which is classified as a commercial recreation use. The golf driving range on Ten Mile Road is also classified as a commercial recreation use. The campground surrounds lakes that were created by sand and gravel operations. Together, these uses occupy about 105.7 acres of land (0.52 percent), minus the lakes.

Golf Course Land Uses

Golf courses in Lyon Township are experiencing the same development pressures that have pushed golf courses out of nearby communities to the east. Walnut Creek Country Club, Tanglewood, Cattails, Coyote, and Riverbank golf courses occupy 876.6 acres, or about 4.32 percent of the total land area.

Golf courses provide a means of preserving open space even as the community develops. However, there are immediate and potential negative impacts from golf courses, including elimination of the natural rural features of the land, increase in traffic, and potential impact on groundwater.

Agricultural

Agricultural land continues to be the prime target for development. The Township lost 1,674.8 acres of agricultural land between 1991 and 2009, a decline of 48.7 percent. Small agricultural operations are scattered throughout the Township, while one of the largest commercial farms in the Township, Elkow Farms, is currently being developed in stages as a residential Planned Development.

Even as more and more parcels are removed from the agricultural base, challenging the goal of preservation of the rural character, the Township continues to meet this challenge head-on.

The Planning Commission has completed a landscape design plan for the Ten Mile Road corridor, as a result of increased development along Ten Mile Road, both from outside and within the Township. The plan prescribes a general layout for landscaping along the road and identifies specific types of trees, shrubs, and grasses associated with the more rural landscape.

Vacant Land Use

Vacant land, which is any land not developed and not farmed, occupies 6,087.5 acres or 29.97 percent of the total land area of the Township, and is the second largest land use category behind residential land use. The loss of vacant land is often felt even more strongly than the loss of agricultural land since vacant land is generally found in a natural state.

Rights-of-Way

Road rights-of-way occupy 739.3 acres or 3.64 percent of the total land area of the Township. This figure does not include rights-of-way where the adjacent parcels are measured to the center of the road. The I-96 freeway, with a 300-foot wide right-of-way, comprises the biggest piece of right-of-way acreage in the Township. Railroad right-of-way is also included in the right-of-way. As the Township develops, the amount of land area for rights-of-way will increase.

Other Land Uses

Airport. The Oakland/Southwest Airport occupies 77 acres, or 0.4 percent of the total land area of the Township. Hangars and other support facilities have been upgraded in recent years, and a master plan is being prepared to address future improvements and expansion.

The 1991 Southeast Michigan Regional Aviation System Plan prepared for SEMCOG indicated that the Oakland/Southwest Airport is a general utility airport, with a 3,128-foot runway. Precision instrument approach operations are not available. The majority of aircraft operating at the airport, according to a 2005 study, are of the single engine and small, twin-engine variety.

Landfill. One of the most prominent land uses in the Township in 1991 was the landfill, which occupied about 124 acres of land on the south side of I-96 west of Milford Road. As noted previously, the landfill is now closed and a community park has been developed on its surface.

Water Bodies. Water bodies occupy 675.8 acres or 3.33 percent of the total land area of the Township. Water bodies include Lake Angela, Haas Lake, part of Kent Lake, Huron River, and the lakes created by gravel extraction.

Natural Areas

In 2004, Oakland County Planning and Economic Development Services contracted with Michigan Natural Features Inventory (MNFI) to update previously collected data regarding

potential natural areas within the County. Potential natural areas are defined as places on the landscape dominated by native vegetation that have potential for harboring high quality natural areas and unique natural features. These areas may provide critical ecological services such as maintaining water quality and quantity, soil development and stabilization, pollination of cropland, wildlife corridors, stopover sites for migratory birds, sources of genetic diversity, and flood water retention.

History. Work to identify potential natural areas began in Oakland County in 1987, when the County contracted with MNFI to conduct a natural area survey. Ten years later, six Oakland County municipalities and the County undertook a more comprehensive study, which became the foundation for the Shiawassee & Huron Headwaters Resource Preservation Project (S&H project). That project developed a systematic process to identify and prioritize natural areas for preservation and further survey efforts.

Oakland County then contracted with MNFI to complete identification and ranking of areas not included in the S&H project, using a more refined process. This resulted in a July 2002 report that identified and ranked over 600 potential natural areas, which represents the least disturbed natural areas remaining within Oakland County. The potential natural areas listed in the 2002 report and the original areas of the S&H project were further refined by MNFI in 2004. Approximately 93,500 acres within Oakland County, representing approximately 16% of the total county acreage, were identified as potential natural areas.

Methodology. The process to identify potential natural areas started with interpretation of digital aerial photos taken in 2002. Emphasis was placed on intactness, wetlands and wetland complexes, riparian corridors, and forested tracts. Then, sites were ranked using a scoring system with points being awarded based on five criteria:

1. Total size of the site. Larger sites tend to have higher species diversity, higher reproductive success, and improved chance of plant and animal species surviving a catastrophic event.
2. Size of core area. The core area is defined as “total size”, minus the area of a 300-foot wide buffer inward from the edge of the site. Studies have shown that there are negative impacts associated with the perimeter of the site for “edge sensitive” animal species, thus a buffer helps minimize impacts for these species in forested landscapes.
3. Presence or absence of a stream corridor. Streams are dynamic systems that interact with the surrounding terrestrial landscape to create new habitats and provide a travel corridor for wildlife to connect isolated patches of natural vegetation.
4. Landscape connectivity. Landscape connectivity is defined as the percentage of a 1/4 mile buffer outward from one site that intersects with another site’s buffer, and the number of times one site’s buffer intersects with other site buffers. High connectivity improves gene flow between populations, allows species to decolonize unoccupied habitat, improves resilience of the ecosystem, and allows ecosystem processes (flooding, fire, pollination, etc.) to occur at a more natural rate and scale.

5. Restorability of surrounding lands. Restorability is defined as the potential for restoration activities in areas adjacent to the site (percentage of agricultural land or old fields within 1/4 mile of the site). Restorability is important for increasing the size of existing natural communities, providing linkages to other habitat patches, and providing a natural buffer from development and human activities.

The scoring system awarded a possible 25 total points for each site, and total scores ranged from 23 to 1. Using the natural break classification method (which identifies breakpoints between classes using a statistical formula called Jenk's optimization), sites scoring between 23 and 12 points were ranked Priority One, sites scoring between 11 and 6 points were ranked Priority Two, and sites scoring between 5 and 1 point were ranked Priority Three.

Oakland County remains rich with high-quality natural resource areas that still look and function the way they did 200 years ago. But, with the high rate of development and its associated stresses on the natural environment, conservation of these remaining areas and their native plant and animal populations are vital if the County's diverse natural heritage is to be maintained.

The 2004 Oakland County Potential Conservation/Natural Areas Report can be used by local municipalities, land trusts and other agencies to prioritize conservation efforts and in finding opportunities to establish an open space system of linked natural areas throughout Oakland County.

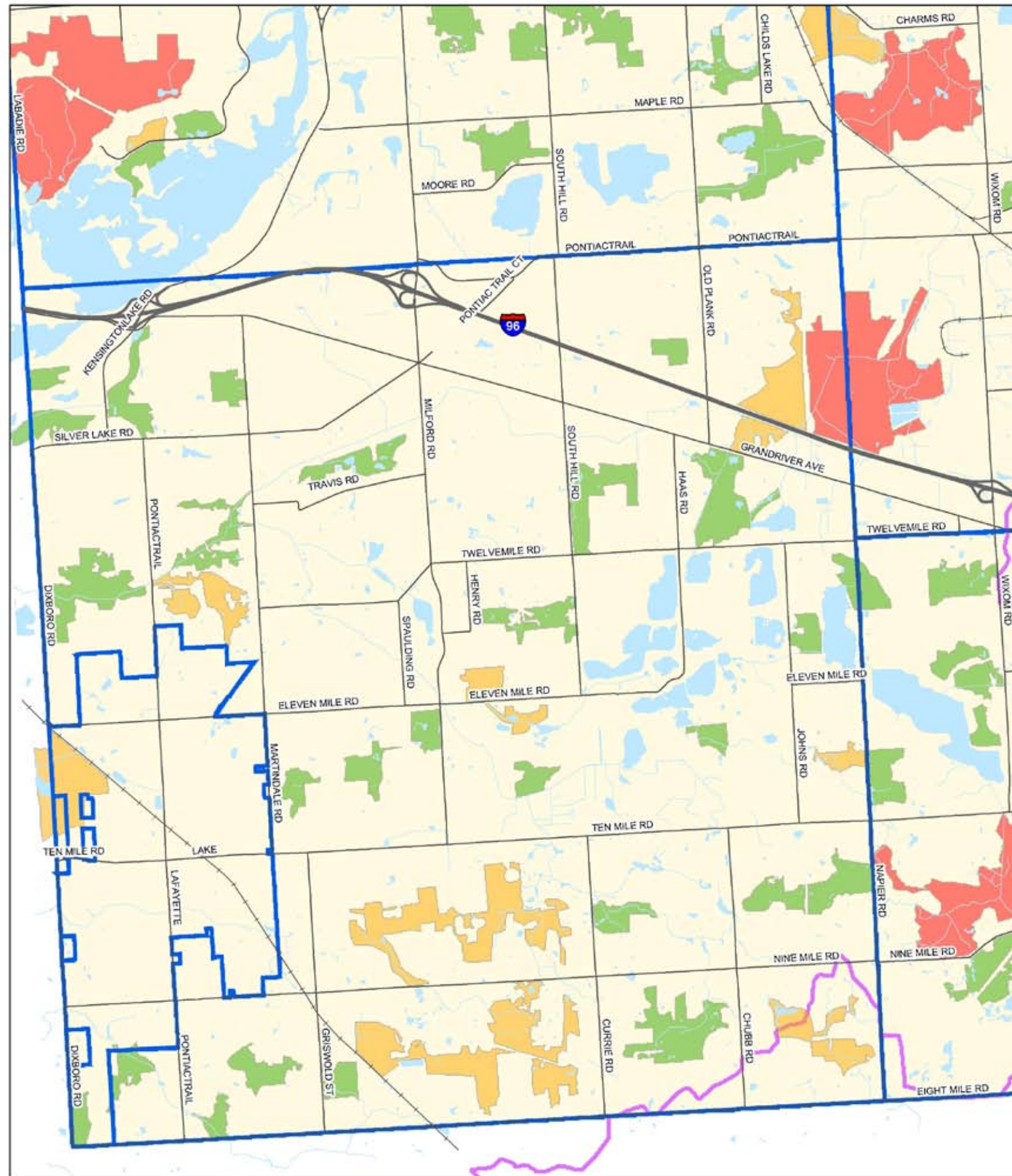
Natural Areas in Lyon Township. As illustrated in Map 2, Lyon Township contains one Priority One area, within Lyon Oaks County Park. The area bounded by Eight Mile, Griswold, Ten Mile and Currie Roads is occupied by a significant amount of Priority Two potential natural areas. Portions of these Priority Two natural areas were within the proposed Meadowcreek Planned Development, which never received final approval. Also, due to significant tree cutting, portions of the Priority Two natural areas may not exist. Lyon Township's other potential natural areas, mostly Priority Three areas, are scattered fairly evenly throughout the Township.

The 2004 Oakland County report recommends that local municipalities identify opportunities to link other possible natural resource sites not mapped. These could include small patches of land, tree and fence row plantings, agriculture land and open fields. Also, it is recommended that field inventories be conducted on the identified potential natural areas, to provide much needed additional site-specific data that should be considered when developing in and around such areas. All identified sites, regardless of their priority, have significance in their local setting. The report further recommends that municipalities adopt a comprehensive conservation/greenway plan, as the conservation of potential natural areas is most effective and successful in the context of an overall conservation/greenway plan.

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Map 2 Potential Natural Areas

Charter Township of Lyon,
Oakland County, Michigan



- Railroad
- Highway
- Major Road
- Priority One
- Priority Two
- Priority Three
- Municipal Boundaries
- Lakes & Rivers
- Rivers & Streams
- Municipal Boundaries
- Watershed Boundary

Source: Environmental Stewardship Program
Oakland County Planning and Economic Development
Services, October 29, 2004



Floodplains

Prior to 2003, floodplains had not been mapped in Lyon Township, although there were areas of the Township that historically experienced flooding during storm events. In 2003, Giffels-Webster Engineers, Inc., completed a Storm Water Master Plan for the Township. One outcome of the Storm Water Master Plan was the determination of the 100-year floodplain (see Map 3).

Since then, the Federal Emergency Management Administration and the MDEQ prepared the official floodplain map to be used when evaluating development proposals, for the purposes of preventing property damage from flooding and to preserve valuable natural resources.

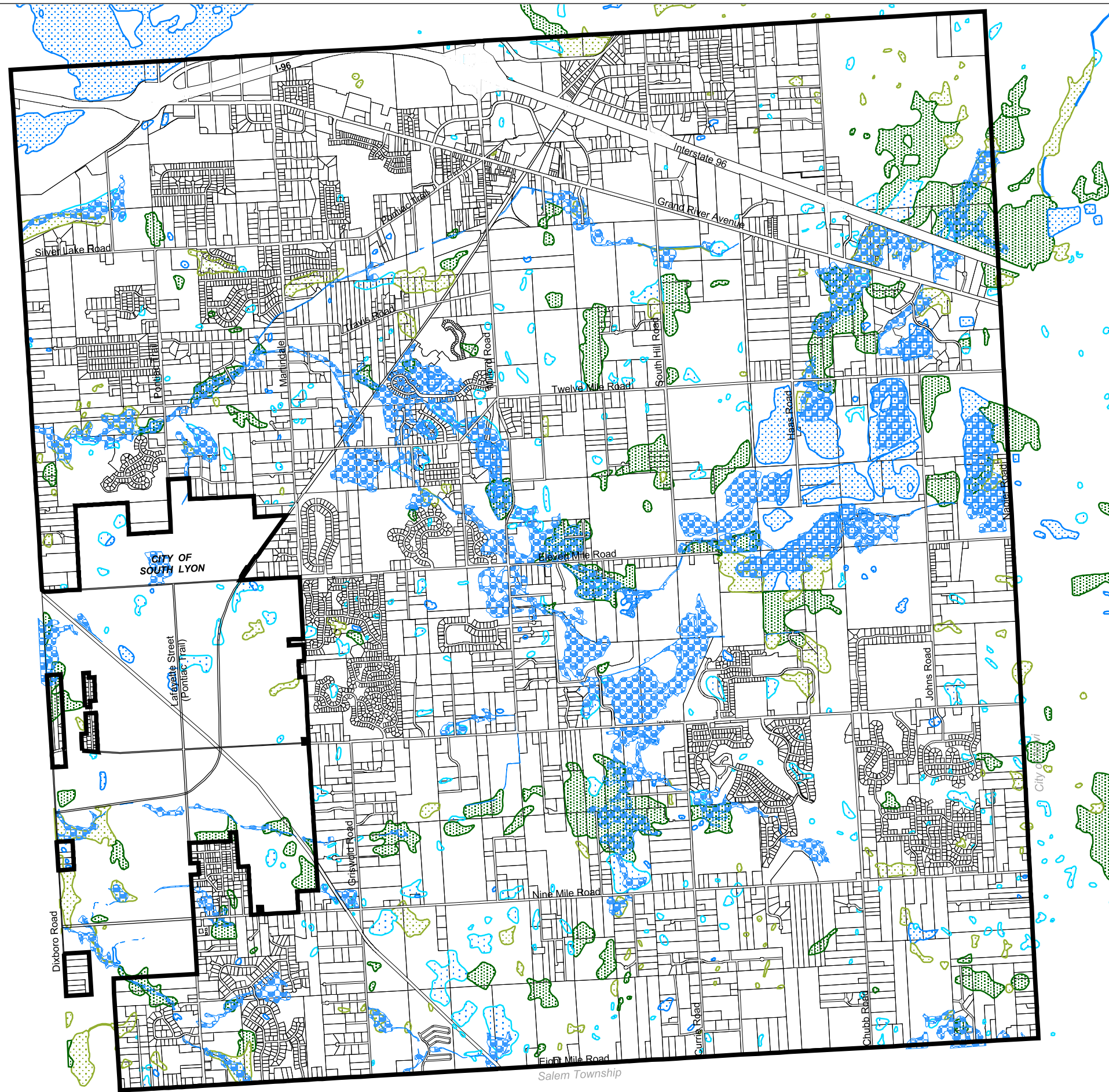
The floodplain map also includes a flood hazard area. The Michigan Residential Building Code states that the local unit of government will establish flood hazard areas in accordance with the adopted ordinance regulating construction in flood hazard locations. The flood hazard areas, which are defined as “areas that have been determined to be prone to flooding but not subject to high velocity wave action,” are somewhat larger than the 100-year floodplains.

Through Michigan Act 451, Part 31, the Michigan Department of Environmental Quality (MDEQ) regulates all construction activities within any 100-year floodplain that has a tributary area equal to or greater than two square miles. With the availability of floodplain maps, it will now be possible to determine if a proposed development lies within a flood hazard area. If it does, the plans should be referred to the MDEQ and the Township Engineer for appropriate approvals. If the development is under the jurisdiction of the MDEQ, then the MDEQ will require that sufficient documentation be submitted so that the official 100-year floodplain can be established.





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Map 3 Floodplains and Wetlands


Charter Township of Lyon,
Oakland County, Michigan



Wetland Classifications

-  Emergent
-  Scrub-Shrub
-  Forested
-  Open Water

Floodplain Classifications

-  100 Year Floodplain

Base Map Source: Oakland County, GIS Utility 2003
 Data Source: 100 Year Floodplain - Giffels Webster
 Engineers 3/6/2003
 Wetlands - U.S. Fish & Wildlife Service,
 National Wetlands Inventory 1979-1994



4/9/12

MCKenna
ASSOCIATES



POPULATION ANALYSIS

General Demographic Trends

From a regional perspective, Lyon Township is located at the western edge of the regional growth pattern in southeastern Michigan. Communities immediately to the east are generally served by fully developed sanitary sewer systems and are developed at a suburban density. Communities to the west are generally less developed or are developed at a lower overall density.

Even though Lyon Township is considered "semi-rural" based on overall population density, the Township experienced a rapid rate of growth in the decades following 1950, largely as a result of in-migration of non-farm households (see Tables 3-1 and 3-2 and Figure 3-1). Prior to 2000, the greatest numerical increase in population (+2,578) was recorded in the 1970's, when several subdivisions were developed in the northwest part of the Township. The rate of growth leveled off in the 1980's and 1990's, resulting in an increase of 1,724 residents between 1990 and 1999. Then, with the advent of sanitary sewers to the Township, residential development accelerated, resulting in an increase of 3,504 residents between 2000 and 2010.

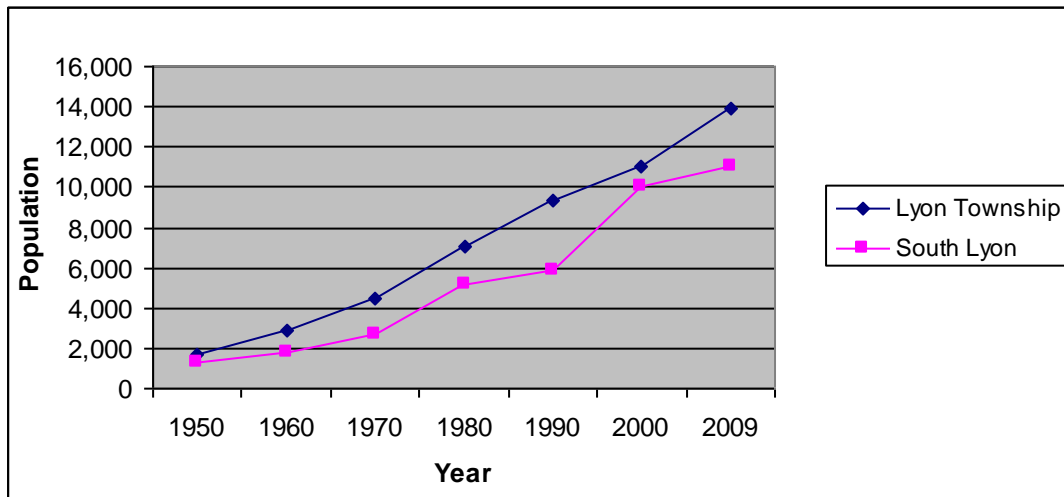
South Lyon also experienced substantial growth in the decades following 1950, spurred on in part by the construction of sanitary sewers within the City and into areas annexed from the Township. South Lyon residents witnessed the greatest numerical increase in population in the City in the 1990's, when the population increased by more than two-thirds, resulting in the addition of 4,179 residents. Because of a lack of land for new development, the population growth in the City leveled off after 2000. Only 1,291 residents were added between 2000 and 2010.

Residential development and population growth in Lyon Township have been affected by several factors, including regional growth patterns, the quality of the residential environment, housing value, economic opportunity, and housing construction.

Regional Growth Patterns. Following World War II, the population of Detroit and Wayne County began to level off. The post-war baby-boom launched a period of significant population growth in Oakland County that has slowed to more steady growth in recent decades. This basic pattern is reflected in Census data for the 1990's: while the SEMCOG region recorded a modest 5.3 percent gain, Oakland County recorded an increase of 110,564 residents (+10.2 percent).

While growth in Oakland County has slowed down relative to other high growth areas within the SEMCOG region, development activity within the county has been anything but stagnant. During the 1980's and 1990's, many Oakland County communities, mostly located in the southeast quadrant of the County, lost population. Meanwhile, large population gains were recorded in a more northerly and westerly tier of suburbs: Rochester Hills, West Bloomfield Township, Novi and Lyon Township.

Figure 3-1: Population Trends



Source: Bureau of the Census

Compared to a 2000 population of 4,833,368 the SEMCOG Regional Development 2035 Forecast projects a gain of just 25,932 residents for the region by the year 2010 and a net gain of 137,995 residents by the year 2030. Movement of the population is expected to continue, though, with a loss of 160,782 residents in Wayne County, and an increase of 122,280 in Oakland County over the next thirty years. In summary, the regional population projections suggest that development in Lyon Township and other Oakland County communities will continue for the next three decades.

Quality of the Residential Environment. The quality of the residential environment has also affected population growth in Lyon Township. Residents have been attracted to the semi-rural environment, spacious building sites, proximity to regional recreation facilities such as Kensington Metropark, and similar assets.

Housing Value. Surveys have shown that many residents are attracted to Lyon Township by housing value. Residents believe that their housing dollar purchases better housing and more land than in other nearby communities. In deciding to move to Lyon Township, many residents also place a high value on the relatively low property tax imposed in the Township.

Economic Opportunities. New economic opportunities in Lyon Township and nearby communities have attracted residents in recent years. Commercial and office developments in Farmington Hills, Novi, Livonia, and other nearby communities have drawn many workers within a short commute of Lyon Township. Lyon Township provides people with the opportunity to live in a semi-rural environment, while enjoying the work opportunities and amenities of nearby suburban communities.

Housing Construction. Housing construction is the final key factor that has affected population growth in Lyon Township. Between 2000 and 2009, Lyon Township recorded a net increase of 1,548 housing units, representing 27.7 percent of the Township’s housing stock. The increase in residential construction can be largely attributed to the advent of sanitary sewer in the Township.

Table 3-1
TOTAL POPULATION

Lyon Township			
<u>Year</u>	<u>Total</u>	<u>Numerical Change</u>	<u>Percent Change</u>
1950	1,647	----	----
1960	2,880	+ 1,233	+ 74.9%
1970	4,500	+ 1,620	+ 56.2%
1980	7,078	+ 2,578	+ 57.3%
1990	9,317	+ 2,239	+ 31.6%
2000	11,041	+ 1,724	+ 18.5%
2010	14,545	+ 3,504	+ 31.7%

Sources: Bureau of the Census, Southeast Michigan Council of Governments (SEMCOG)

Table 3-2
TOTAL POPULATION

City of South Lyon			
<u>Year</u>	<u>Total</u>	<u>Numerical Change</u>	<u>Percent Change</u>
1950	1,312	---	---
1960	1,753	+ 441	+ 33.6%
1970	2,675	+ 922	+ 52.5%
1980	5,214	+ 2,539	+ 94.9%
1990	5,857	+ 643	+ 12.3%
2000	10,036	+ 4,179	+ 71.4%
2010	11,327	+ 1,291	+ 12.9%

Source: Bureau of the Census, Southeast Michigan Council of Governments (SEMCOG)

Population Characteristics

Age Structure. The median age of Lyon Township's population increased from 31.0 years in 1990 to 35.2 years in 2000 (see Table 3-3). During the same period, the median age for residents of Oakland County increased from 33.8 to 36.7 years.

Thus, while Oakland County's population is older, Lyon Township's population is aging at a faster rate. The Township has a relatively low percentage of seniors, compared to the County's share. Analysis of SEMCOG data indicates that Lyon's fastest growing age group is the "35 to 65" bracket, and the "18 to 34" bracket declined significantly. The percentages of the pre-school, school-age, and senior populations in the Township were relatively stable.

The lack of a large percentage growth of pre-school and school age children indicates that much of the growth in the Township in the 2000's probably consisted of mature families in the 45 to 64 bracket. Persons in this age bracket are more likely to have children who are in high school, out of school, or in college. This is in contrast to the 1980's when there was a significant influx of young families into the Township.

Table 3-3

	AGE STRUCTURE			
	Lyon Township	Oakland County		Percent Difference
	Number	Percent	Percent	
Under 5 years	881	8.0%	6.7%	1.3%
5 to 19 years	2,574	23.4%	20.6%	2.8%
20 to 24 years	535	4.8%	5.1%	-0.3%
25 to 44 years	3,760	34.1%	32.5%	1.6%
45 to 64 years	2,545	23.1%	23.9%	-0.8%
65 years and older	746	6.8%	11.4%	-4.6%

Source: Bureau of the Census, 2000

South Lyon Community School District enrollment data supports this observation. While young families are moving into the Township, they are occupying a smaller percentage of the total Township growth. Kindergarten through twelfth grade enrollment increased from 6,067 students in 2000-2001 to 7,081 in 2009-2010 (see Table 3-4). During this time period, the kindergarten through fifth grade bracket increased by 10 percent. Enrollment in grades six through eight increased by 18.5 percent. High school enrollment increased 27.1%.

Table 3-4

SCHOOL ENROLLMENT SOUTH LYON COMMUNITY SCHOOL DISTRICT						
Year	Grades K-5		Grades 6-8		Grades 9-12	
	Number	Percent Change	Number	Percent Change	Number	Percent Change
2000-01	2,979	---	1,423	---	1,665	---
2001-02	3,010	+ 1.0%	1,496	+ 5.1%	1,750	+ 5.1%
2002-03	3,118	+ 3.6%	1,563	+ 4.5%	1,809	+ 3.4%
2003-04	3,165	+1.5%	1,576	+0.1%	1,881	+4.0%
2004-05	3,273	+3.4%	1,551	-0.2%	1,990	+5.8%
2005-06	3,274	0.0%	1,563	+0.1%	2,039	+2.5%
2006-07	3,254	-0.1%	1,624	+3.9%	2,068	+1.4%
2007-08	3,300	+1.4%	1,663	+2.4%	2,085	+0.1%
2008-09	3,297	0.0%	1,689	+1.6%	2,051	-1.6%
2009-10	3,278	0.0%	1,686	0.0%	2,117	+3.2%
Change 2000-2009	+299	+10.0%	+263	+18.5%	+452	+27.1%

Source: South Lyon Community School District

The data suggests that the type and cost of new housing has attracted many mature families. Also, young families in the 1980's have matured. The in-migration of young families did not occur in the 1990's and 2000's at the rate that it did in the 1980's.

Household Type and Composition. The analysis of household characteristics reveals important distinctions between Lyon Township and South Lyon. For example, the following chart indicates that the Township is predominantly a single-family housing community. On the other hand, almost half of South Lyon's housing stock consists of townhome, 2-unit, or multiple-family housing.

<u>Housing Structure</u>	<u>Township</u>	<u>City</u>
Single Family	71.5%	49.1%
Duplex	1.3%	2.9%
Townhouse/Attached Condo	3.6%	16.3%
Multi-Family Apartment	8.8%	28.4%
Mobile Home	14.8%	3.2%

Source: 2009 Data, SEMCOG

It is significant to note that the national trend of decreasing household and family size steadied in Lyon Township in the 1990's. The Township's average number of persons per household and persons per family exceeds those of Oakland County, which are 2.51 and 3.09, respectively.

Table 3-5

AVERAGE HOUSEHOLD AND FAMILY SIZE		
	<u>Average Household Size</u>	<u>Average Family Size</u>
1970	3.35 persons	3.33 persons
1980	2.90 persons	3.33 persons
1990	2.83 persons	3.23 persons
2000	2.83 persons	3.21 persons
2009	2.63 persons	Not Available

Sources: Bureau of the Census, Southeast Michigan Council of Governments (SEMCOG)

A decrease in household size affects population growth. If not for the in-migration of residents due to new construction, Lyon Township would have experienced a slight population decrease during the 2000’s. Instead, a 27.7 percent increase in housing units produced a 26 percent increase in population.

Education and Employment. Census data indicate that residents moving into the Township are increasingly well-educated. The 1990 Census revealed that 17.7 percent of the residents 25 years of age or older had completed college at a four-year university (see Table 3-6). The 2000 Census reported that this number had increased to 26.0 percent. The percentage of residents without a high school education decreased from 13.2 percent in 1990 to 10.3 percent in 2000.

Table 3-6

EDUCATIONAL ATTAINMENT LYON TOWNSHIP*		
	<u>1990</u>	<u>2000</u>
High School Only	34.9%	40.0%
College 1 to 3 years	34.0%	34.1%
College 4 + years	17.7%	26.0%
High School Graduate	86.8%	89.7%

* Population 25 years and older

Source: Bureau of the Census, U.S. Department of Commerce

The educational attainment of residents is reflected in the types of occupations they are engaged in. Lyon Township has a highly-skilled labor force, consisting of primarily managerial, professional, technical, sales, and administrative support positions (see Table 3-7).

The total Lyon Township labor force (employed persons 16 years and older) increased in the 2000’s. Table 6 reveals that managerial, professional, technical, sales and administrative employment is increasing as a proportion of the total labor force.

The increases in “white collar” occupations has coupled with a proportional decrease on what are traditionally considered to be blue collar jobs. The percentage of persons occupied in blue collar occupations has decreased in the Township from 32.6 percent in 1990 to 21.3 percent in 2005.

The 2000 Census revealed that 75.2 percent of Township residents 16 years of age or older are in the labor force, indicating that there are several households with more than one wage earner. The implications of this statistic are significant: As the proportion of households with more than one wage earner increases, the need for child care services and other support services increases. From a crime prevention point-of-view, the high percentage of residents in the labor force means that fewer residents are home during the day to monitor activity in residential areas.

Income. As would be expected based on the education and employment data cited above, households in Lyon Township enjoy a relatively high standard of living. Almost 44 percent of all households in 1999 had an annual income of \$75,000 or more (see Table 3-8). In 1989 only 10.4 percent of the households had incomes in this range. Another 23.5 percent of the households had an annual income of between \$50,000 and \$74,999.

Between 1989 and 1999 the median household income increased from \$41,056 to \$67,288, or an increase of 64 percent. Adjusted for inflation, the median household income for Lyon Township residents increased by 22 percent. Per capita income increased from \$16,157 per year in 1989 to \$27,414 per year in 1999. By comparison, the 1999 median household income in Oakland County was \$61,907 and the per capita income was \$32,534.

Table 3-7

COMPOSITION OF LABOR FORCE (2005)

	<u>Number</u>	<u>Percent</u>
Natural Resources and Mining	132	4.2
Manufacturing	416	13.1
Wholesale Trade	381	12.0
Retail Trade	656	20.7
Transportation and Warehousing	127	4.0
Financial Activities	318	10.0
Professional, Scientific and Technical Services	149	4.7
Management of Companies & Enterprises	0	0.0
Administrative, Support & Waste Services	258	8.1
Education Services	252	8.0
Health Care & Social Assistance	47	1.5
Leisure & Hospitality	162	5.1
Other Services	59	1.9
Public Administration	<u>60</u>	<u>1.9</u>
TOTAL	3,168	95.2%¹

¹ Data for "Utilities" and "Information" categories has been blocked due to confidentiality concerns. Consequently, 100 percent of the labor force is not represented.

Source: Bureau of the Census, U.S. Department of Commerce

Table 3-8

ANNUAL HOUSEHOLD INCOME (1999)		
	<u>Number</u>	<u>Percent</u>
Less than \$15,000	225	5.8%
\$15,000 - \$24,999	251	6.5%
\$25,000 - \$34,999	209	5.4%
\$35,000 - \$49,999	577	14.9%
\$50,000 - \$74,999	909	23.5%
\$75,000 or more	1,695	43.8%

Source: 2000 U.S. Census

The 2000 Census revealed that 4.2 percent of the population (460 residents) were below the poverty level in 1999. A total of 11.4 percent of all residents 65 years and older and 12.7 percent of female-headed households with children were below the poverty level. By comparison, the current census indicated that 5.5 percent of Oakland County’s population was below the poverty level in 1999.

Future Population Growth

Population growth in Lyon Township will be determined chiefly by four sets of variables:

1. **Physical Parameters.** Several physical variables will affect population growth in Lyon Township, including the amount of vacant land available for residential development, the land use restrictions placed on such land, and the type of housing that is constructed in the future.
2. **Regional Growth.** Regional development patterns and the general economic health of the region will affect population growth in Lyon Township.
3. **Characteristics of the Existing Population.** Characteristics of the population, such as age structure, propensity to move, and household size will affect population growth.
4. **Preferences of Residents.** Existing and prospective residents' preferences in terms of a living environment will have an impact on population growth. The type and affordability of housing, characteristics of the environment, and availability of public facilities and services affect people's desire to live in a community.

Each of these sets of variables is discussed in detail in the following pages.

Physical Parameters. Vacant land on which new housing units can be constructed is a key variable that determines the absolute maximum population, or "holding capacity" of the Township.

In the **Existing Land Use Analysis** chapter of the master plan, the development potential on the vacant and buildable residentially-zoned land was computed based on the density standards set forth in the Zoning Ordinance. These computations revealed that the opportunity exists to develop another 7,381 housing units, 1.5 times more units than currently exist. Based on the current average household size of 2.63 persons, the construction of 7,381 housing units would add approximately 19,412 residents. Under this development scenario, which is permitted under current zoning, the total population of the Township could more than double to 32,403 persons.

These estimates do not take into account several variables that will affect population growth, including the following:

- **Changes in Planning and Zoning Policies.** Most vacant and agricultural lands in the Township are currently zoned to permit residential development on half-acre or one acre lots.

In developing semi-rural communities adjacent to more suburban communities, rezoning requests to permit higher density development are not uncommon, particularly as land values increase making agriculture less feasible. Rezoning of agricultural and vacant lands to accommodate higher density development would increase the maximum population potential of the Township. On the other hand, this master plan proposes to limit higher density development in the Township, except in a few select locations.

- **Other Land Use Regulations.** Other land use regulations, such as lot split, private road, and subdivision regulations will affect the development potential and subsequent population growth of the Township. Current land use regulations have resulted in haphazard development caused by lots splits on private roads randomly located throughout the Township. Such development has not always followed good planning practice, and it frequently is in conflict with public safety and transportation planning objectives. Initiatives to resolve these concerns will affect the development potential on certain lands.
- **Septic Systems, Availability of Sanitary Sewer and Water Utilities.** Although sanitary sewers and water utilities are being extended throughout the Township, there are many areas that still have no access to these utilities. According to the Soil Survey for Oakland County, soils in most of the Township have severe limitations with respect to septic system use. In establishing land use regulations, a key determinant must be the minimum site area that is required to be reasonably certain that there is sufficient land area for operation of a septic system in an environmentally safe manner. Similarly, land use regulations must recognize the need to drill a well for potable water on each building site. In summary, the maximum density standards deemed appropriate will be affected by the capacity of the wastewater treatment system, septic system limitations and potable water requirements in some locations.

- **Wetlands, Woodlands, Farmlands.** Wetlands, woodlands, and farmlands, to the extent that they are protected by local, state, or federal regulations, will affect development and population growth. Michigan Department of Environmental Quality maps reveal that large portions of the Township are covered by wetlands.

Regional Growth. Certain variables are largely beyond the control of the Township and its individual residents, yet these variables have a tremendous impact on population growth.

The general state of the economy and regional growth patterns are related external variables that work in conjunction to affect population growth.

Cycles in the economy have been cited as one of the key determinants of population change in Michigan, because of the effect of the economy on housing construction and migration patterns. A lackluster economy results in a reduction in the number of families that purchase new homes or relocate. Thus, a poor economy tends to preserve the status quo or, in certain communities, results in reduction in population.

The impact of the recovery of the regional economy in the late 1980's was evident in western Oakland County and Lyon Township. Resurgent growth pushed the leading edge of urbanization into the adjoining communities of Novi, Wixom and Commerce Township. The downturn in the economy in the late 2000's left over 2,500 developed lots vacant in Lyon Township, and caused many developers and builders to lose their businesses.

Characteristics of the Population. The earlier review of population data revealed that the number of mature households is increasing. The increase in more mature households portends smaller household size, which is an important consideration with regard to population growth. A fractional increase or decrease in household size can make a difference of hundreds in total population.

During the 1990's and 2000's, the decrease in household size was counterbalanced by immigration and general population growth. The patterns of the 1990's and 2000's reveal the importance of new housing construction and migration patterns with respect to maintaining or increasing the population.

Preferences of Residents. Variables related to people's preferences in terms of housing and the environment in which they live will affect population growth. The Citizen Planning Survey conducted in late 1990 revealed that residents have been drawn to Lyon Township primarily by its country or rural environment. Other attractive features that survey respondents cited include: general proximity to I-96; access to work, shopping and parks; large lots and open space; low population density; friendly people; and low crime.

The ability of the Township to maintain these qualities will affect population growth. As more people move into the Township, portions of the natural environment are developed upon and the remaining natural areas are subject to greater use. A point could eventually be reached where additional development will not only diminish the Township's natural features, but also alter the perceived desirability of the environment and community in general.

Public facility improvements will also affect the desirability of the community. Research in other semi-rural communities in Michigan revealed that newcomers often are accustomed to the amenities of urban living, such as paved roads, water and sewer services, parks and playgrounds, garbage pick-up, and other services. Typically, the demand for these services gradually increases as the proportion of new residents increases. The ability of the Township to meet these demands will have a substantial impact on people's perception of quality of life in the Township.

Population Projections

Current population statistics indicate that Lyon Township's population continues to grow, although at a slower rate than in previous decades. The information presented on the previous pages reveals events that are expected to generate future population growth. These events include continued economic expansion in western Oakland County, new housing development in the Township, and the general appeal of the community.

Even though population growth is expected to continue, it is unlikely that the population will approach the Township's holding capacity of 32,403 people within the twenty year framework covered by this plan. Population growth of such magnitude would depend on large-scale housing development and in-migration of thousands of new residents, since the size and age structure of the existing population would be able to generate very modest population growth. Regional economic forecasts do not support prospects for housing development and population growth of such magnitude.

One of the most precise population projections for Lyon Township and other communities in the region has been prepared by SEMCOG as a part of its 2030 Regional Development Forecast. The 2030 Regional Development Forecast is based on local land use plans and policies, modified to account for sewer service, protection of environmentally sensitive lands, planned transportation improvements, and similar considerations.

SEMCOG projections indicate that the number of households in Lyon Township will increase to 5,394 by the year 2015, 6,351 by the year 2025, and 7,801 by the year 2035. The SEMCOG projections indicate a total population of 14,430 by the year 2015. SEMCOG projections for year 2025 indicate a total population of 16,671 which represents a 51 percent increase from the 2000 population (see Table 3-9 and Figure 3-2). The net increase population must be attributed largely to the projected increase in the number of households due to in migration.

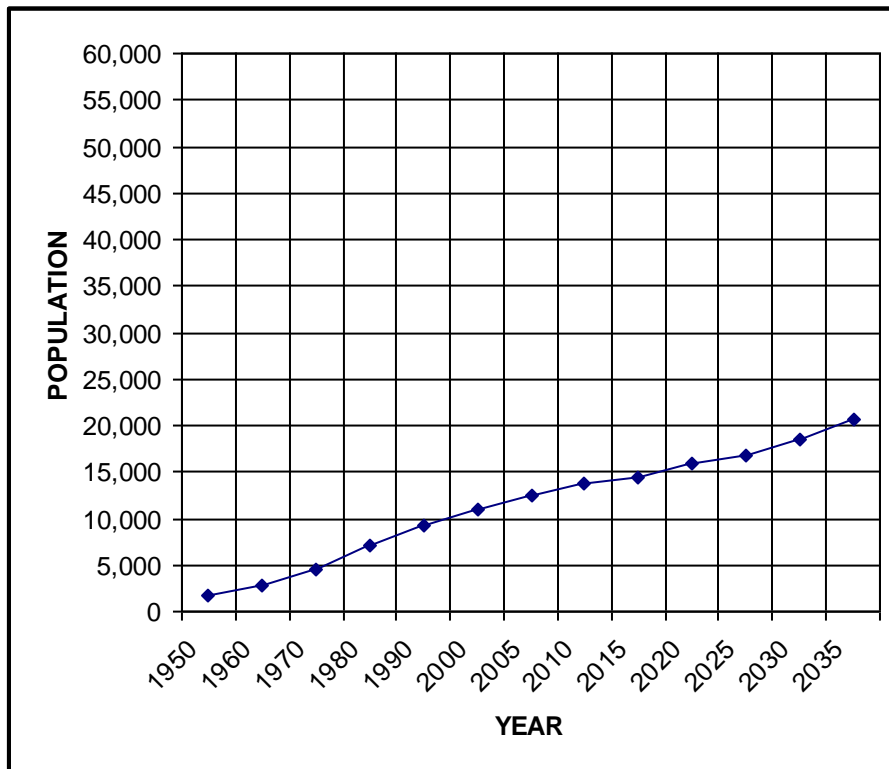
The SEMCOG estimates are based on a much higher rate of growth than in the recent past. Between 1990 and 2000, an average of 93 units were added per year to the housing stock in Lyon Township. In contrast, the SEMCOG estimates call for construction of an average of 156 units per year between 2005 and 2035. Considering that the Census revealed that the population of the Township in 2010 was 14,545, it seems that adjustments to the SEMCOG forecast are in order.

Table 3-9

	<u>Total Population</u>	<u>Total Households</u>	<u>Persons Per Household</u>
2000	11,041	3,887	2.83
2005	12,595	4,677	2.70
2015	14,430	5,394	2.68
2025	16,671	6,351	2.62
2035	20,162	7,801	2.58

Source: SEMCOG 2035 Forecast

Figure 3-2
Population Trends and Projections



Sources: Bureau of the Census, SEMCOG

RETAIL AND OFFICE ANALYSIS

Introduction

This chapter seeks to provide an overview of the retail and office needs of the Township. It is not a market study or a feasibility analysis for new businesses. Rather, it is meant to generally establish a baseline of existing retail and office uses in order to determine if the needs of existing residents are being met given current spending patterns. The needs of future residents are projected based on current resident habits.

Retail, office, and industrial development in Lyon Township has traditionally been affected by three key parameters:

1. **The Market.** Commercial and office development is directly related to population and household growth and average household income, whereas industrial development is closely related to growth of industry in the region and the ability of the Township to accommodate that growth.
2. **Land Use Policies.** The Township's master plan and zoning ordinance set forth a relatively straightforward pattern for non-residential development: a large industrial corridor along Grand River Avenue and two clusters of commercial development in the New Hudson area and adjacent to South Lyon. There are a few exceptions to this pattern, but in general, most non-residential development has followed the pattern outlined in the Township's planning and zoning documents.
3. **Residents' Preferences.** Resident's preferences continue to shape land use policies. The Lyon Township Community Survey revealed that residents place a higher value on preservation of rural open space rather than widespread non-residential development.

Furthermore, most residents thought that commercial development should be confined to the three general areas where it was already present: south of South Lyon on Pontiac Trail; at the Milford Road interchange with I-96; and along Grand River Avenue in the New Hudson area. Over the years there have been several public hearings at which residents have consistently

verified the results of the survey, and spoken in favor of confining commercial development to the areas it already exists. Consequently, although the survey is twenty years old, it is still considered valid with respect to commercial development.

Existing Retail Conditions

When it was a rural community, Lyon Township had limited shopping opportunities. Commercial uses were generally confined to New Hudson and the City of South Lyon, although some agricultural-related businesses were found among the farms of the Township. With the decline of large farms and the growth of population, the existing commercial areas have expanded and new commercial shopping centers have developed.

A Shopping centers are generally defined as a group of architecturally unified commercial establishments built on a site that is planned, developed, owned and managed as an operating unit related in its location, size and type of shops to the trade area that it serves. Four basic types of shopping centers are recognized: regional, community, neighborhood and convenience shopping centers.

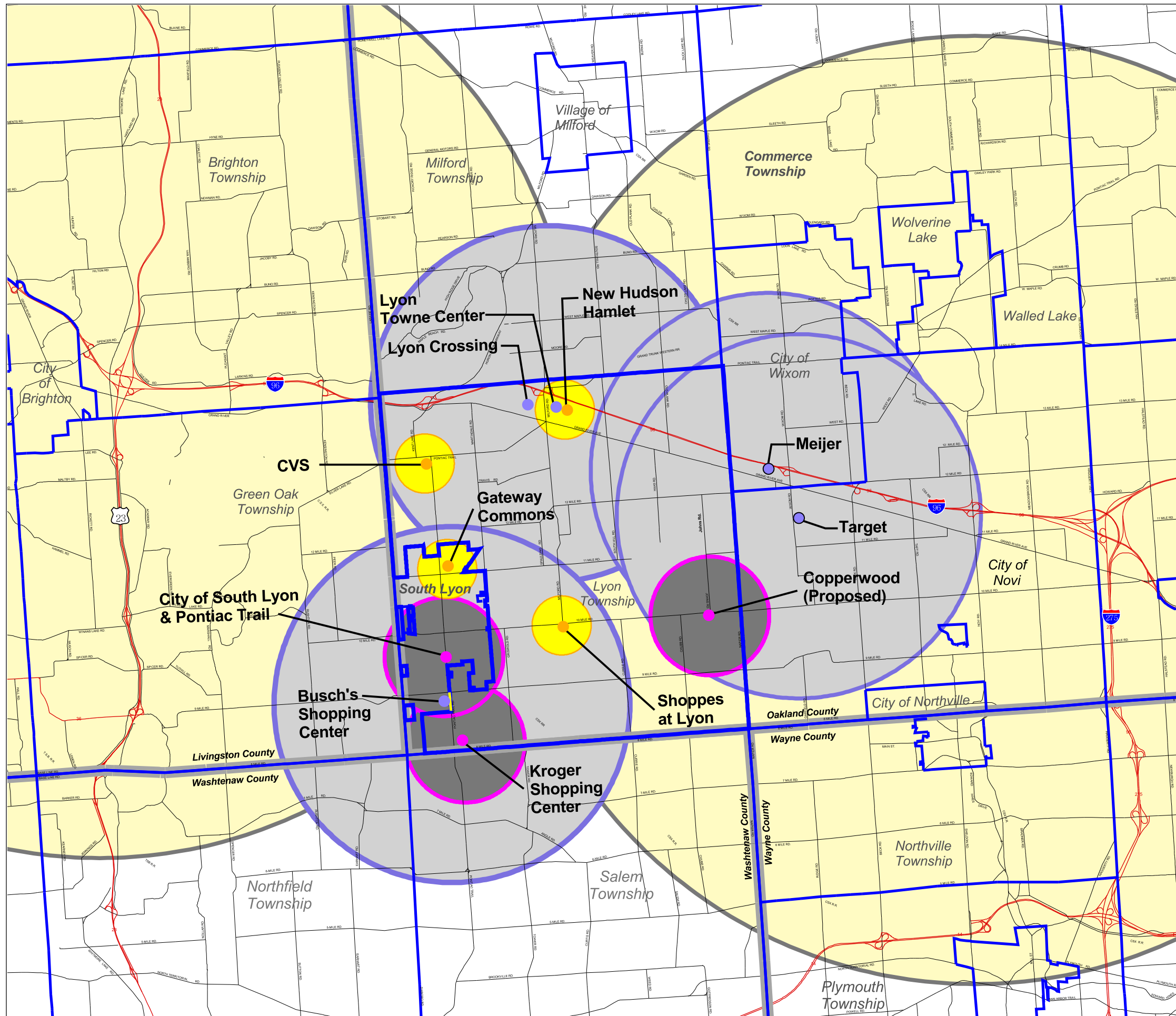
Regional. Regional shopping centers provide a variety of shopping goods, general merchandise, apparel, furniture, and home furnishings. Regional centers are typically anchored by one or more full-line department stores and have supporting retail, such as restaurants, within or nearby. Having a traditional market area of 8 to 12 miles, regional centers range in size from 300,000 to 1 million square feet, with a site area of 30 acres or more. The minimum support population for a regional shopping center is 150,000 people.

Lyon Township, located roughly midway between Novi and Brighton, lies on the edge of two existing regional shopping areas (see Map 4). To the east, Novi's Twelve Oaks Mall and surrounding area provide full-line department stores and numerous comparison retailers. To the west, Brighton also provides comparison shopping for clothing, furniture, major appliances, and automobiles. Other big-box development, offering regional-scale shopping, is creeping towards Lyon Township along the I-96 corridor. Combined, these existing regional shopping areas are within a reasonable distance of Lyon Township.

Community. Community shopping centers do not have full-line department stores, which would automatically categorize them as regional shopping centers. A community shopping center has a greater market area than a neighborhood shopping center but is still typically anchored by a supermarket or discount store. Other traditional anchor tenants are a junior department store or a hardware/home improvement store, along with a supermarket. Community centers draw from a 3 to 5 mile radius and range in size from 100,000 square feet to 300,000 square feet, with a site area of 10 to 30 acres. The minimum support population for a community center is 40,000 to 150,000 people.

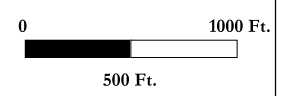
Map 4 Retail Market Area

Charter Township of Lyon,
Oakland County, Michigan



-  Regional Market Areas (8 mile radius)
-  Community Market Areas (3 mile radius)
-  Neighborhood Market Areas (1 mile radius)
-  Convenience Retail Area
-  Roads
-  Municipal Boundaries
-  County Boundaries

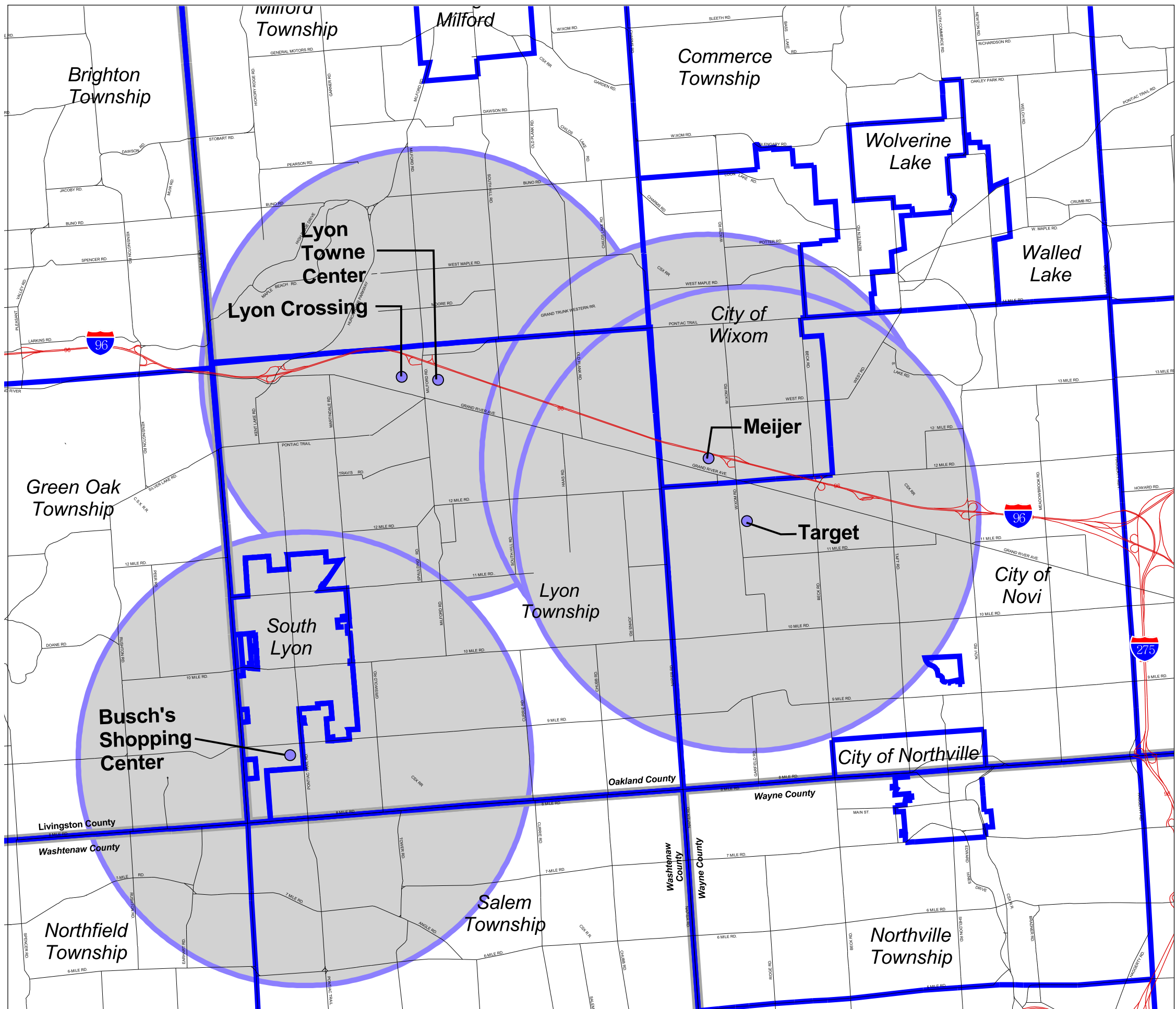
Base Map Source: Michigan Department of
Natural Resources, Spatial Data Library







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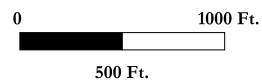
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Charter Township of Lyon,
Oakland County, Michigan

-  Community Market Areas (3 mile radius)
-  Roads
-  Municipal Boundaries
-  County Boundaries

Base Map Source: Michigan Department of
Natural Resources, Spatial Data Library



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Community shopping centers serving Lyon Township are found inside as well as outside of the Township limits. As illustrated on Map 5, community shopping centers are available in Novi and Wixom (see Map 5). The Meijer store on Grand River Avenue and the Target store on Wixom Road are close enough to include portions of Lyon Township in their 3 to 5-mile radius trade areas. Township residents can obtain everyday goods within reasonable proximity to their homes at these community shopping centers.

South Lyon also provides community-scale shopping. Combined with the community-scale retail available south of the city along Pontiac Trail, the entire southwest quarter of the Township is within adequate distance to a community shopping center.

With the addition of Lyon Towne Center (and eventually, Lyon Crossing), the New Hudson area is considered a community-scale retail center. Assisted by the upper-reaches of the South Lyon shopping area and the western end of the Wixom and Novi community shopping centers, New Hudson makes the northern half of Lyon Township (both the northwest and northeast quarters) within adequate distance to a community shopping center.

This leaves the southeast quarter of Lyon Township outside of a community shopping center area. This, however, does not automatically mean that additional community shopping centers are needed. As Lyon Township is a semi-rural area, residents generally tolerate somewhat longer distances to general merchandise retailers. Some even prefer being outside of the normal range. Additional community shopping areas are not needed to serve the existing and future residents expected within the time-frame of this Plan. As the Township develops and the trends in housing, local economy, retail markets, public infrastructure and overall land use pattern emerge, the need for additional community-scale retail areas may arise. If found to be needed at all, the extent and location of any new community commercial areas cannot be determined until such trends and patterns become apparent.

Neighborhood. Neighborhood shopping centers are intended to satisfy the convenience shopping needs of residents in the immediate trade area. A grocery store or pharmacy is typically the anchor tenant in a neighborhood center. Serving customers within 1 to 3 miles, a neighborhood center usually ranges in size from 30,000 to 100,000 square feet and has a site area of 3 to 10 acres. A minimum population of 2,500 to 40,000 is needed to support a neighborhood center.

Until recently, the Township had little neighborhood-scale retail. Prior to the development of the newer shopping centers, New Hudson Center (home to the Roundabout Market (formerly the New Hudson Market) and the New Hudson Discount Pharmacy and a few other businesses) was the only real neighborhood shopping center. Other stores and shops along Grand River Avenue offered the opportunity for neighborhood-scale retail, but the mix of businesses was heavy with auto service and parts dealers, and other untraditional retailers. In other words, the retail buildings existed but the merchandise within those buildings did not include everyday items.

Now, existing or proposed neighborhood shopping centers are found throughout the Township (see Map 6). Roughly half of the Township is within a couple of miles of neighborhood-scale retail. Some of the northeast quarter of the Township is within the neighborhood shopping range of the new and old retailers in New Hudson.

Since much of this quarter is primarily industrial, it is not as important to provide for daily consumer needs there (although industrial facilities do need certain types of commercial support services, like restaurants, convenience stores, office supply stores, etc.). In the northwest quarter, portions are served by New Hudson as well. Also, a CVS/Pharmacy, located at the corner of Silver Lake Road and Pontiac Trail, provides neighborhood-scale retail. The southwest quarter is within range of South Lyon for neighborhood retail, including Gateway Commons at Pontiac Trail and Eleven Mile Road, and by a small commercial center at Ten Mile and Milford Roads in the Township. This center, called Shoppes at Lyon, and a proposed neighborhood center on the south side of Ten Mile Road at Johns Road, is intended to provide daily necessities to the southeast quarter of the Township.

Some gaps in complete neighborhood-scale retail coverage may exist in the Township. However, in order to satisfy both the retail needs and the preferences of residents to confine commercial areas, slight gaps will be tolerated. It will be, therefore, important to encourage efficient use of the neighborhood-scale retail areas.

Convenience. A convenience center contains a group of small shops and stores dedicated to providing a limited range of personal services and convenience goods for customers making a quick stop. Mini-markets, laundromats, beauty or barber shops, and video stores are traditional convenience center tenants. They typically draw the majority of their customers from the immediate vicinity or passers-by. A typical convenience center will have 2 to 3 stores and a total gross leasable area of about 80,000 sq. ft.

Retail Analysis

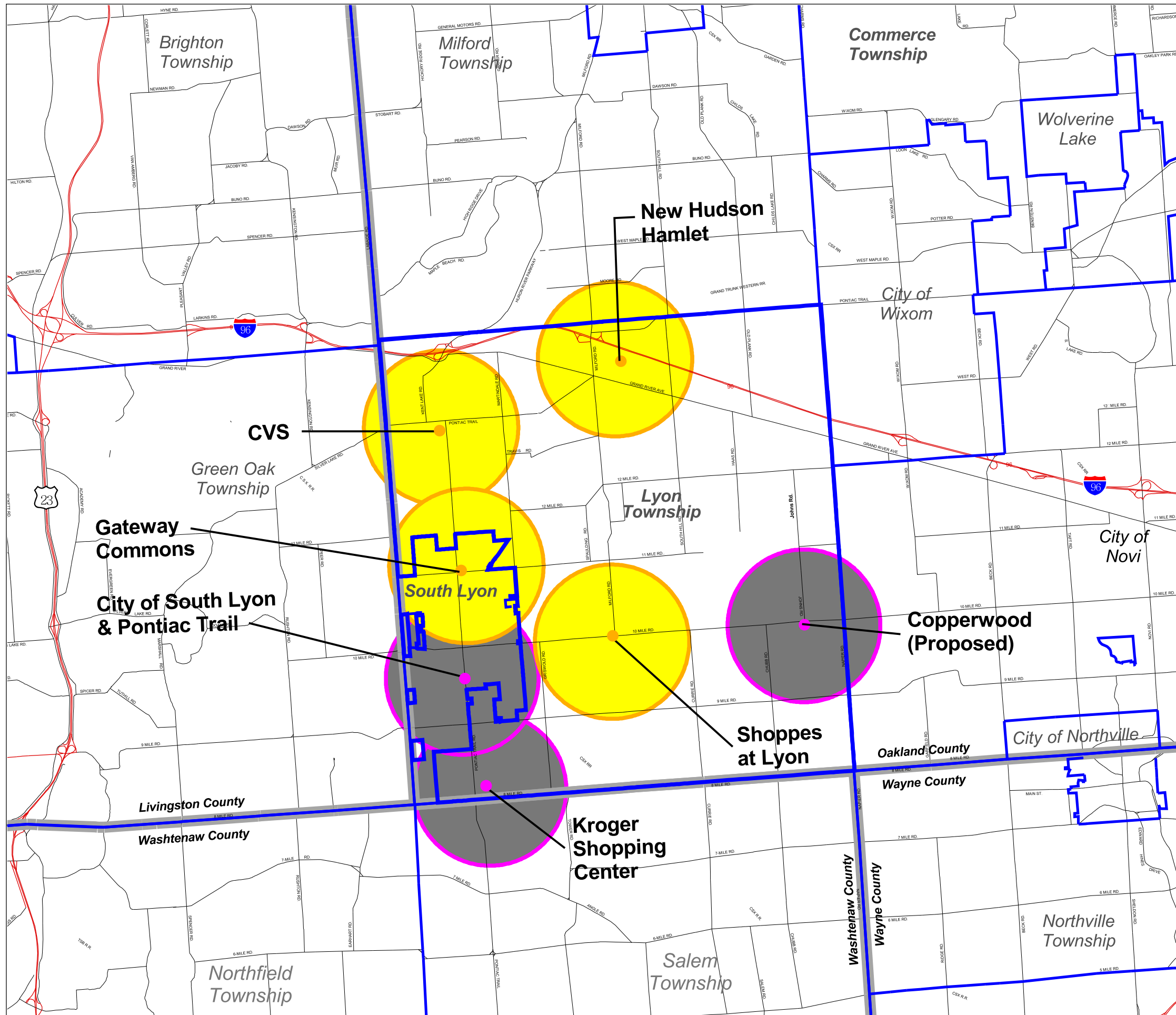
The primary purpose of the retail analysis is to determine how many square feet of retail floor space the population of Lyon Township can support. It is desirable to have this information by category of retail.



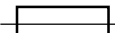


In reality, there is overlap between the categories of shopping centers. For example, neighborhood centers will frequently sell convenience goods and vice versa. Consequently, for this segment of the retail analysis the neighborhood and convenience goods centers have been combined.

The first step in the retail analysis involves data collection, beginning with relevant data about households in Lyon Township. Households are the basic unit of measuring the economic capacity of a community. According to SEMCOG, there were 5,288 households in Lyon Township in 2009, with an estimated population of 13,907. The estimated mean household income in 2009 was \$92,989, according to the U.S. Census Bureau American Community Survey (Table 4-1). This figure was derived using the Bureau of Labor Statistics Inflation Calculator.

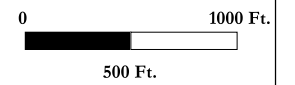
Map 6 Neighborhood and Convenience Retail Market Areas

Charter Township of Lyon,
Oakland County, Michigan



-  Neighborhood Retail Market Areas (1 mile radius)
-  Convenience Retail Market Areas (up to 1 mile radius)
-  Roads
-  Municipal Boundaries
-  County Boundaries

Base Map Source: Michigan Department of Natural Resources, Spatial Data Library



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Table 4-1

INCOME IN 2009 INFLATION-ADJUSTED DOLLARS		
	<u>Households</u>	<u>Families</u>
Total Number	4,697	3,682
<u>Income Category</u>		
Less than \$10,000	2.2%	1.3%
\$10,000 to \$14,000	1.2%	0.7%
\$15,000 to \$24,000	7.4%	4.8%
\$25,000 to \$34,999	5.6%	4.6%
\$35,000 to \$49,999	13.8%	10.1%
\$50,000 to \$74,999	17.9%	19.8%
\$75,000 to \$99,999	16.2%	15.2%
\$100,000 to \$149,999	19.9%	25.1%
\$150,000 to \$199,999	10.0%	11.1%
\$200,000 or more	5.7%	7.3%
Median income	\$78,194	\$89,722
Mean income	\$92,989	\$103,577

Source: U.S. Census Bureau, 2005-2009 American Community Survey

The second step in the retail analysis requires determination of the proportion of income spent on convenience/neighborhood and community retail goods. The Bureau of Labor Statistics publishes a Consumer Expenditure Survey that provides this information. The most recent survey, which was published in 2008, showed that 16.1% of expenditures went toward convenience/neighborhood goods (food at home, alcoholic beverages, housekeeping supplies, personal care products, reading material, tobacco products, and miscellaneous). Community-scale goods accounted for 15.2% of the expenditures (food away from home, household furnishings, apparel and services, entertainment, and miscellaneous). Non-retail expenditures include household operations, health care, transportation, utilities, education, cash contributions, and personal insurance and pensions. These non-retail expenditures accounted for 68.7% of the expenditures.

The third step in the retail step is to determine the average sales per square foot for convenience/neighborhood and community shopping centers in the Midwest. This information is available in the publication **Dollars & Cents of Shopping Center/SCORE 2008**¹. The average sales per square foot is published separately for convenience and neighborhood shopping centers, so it is necessary to average the two, resulting in a figure of \$233.75/sq.ft. Community shopping centers in the Midwest generate about \$321.81/sq.ft.

Having collected the relevant data, the next step is to calculate the supportable retail square footage. The formula for calculating supportable retail square footage is as follows:

$$\text{Household Income} \times \text{Proportion Spent on Retail} / \text{Average Sales per Sq. Ft.} \times \text{No. of Households} = \text{Supportable Sq. Ft.}$$

¹ **Dollars & Cents of Shopping Centers/SCORE 2008**, published by the Urban Land Institute and the International Council of Shopping Centers, Anita Kramer, Project Director, 2008.

Application of this formula produces the following results:

Type of Retail	Supportable Square Footage
Convenience/Neighborhood Retail	338,686 sq. ft.
Community Retail	232,256 sq. ft.

Existing Shopping Centers and Retail Areas. Lyon Township contains several community, neighborhood and convenience shopping centers. In general, these shopping centers are newer developments in the Township. Most are found in and around New Hudson or the City of South Lyon. Individual stores contribute to the supply of retailers meeting the retail needs of Township residents. The survey below of existing shopping centers and individual stores classifies individual stores based on the size of the retail building.

Community Shopping Centers

Shopping Center	Location	Size
Kroger Shopping Center	Pontiac Trail & Eight Mile Rd.	76,990 sq. ft.
Lyon Crossing (mostly undeveloped)	Lyon Center Drive-West	150,831 sq. ft.
Lyon Towne Center	Lyon Center Drive-East	458,000 sq. ft.
Total Square Feet		685,821 sq. ft.

Neighborhood Shopping Centers and Retail Areas

Business/Shopping Center	Location	Size
Copperwood Shops (proposed)	Ten Mile Road at Johns Rd	120,000 sq. ft.
Shoppes at Lyon	Ten Mile & Milford Rds	Approx.40,000 sq. ft.
Milford Road Plaza	Milford Rd at W. Lyon Center Drive	34,200 sq. ft.
Grand River Corridor*		42,043 sq. ft.
* Includes: South Lyon Fence & Supply, Rainbow Recreation, Brainer’s Greenhouse, @ Wireless, Miner’s Barber Shop, Bob’s Carryout Deli, Alternator Shop, CCW Lures Bait & Tackle, New Hudson Gas Station, Grand River Equine, New Hudson Inn, and others.		
Pontiac Trail Corridor**		57,450 sq. ft.
** Includes: Perfect Floors, Martin’s Hardware, Tuffy Auto Service, Sunoco/South Lyon Tire & Service, Mobil Gas Station, Auto Zone, Walgreens, Leo’s Coney Island, and others.		
Total		293,693 sq. ft

Convenience Shopping Centers

Business/Shopping Center	Address	Size
CVS Pharmacy	Silver Lake Rd & Pontiac Trail	13,000 sq. ft.
King Plaza	Pontiac Trail & Nine Mile Rd	20,000 sq. ft.
Mickey's One Stop Market Plaza	22450 Pontiac Trail	13,000 sq. ft.
Lyon Vet Clinic and Shops	21200 Pontiac Trail	20,879 sq. ft.
Victory Lane Plaza	Pontiac Trail	12,000 sq. ft.
Family Video Center	23000 Pontiac Trail	13,000 sq. ft.
Total :		91,879 sq. ft.

Total Retail Space:

Community, Neighborhood, Convenience
1,071,393 square feet

Existing Restaurants and Bars. Lyon Township has ten free-standing restaurants: the New Hudson Inn, Bona Rose, Rio Grande, Applebee's, McDonald's, Arby's, Lyon Grill, Leo's Coney Island (2), and China House. Restaurants, as a rule, are considered community-scale retail but they can be found in all types of shopping centers. Over 29,000 square feet of restaurant and bar space is existing within the Township.

Existing Space vs. Supportable Space by Existing Township Households
Community-Scale Retail

Year	Existing	Supportable
2009	685,821 sq. ft.	232,686 sq. ft.

Neighborhood and Convenience-Scale Retail

Year	Existing	Supportable
2009	385,572 sq. ft.	338,686 sq. ft.

This analysis reveals that the Township has more retail space than the Township residents can support. One implication of this finding is that there must be a net inflow of dollars from customers from outside of the community in order to keep Township businesses operating. One can see how this might be possible in Lyon Towne Center, which draws customers from I-96. Another implication of these findings is that the surplus of retail space is expected in the future. It will take a long time for household growth to absorb the excess retail capacity that exists.

It is important to note that this analysis did not include a market study of the kinds of commercial products and services provided within the existing retail space. Anecdotal evidence suggests the Township could use more shoe and clothing retailers but already has ample auto-related businesses. Because so much commercial space already exists in the Township, it is more appropriate for retailers to fill niches in the market by occupying existing commercial facilities rather than establishing new areas.

Land Area Requirements for Shopping Centers. When considering any new areas for commercial development, the rule of thumb is that the total site area should be about four times the gross building area for shopping centers. This floor-area ratio would provide ample room for parking, landscaping, stormwater management, and pedestrian and traffic circulation.

In actual practice, developments in semi-rural and suburban communities are usually provided with a larger site area than prescribed by the 4 to 1 standard. Consequently, for the purposes of computing a conservative estimate of retail land area needs, a reasonable floor-area standard would be 5 to 1. Thus, the current Township households would need about 75 acres to satisfy all of their commercial needs. This statistic verifies the finding that the Township has sufficient land currently designated for commercial use.

Market Evaluation for the New Hudson Hamlet

As part of the Lyon Center Vision Plan, which was completed in August 2009, a market evaluation was done for the New Hudson Hamlet and environs. The market evaluation took a different approach than the one just outlined in this chapter. It first used ESRI data to define the retail opportunity gap, which revealed there is a vast oversupply of retail space relative to the demand generated by the residents within a 15-minute drive time market area of the hamlet. Furthermore, the evaluation found that Brighton and Novi serve as a regional commercial center for a very large area that extends well beyond the boundaries of the 15-minute drive time area. (These findings are consistent with the findings in the first part of this chapter.)

Notwithstanding, the above findings, on an optimistic note, the evaluation found that there should be opportunities for locally-oriented businesses that serve the convenience and entertainment needs of nearby residents. The evaluation suggests that such businesses would be most appropriately designed and positioned in a mixed-use village center.

The evaluation completed an analysis of categories where there may be opportunities for new businesses in New Hudson. This is known as leakage/surplus analysis. Examples of potential opportunities include:

- Electronics retailers and services
- Restaurants, bistros, and wine bars
- Health and personal care stores

- Clothing and clothing accessories stores
- Sporting goods and hobby shops
- Gift stores
- Arts and crafts stores
- Cultural facilities

The evaluation cautioned, however, that even though the analysis indicates that some categories are underserved, it is likely that big-box superstores (e.g., Wal-Mart) are already meeting at least some of the demand. Thus, it is important for local businesses to differentiate themselves from the big box stores if they want to be successful. This can be accomplished by providing quality, service, uniqueness, or other features that the superstores can't match. It is unlikely that a local business will be able to compete with a big box store on the basis of convenience or price.

The market evaluation noted the need for gasoline stations, but made the observation that they are not compatible with the vision for the New Hudson hamlet. However, these may be locations at the outer edges of the ring road that are appropriate.

Food and beverage stores will have to find a niche that larger stores cannot fill. For example, specialty food stores, such as a local market, or a market that sells fruits and vegetables, might have success. A grocery store that goes head-to-head with Wal-Mart or Meijer will find it difficult to compete on the basis of convenience or price.

Office Analysis

Office users can be categorized as retail and non-retail. Retail office users are those who provide services directly to the residents and businesses in the community in which they are located. Non-retail office users are those who provide for services to consumers in a larger area, region or even globally.

Office space for non-retail office users is typically developed in concentrated areas with good access to regional transportation routes. Such locations minimize the risk to the office building owner by increasing the number of potential tenants. Communities to the east, particularly Novi and Farmington Hills, have established a significant position in the market as preferred locations for development of planned general office complexes. Lyon Township is not currently a preferred location for general office development.

Non-retail office users may also be located outside of the major market areas. These outside locations may be chosen for proximity to important clients. Or, in suburban areas, the owner or principals of office-based businesses may open their office to be close to their home. Non-retail offices located outside of major markets tend to be driven by the end-user, with speculative buildings being less common than built-to-suit buildings.

Retail Office Users. Retail office users tend to locate in proximity to the area residents and business they serve. Sites for retail offices are often in or adjacent to retail shopping centers, and along major transportation corridors. As with retail goods, retail offices with larger market areas seek to locate in or near larger scale shopping areas, where major transportation routes connect the business with larger populations.

Retail offices may be developed as a single tenant building with an end user identified prior to construction. Speculative development of retail offices can occur, but often the developer will have one end-user identified and then plan additional space speculatively in a multi-tenant building.

Lyon Township is not immediately part of a major office market. Thus, it is not likely to experience large scale speculative office development. More likely, as supported by past trends, the Township is suited to retail office users, and to small-scale office developments driven by the location demands of end-users.

Appropriate Locations for Office Space. The most logical place for any non-retail office user to locate their business is in New Hudson or South Lyon. The plan for New Hudson includes sufficient space for any expanding or relocating non-retail office user seeking to locate in the Township. Space to accommodate new retail office users is partially accounted for in the above retail analysis.

Any area in or adjacent to New Hudson, or along Pontiac Trail south of the City of South Lyon, is appropriate for further retail office uses if increased demand becomes apparent. Within the rest of the Township, areas directly adjacent to existing or planned commercial areas can be considered for additional office uses if necessary, provided that the office use cannot be accommodated within the actual commercial area.

PLAN FOR THE TEN MILE CORRIDOR

The Ten Mile Corridor is one of the most visible roadways in Lyon Township. It stretches from the Township's eastern border with the City of Novi to its western border with the City of South Lyon. It is one of three paved east-west arterials running through the Township and is one the most heavily traveled roads in Lyon Township. Despite the large amount of traffic, the Ten Mile Road Corridor is an example of the rural character of the Township with open vistas, large tree stands, hedgerows, wetlands and historic buildings such as farm houses, barns and silos. The natural features and rural character found in the Ten Mile Corridor are most valuable and irreplaceable assets in Lyon Township.

The Ten Mile Corridor is also one of the most susceptible areas in the Township to development pressure, especially development of single-family homes. Due to its accessibility to regional roads, the availability of sewer and water utilities, new schools, and its proximity to Novi and South Lyon, Ten Mile Road is and will continue to be impacted by development. Since 2003, over 960 new homes were approved for construction along Ten Mile Road in the Woodwind, Copperwood, Lyon Ridge, and Pinehurst developments.

Since development often disregards indigenous features of a community, which are replaced with a landscape that merely duplicates the cultured landscape found throughout the Midwestern United States, the end result may be the loss of the character of one of the most visible rural corridors in the Township. The purpose of this chapter is to present guidelines for development of the Ten Mile Corridor that respect, retain and enhance the indigenous landscape and vegetation.

Ten Mile Corridor Attributes

The Ten Mile Corridor is rural in places and at other spots takes more of a suburban character. The graphic analysis on the following page highlights the different characters of the corridor and notes the significant natural features, developments and future building.

The western most portion of the corridor is characterized by residential development of a suburban nature, providing a transition from the denser housing in the City of South Lyon. Moving east, the density of residential development quickly decreases. There are a couple of non-residential uses on the south side, a funeral home and a church. The intersection of Ten Mile and Milford Roads is characterized by large open spaces and institutional uses, a church and a fire station, with a small shopping center at the northwest corner.

East of Milford Road, residential uses with a rural character begin again, typically on larger lots with heavy tree cover. Large trees are close to the road. A large wetland area abuts the north side of Ten Mile, east of Currie Road. West of Currie Road, the character is more suburban with the Tanglewood golf community to the south.

Woodwind, a large planned development is on the north side of Ten Mile between Currie and Johns Road. A variety of residential uses, elementary school, and high school are a part of this planned development. On the south side, east of Chubb Road, two residential developments are being constructed, Lyon Ridge and Copperwood. Lyon Ridge has been the most successful at adhering to the guidelines specified later in this chapter.

The character of Ten Mile Road returns to a rural flavor between Johns Road and the western border at Napier Road. This area is mostly undeveloped although some of the acreage is farmed. The vistas and rolling topography of this portion of the corridor provide a rural entrance to the Township.

The alternating suburban/rural nature of the Ten Mile corridor provides a challenge in terms of addressing the corridor as a whole. Unifying elements can tie the corridor together.

Ten Mile Corridor Design Plan

Ten Mile Road is anticipated to develop fully in the next several years. The corridor has been partially developed and other portions have the traditional uses of the past or modern day uses which preserve the views such as golf courses. The Township wishes to preserve certain natural features, such as wetlands, woodlands, landmark trees, scenic vistas, and natural landforms, even as development occurs. These features should be incorporated into the landscape plans for new developments. However, it is recognized that developers wish to landscape the entrances and frontages of their developments to make them appealing to potential buyers. In rural areas, this should be done in ways that are complementary to the existing landscape.

However, a traditional suburban landscape is not necessarily complementary to the existing rural landscape. Well-manicured landscapes, organized plantings, trees planted at regular intervals, and rigid berm dimensions are not usually found in a rural landscape. Due to the planned right-of-way along Ten Mile Road and subdivision design requirements for fifty-foot wide landscape buffer, a substantial portion of the land along Ten Mile Road is required to be landscaped.

Through a series of Planning Commission workshops, a complementary design plan was developed for the Ten Mile Road Corridor. The design plan has three components: 1) unifying elements 2) rural design elements, and 3) suburban design elements. The unifying elements should be utilized throughout the corridor to create a cohesive appearance. The rural design elements and suburban design elements should be used in the appropriate locations to retain and enhance the existing character of each segment of the corridor.

Unifying Elements

The following unifying elements should be a part of every development along the Ten Mile Corridor:

- Existing natural features, such as wetlands, woodlands, landmark trees, and scenic vistas, should be preserved and incorporated into the development or redevelopment.
- To screen uses from the roadway, undulating landforms and a combination of trees, shrubs, and perennials should be used instead of rigid berms and rows of evergreen trees.
- Where feasible, the required bicycle path along Ten Mile should meander and undulate through the landscape and not proceed in a straight line parallel to the road. Lower level bike path lighting could be allowed.
- Building setbacks and landscape buffers should be designed as naturalized green spaces, incorporating sustainable storm water management features and creative use of vegetation.
- The same street lighting fixtures should be used throughout the corridor to provide continuity.
- Coordinated street signage should be used throughout the corridor.
- At least 60% of the landscape proposed should come from the unifying elements plant list found at the end of this chapter. These materials have been selected because they are hardy in both rural and suburban settings, inspire rural images and vistas, maintain a healthy condition in a street side environment and provide visual interest to highlight the rural indigenous character of the Township.



Example of meandering bicycle trail.



Grasses are a key component of the unifying elements plant list.

Rural Design Elements

Development or redevelopment in the rural areas of the Ten Mile Corridor must encompass the following rural design elements. A sketch of a typical rural plan follows.

- Large masses of native or naturalized perennials and grasses should be utilized in the landscape area along Ten Mile Road (See Rural Plant List). Plantings should be informal, have a natural appearance and require minimal maintenance.
- Irrigation should be used only where needed due to the type of plants used.
- Open areas, including those in or near the right-of-way, should be left in a natural state, rather than converted to lawn.
- Trees should be clustered and planted at random intervals. They should be left in naturalized beds with naturalized undergrowth whenever possible.
- Native vegetation should be maintained along gravel road shoulders where Ten Mile cuts through native areas like wetlands.
- Land forms should be smooth, natural, undulating forms with the bike path meandering over, down, around and through the land forms.
- To screen development from Ten Mile, existing hedgerows should be used, new hedgerows created or ornamental trees planted in a style to mimic orchards. A three-rail horse fence could be used to add visual interest and as a unifying element.
- Street lighting should be limited to intersections only.



Example of large masses of perennials and grasses.



Joe-Pye Weed is an example of native vegetation.

Suburban Design Elements

In the suburban areas of the Ten Mile Corridor, all developments or redevelopment should contain the following suburban design elements. A sketch of a typical suburban plan follows.

- A formal planting style may be utilized. (See Suburban Plant List).
- Edging to define and separate planting beds from turf should be used.
- Planting beds should be mulched and weed-free.
- All landscaped and grassed areas must be irrigated.
- Street trees should be planted at regular intervals.
- Mowed grass should be in the right-of-way and around plantings and between the bicycle path and road shoulder.
- Lighting should be limited to intersections only.
- A variety of species of plant material shall be used.



Example of more formal planting with street lights at regular

Design Plans and Plant Lists

The plans on the next five pages demonstrate how the rural or suburban design elements discussed above can be implemented. These plans are guides to inform potential developers and to evaluate development proposals. The plant lists on the final pages of this chapter list the perennials, shrubs and trees that may be used along the Ten Mile Corridor. In all cases, at least 60% of the landscape should be drawn from the unifying plant list. The Rural Plant List should be used for the remaining landscape for areas identified as rural estate, semi-rural, rural character and non-residential on the aerial photograph analysis presented previously in this chapter. Areas on that analysis identified as a transitional area or suburban character should use the Suburban Plant List for the remaining landscape.

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Transitional Area

Rural Estate

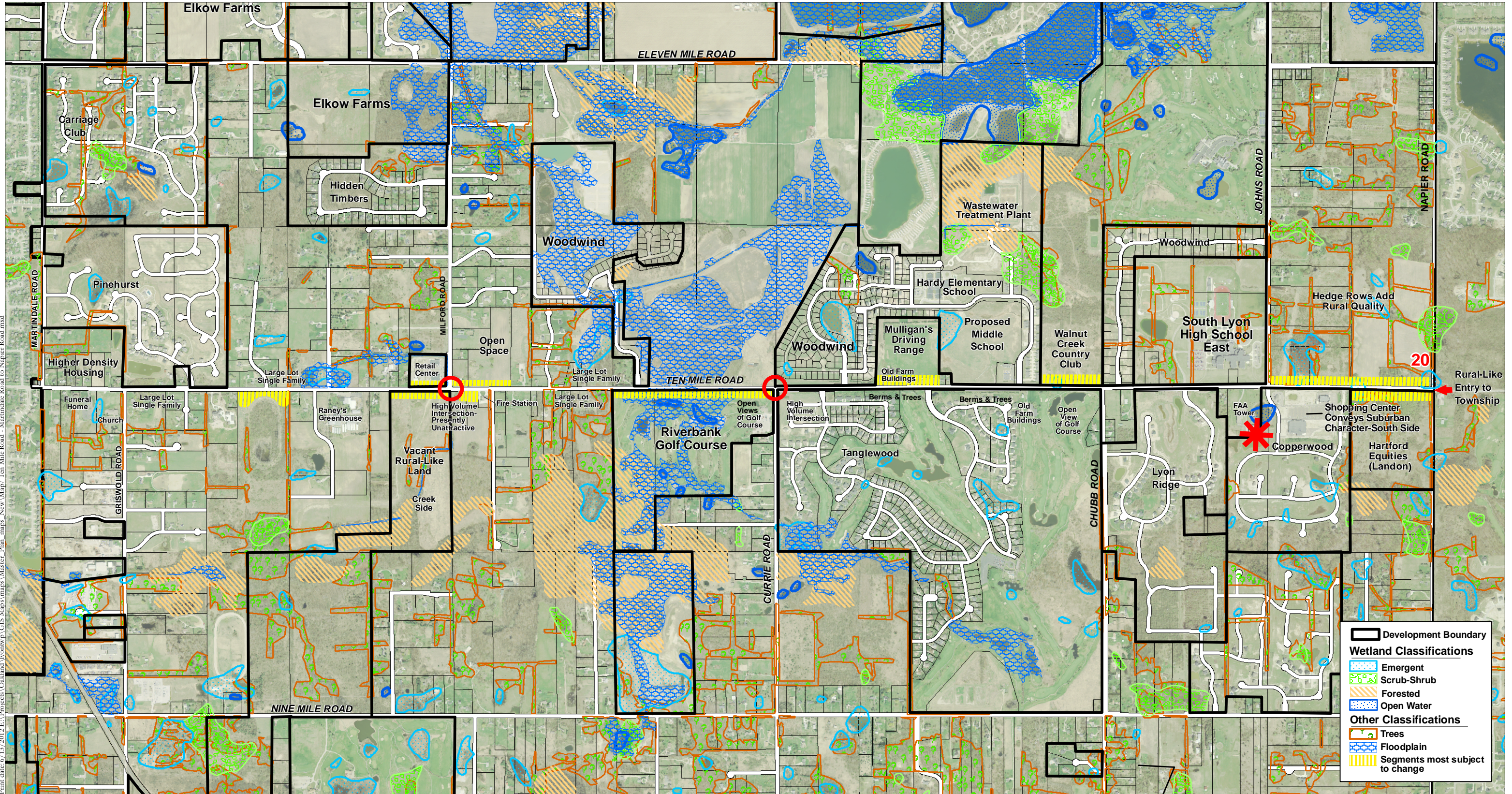
Non-Residential & Rural Estate

Rural Estate

Semi-Rural

Suburban Character

Predominantly Rural with Suburban Segment



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Development Boundary
 ——— Development Boundary

Wetland Classifications

- Emergent
- Scrub-Shrub
- Forested
- Open Water

Other Classifications

- Trees
- Floodplain
- Segments most subject to change

Base Map Source: Oakland County, Michigan, 2006
 Aerial Source: SEMCOK, 2010
 Zoning Data: Lyon Township, 2002
 NWI Data: Michigan Department of Natural Resources
 Spatial Data Library, 1978

Map 7
Ten Mile Road - Martindale Road to Napier Road
Charter Township of Lyon, Oakland County, Michigan

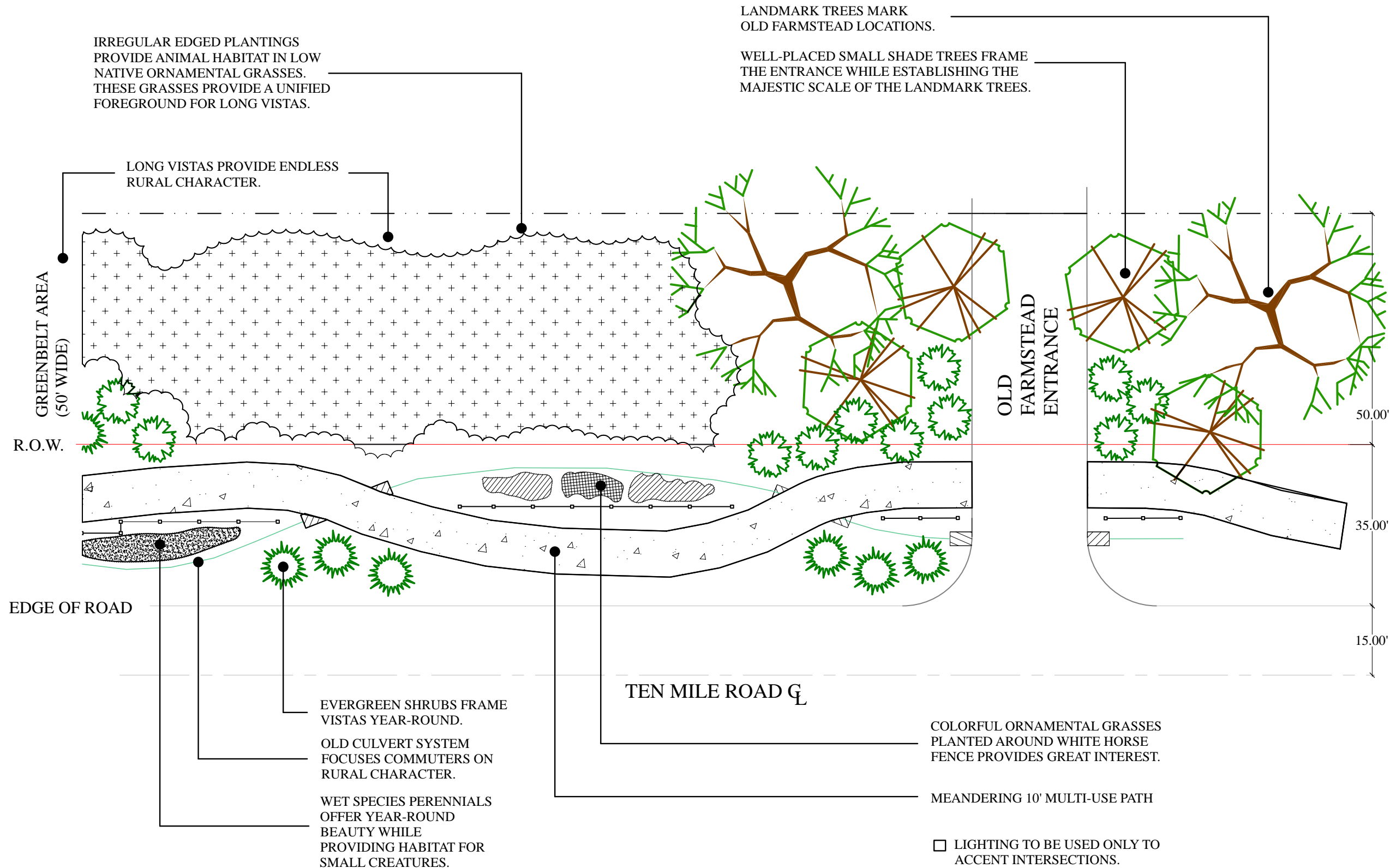


Figure 5-1: Ten Mile Road Design Plan
Concept Plan for Rural Character



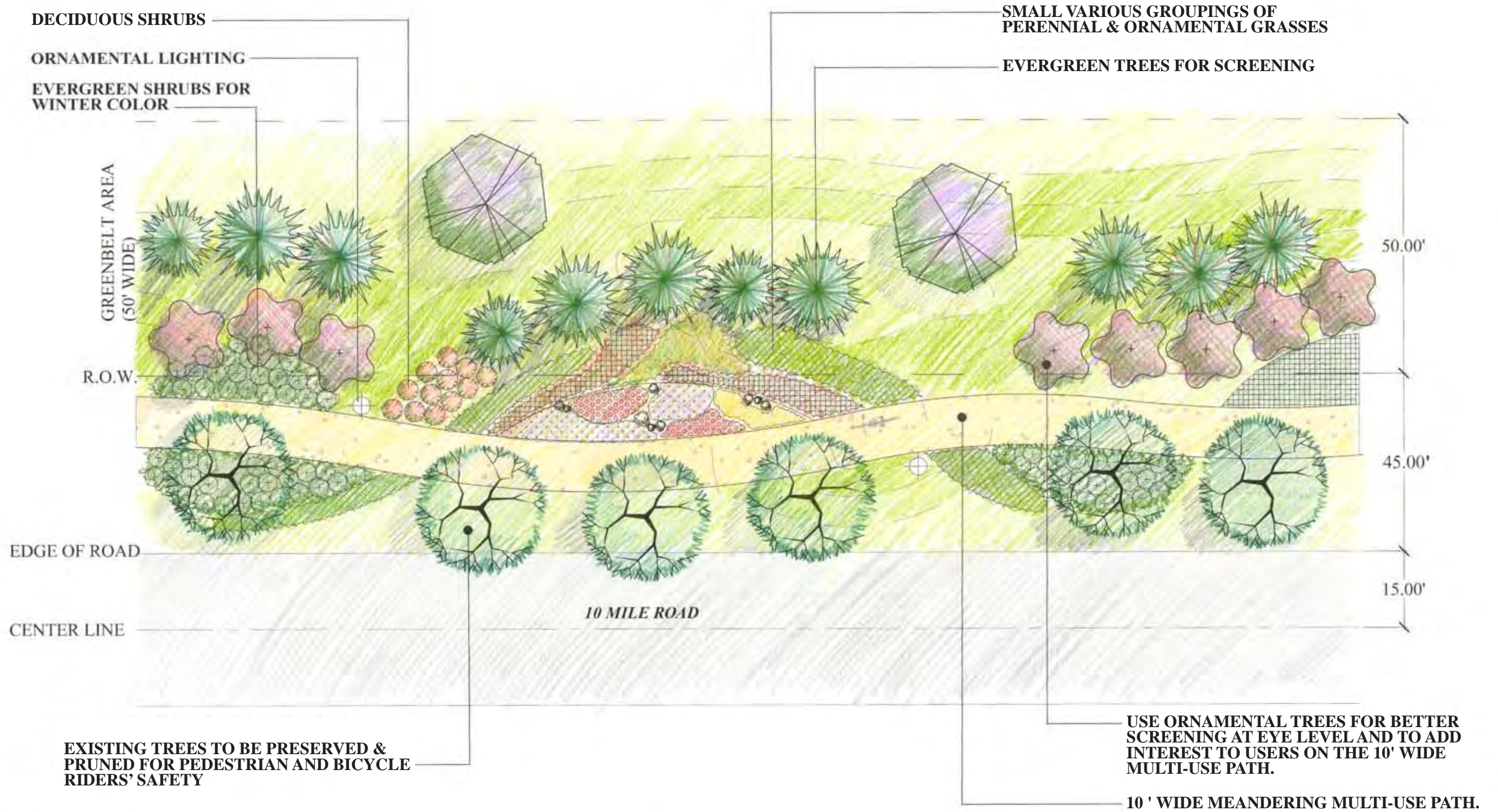


Figure 5-2: Ten Mile Road Design Plan
 Concept Plan for Suburban Character



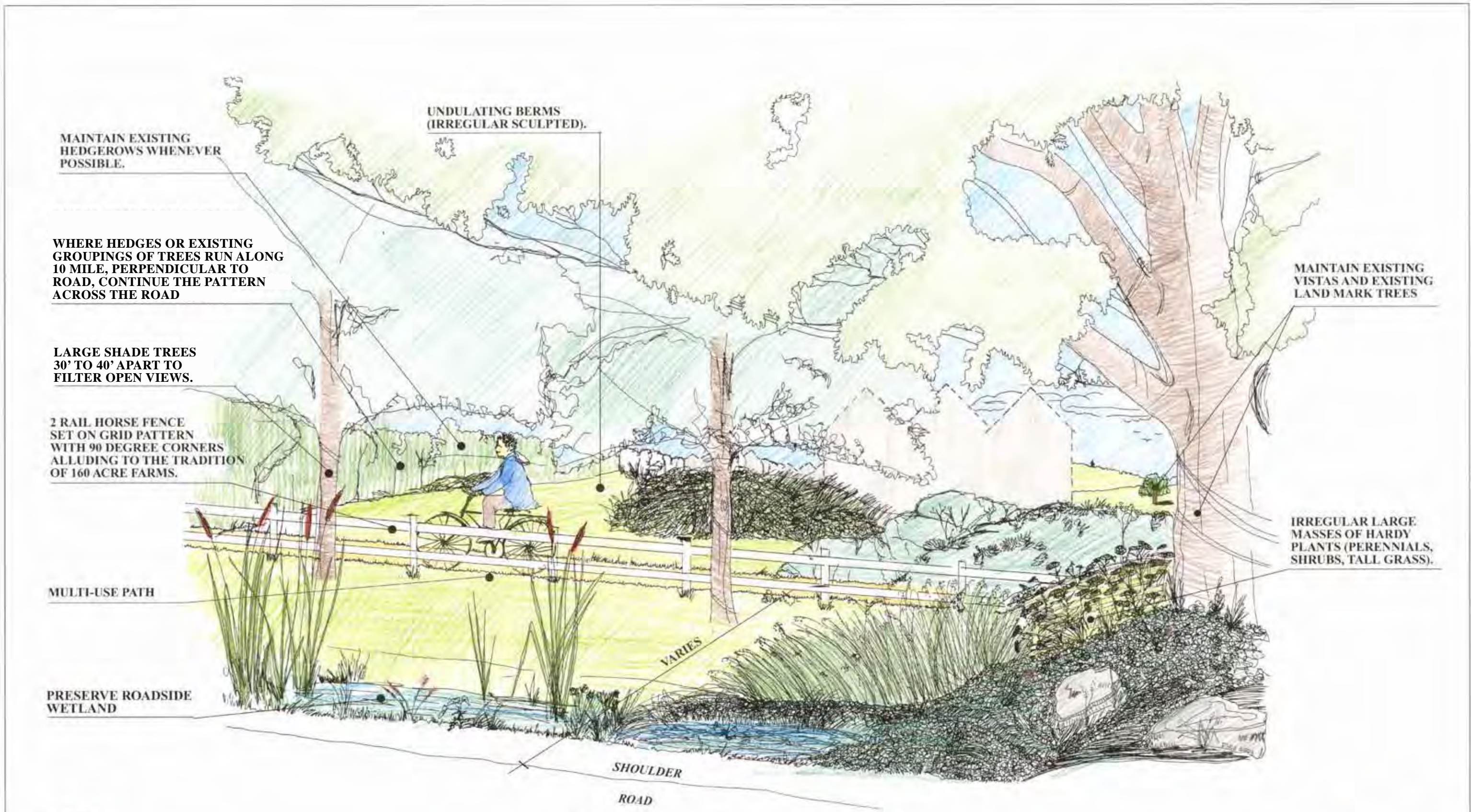


Figure 5-3: Ten Mile Road Design Plan
Rural Character #1



- BEST MANAGEMENT PRACTICES (BMP) STORM WATER MANAGEMENT
- RETENTION OR DETENTION PONDS WITH IRREGULAR BERM BUFFERS.
- USE STORM WATER AT THE EDGE OF GREENBELTS TO EXTEND GREEN SPACE BETWEEN DEVELOPMENTS.
- COMBINED STORM WATER FACILITIES ON A BUTTING DEVELOPMENTS TO CREATE LARGER GREEN SPACE.

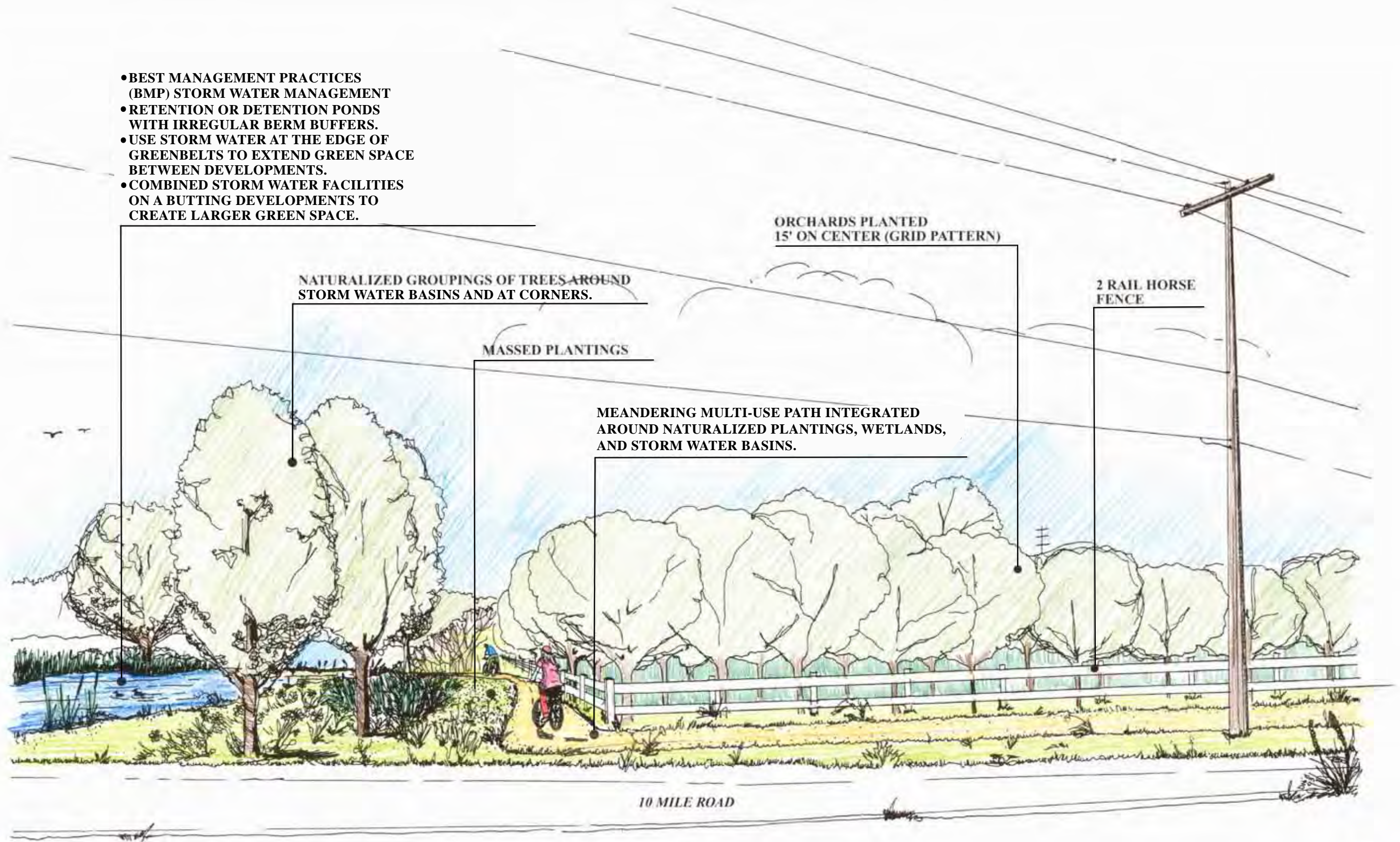


Figure 5-4: Ten Mile Road Design Plan
Rural Character #2



N.T.S
4/9/12

McKenna
ASSOCIATES

Table 5-1
Lyon Township 10 Mile Road
Unifying, Suburban, and Rural Character Plant Palette

UNIFYING LANDSCAPE PLANTINGS

Perennials

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
<i>Achillea filipendulina</i>	Yellow Yarrow	Dry, Prairie	1-3'	Summer, Fall	Yellow
<i>Anemone x 'Queen Charlotte'</i>	Queen Charlotte Japanese Anemone	Medium Moisture, Sunny	2-3'	Fall	Pink
<i>Echinacea purpurea 'Magnus'</i>	Magnus Purple Coneflower	Dry, Prairie	1-2'	Summer and Fall	Purple
<i>Geranium x 'Johnson's Blue'</i>	Johnson's Blue Geranium	Dry, Shade	1-2'	Spring	Red
<i>Hemerocallis x 'Pardon Me'</i>	Pardon Me Daylily	Moist, Sunny	2-4'	Summer and Fall	Burgandy
<i>Oenothera 'Speciosa'</i>	Evening Primrose	Moist, Sunny	>1'	Summer	Pink

Grasses

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
<i>Panicum virgatum ' Shenandoah'</i>	Red Switchgrass	Dry, Prairie	3-4'	Summer, Fall	N/A
<i>Panicum virgatum ' Hans Herms'</i>	Red Switchgrass	Dry, Prairie	3-4'	Summer, Fall	N/A
<i>Spartina pectinata</i>	Prairie Cordgrass	Moist, Prairie	3-4'	Summer, Fall	N/A
<i>Sorghastrum nutans</i>	Indian grass	Dry, Prairie	4'	Summer, Fall	N/A
<i>Pennisetum alopecuroides</i>	Fountain Grass	Varies	2-4'	Summer, Fall	N/A

Shrubs

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
<i>Caryopteris x clandonensis 'Bluebeard'</i>	Bluebeard	Sunny, Dry	3-5'	Late Summer/Fall	Indigo
<i>Forsythia x intermedia 'Arnold dwarf'</i>	Dwarf border forsythia	Sunny, Dry	3'	Spring	Yellow
<i>Spiraea x 'Van Houttei'</i>	Bridal Wreath Spirea	Sunny	5-8'	Spring	White
<i>Syringa x chinensis</i>	Chinese Lilac	Sunny, Dry	8 -10'	summer	Lavender
<i>Viburnum dentatum 'Autumn Jazz'</i>	Arrowwood Viburnum	Dry, Sunny	6-8'	summer	White

UNIFYING LANDSCAPE PLANTINGS CONT.

Ornamental Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
<i>Syringa reticulata</i> 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	Sunny	20-30'	Spring	White
<i>Malus</i> 'Bob White'	Bob White Crab Tree	Sunny	15-20'	Spring	White
<i>Acer ginnala</i>	Amur Maple	Sunny	15-20'	N/A	N/A
<i>Malus transitoria</i> 'Schmidtcutleaf'	Cutleaf Crab	Sunny	20'	Spring	White
<i>Malus</i> 'Hargozam' Harvest Gold	Harvest Gold Crab	Sunny	20'	Spring	White

Shade Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom/Fall Color
<i>Aesculus x carnea</i> 'Brioti'	Red Horsechestnut	Varies	30-40'	Late Spring	Red/Gold
<i>Aesculus hippocastanum</i> 'Baumannii'	European Horsechestnut	Varies	50-75'	Late Spring	White/Gold
<i>Quercus rubra</i>	Red Oak	Varies	60-75'	N/A	None/Wine

Table 5-2
Lyon Township 10 Mile Road
Unifying, Suburban, and Rural Character Plant Palette

RURAL LANDSCAPE PLANTINGS

Perennials

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
<i>Achillea millefolium</i>	Yarrow	Dry, Prairie	1-3'	Summer, Fall	White
<i>Andropogon gerardii</i>	Big Bluestem grass	Dry, Prairie	4-5'	Summer, Fall	N/A
<i>Andropogon scoparius</i>	Little Bluestem grass	Dry, Prairie	2-3'	Summer, Fall	N/A
<i>Aquilegia canadensis</i>	Wild Columbine	Moist, Sunny	1'	Summer	White, Red, Blue
<i>Asclepias incarnata</i>	Swamp Milkweed	Wetland, Sunny	1-4'	Summer	Rosy Bright Pink
<i>Asclepias tuberosa</i>	Butterfly Weed	Dry, Prairie	1-2'	Summer	Bright Orange
<i>Aster azureus</i>	Sky-blue Aster	Dry, Prairie	2-3'	Summer	Blue
<i>Aster novae-angliae</i>	New England Aster	Dry, Prairie	3-4'	Late Summer, Fall	Purple
<i>Chrysanthemum leucanthemum</i>	Ox-Eye Daisy	Wet or Dry Sunny	1-3'	Spring and Summer	White
<i>Coreopsis lanceolata</i>	Sand Coreopsis	Moist, Sunny	2-3'	Spring	Yellow
<i>Echinacea angustifolia</i>	Purple Coneflower	Dry, Prairie	2-3'	Summer and Fall	Purple
<i>Echinacea pallida</i>	Purple Coneflower	Dry, Prairie	3'	Summer and Fall	Purple
<i>Echinacea purpurea</i>	Purple Coneflower	Dry, Prairie	2-3'	Summer and Fall	Purple
<i>Echinacea purpurea</i> 'Magnus'	Magnus Purple Coneflower	Dry, Prairie	1-2'	Summer and Fall	Purple
<i>Echinacea purpurea</i> 'White Swan'	White Swan Coneflower	Dry, Prairie	2-3'	Summer and Fall	White
<i>Eupatorium maculatum</i>	Joe-Pye Weed	Wetland/Sunny	2-5'	Summer	Pink
<i>Eupatorium purpureum</i>	Sweet Joe-Pye Weed	Wetlands/Shaded	2-5'	Summer	Pinkish/Purple
<i>Gallardia aristata</i>	Blanket Flower	Dry, Prairie	2-3'	Summer and Fall	Yellow and Red Mix
<i>Geranium maculatum</i>	Wild Geranium	Dry, Shade	1-2'	Spring	Red
<i>Geum triflorum</i>	Prairie smoke	Wet	1.5'	Late summer	Green
<i>Heliopsis helianthoides</i>	False Sunflower	Dry, Prairie	2-3'	Summer and Fall	Yellow
<i>Hemerocallis x</i>	Daylily	Moist, Sunny	2-4'	Summer and Fall	Various
<i>Hypericum perforatum</i>	St. Johnswort	Dry Prairie	1-3'	Summer, Fall	Bright Yellow
<i>Iris germanica</i>	Bearded Iris	Dry, Upland	2-3'	Spring	Varies
<i>Iris versicolor</i>	Blue Flag Iris	Wetland	2-3'	Spring and Summer	Blue
<i>Liatris asperia</i>	Rough Blazing Star	Dry, Prairie	1.5- 4'	Summer, Fall	Purple Spike
<i>Liatris spicata</i>	Gayfeather	Moist, Sunny	3'	summer	Pink
<i>Lobelia siphilitica</i>	Great Blue Lobelia	Moist, sunny	2-3'	summer	Blue

RURAL LANDSCAPE PLANTINGS CONT.

Perennials cont.

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Monarda didyma 'Jacob Kline'	Jacob Kline Beebalm	Dry, Prairie	2-4'	Summer	Dark Red
Monarda fistulosa	Wild Bergamot	Dry, Prairie	2-4'	Summer	Lavendar
Panicum virgatum	Switchgrass	Dry, Prairie	3-4'	Summer, Fall	N/A
Perovskia atriplicifolia	Russian Sage	Sunny, Dry	3-5'	Late Summer	Lavender
Rudbeckia hirta	Black-eyed Susan	Dry, Prairie	1-3'	Summer, Fall	Bright Yellow
Sedum spectabile 'Autumn Joy'	Autumn Joy Sedum	Sunny, Dry	1-2'	Fall	Red
Sedum spectabile 'Brilliantissima'	Brilliantissima Sedum	Sunny, Dry	1-2'	Fall	Pink
Sedum spectabile 'Neon'	Neon Sedum	Sunny, Dry	1-2'	Fall	Pink
Sorghastrum nutans	Indian grass	Dry, Prairie	4'	Summer, Fall	N/A
Spartina pectinata	Prairie Cordgrass	Dry, Prairie	3-4'	Summer, Fall	N/A
Sporobolus heterolepis	Prairie Dropseed	Dry, Prairie	2-4'	Summer, Fall	N/A
Vernonia fasciculata	Common Ironweed	Wet Prairie	4-6'	Late Summer, Fall	Purple

Shrubs

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Aronia arbutifolia	Red Chokeberry	Sunny, Moist	3-6'	Spring	White
Aronia melanocarpa	Black Chokeberry	Sunny, Varies	3-6'	Spring	White
Ilex verticillata	Michigan Holly	Sunny, Wet	3-7'	Not Showy	N/A
Kolkwitzia amabilis	Beautybush	Varies, Sunny	6-9'	Early Summer	Pink
Sorbaria sorbifolia	False Spirea	Sunny, Varies	5-8'	Summer	White
Spiraea x vanhouttei	Bridal Wreath Spirea	Varies, Sunny	8-10'	Spring	White
Syringa vulgaris (and cultivars)	Common Lilac	Dry, Sunny	6-10'	Spring	Varies
Syringa x chinensis	Chinese Lilac	Varies, Sunny	4-8'	Spring	Varies
Viburnum burkwoodii 'Chenault'	Chenault Burkwood Viburnum	Well Drained	6-10'	Spring	White
Viburnum burkwoodii 'Mohawk'	Mohawk Burkwood Viburnum	Well Drained	6-10'	Spring	White
Viburnum carlecephalum	Fragrant Viburnum	Well Drained	6-12'	Spring	Pink and White
Viburnum carlesii	Korean Spice Viburnum	Well Drained	4-6'	Spring	Pink and White
Viburnum juddi	Juddi Viburnum	Well Drained	4-6'	Spring	Pink and White

RURAL LANDSCAPE PLANTINGS CONT.

Ornamental Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Amelanchier x	Serviceberry	Varies	8 -18'	Spring	White
Syringa reticulata 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	Sunny	20-30'	Spring	White
Malus 'Bob White'	Bob White Crab Tree	Sunny	15-20'	Spring	White
Acer ginala	Amur Maple	Sunny	15-20'	N/A	N/A
Malus transitoria 'Schmidtcutleaf'	Cutleaf Crab	Sunny	20'	Spring	White
Malus 'Hargozam' Harvest Gold	Harvest Gold Crab	Sunny	20'	Spring	White

Shade Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom/Fall Color
Acer saccharum	Sugar Maple	Varies	60-75'	N/A	Orange/Yellow/Red
Liriodendron tulipifera	Tulip Tree	Varies	70-90'	Spring	Green/Yellow
Quercus alba	White Oak	Varies	50-80'	N/A	None/Brown to Wine
Quercus bicolor	Swamp White Oak	Moist	50-60'	N/A	None/Yellow-Brown
Quercus macrocarpa	Bur Oak	Varies	70-80'	N/A	None/Yellow-Brown

Table 5-3
Lyon Township 10 Mile Road
Unifying, Suburban, and Rural Character Plant Palette

SUBURBAN LANDSCAPE PLANTINGS

Perennials

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Chrysanthemum x	Hardy Mums	Wet or Dry Sunny	1-3'	Late Summer and Fall	Varies
Coreopsis lanceolata	Sand Coreopsis	Moist, Sunny	2-3'	Spring	Yellow
Echinacea angustifolia	Purple Coneflower	Dry, Prairie	2-3'	Summer and Fall	Purple
Echinacea pallida	Purple Coneflower	Dry, Prairie	3'	Summer and Fall	Purple
Echinacea purpurea	Purple Coneflower	Dry, Prairie	2-3'	Summer and Fall	Purple
Echinacea purpurea 'Magnus'	Magnus Purple Coneflower	Dry, Prairie	1-2'	Summer and Fall	Purple
Echinacea purpurea 'White Swan'	White Swan Coneflower	Dry, Prairie	2-3'	Summer and Fall	White
Festuca ovina 'Elijah Blue'	Blue Fescue	Dry, Prairie	2-3'		
Gallardia aristata	Blanket Flower	Dry, Prairie	1'	Summer	Yellow & Red Mix
Gallardia aristata 'Goblin'	Goblin Dwarf Blanket Flower	Dry, Prairie	1'	Summer and Fall	Yellow & Red Mix
Geranium maculatum	Wild Geranium	Dry, Shade	1-2'	Spring	Red
Heliopsis helianthoides	False Sunflower	Dry, Prairie	2-3'	Summer and Fall	Yellow
Hemerocallis x	Daylily	Moist, Sunny	2-4'	Summer and Fall	Various
Iris germanica	Bearded Iris	Dry, Upland			Varies
Iris versicolor	Blue Flag Iris	Wetland	2-3'	Spring and Summer	Blue
Liatris spicata	Gayfeather	Moist, Sunny	3'	summer	pink
Lobelia siphilitica	Great Blue Lobelia	Moist, sunny	2-3'	summer	Blue
Monarda didyma 'Jacob Kline'	Jacob Kline Beebalm	Dry, Prairie	2-4'	Summer	Dark Red
Miscanthus sinensis 'Gracillimus'	Variegated Maiden Grass	Varies	4-5'	Summer, Fall	N/A
Miscanthus sinensis 'Morning Light'	Morning Light Grass	Varies	4-5'	Summer, Fall	N/A
Miscanthus sinensis 'November Sunset'	November Sunset Grass	Varies	4-5'	Summer, Fall	N/A
Panicum virgatum	Switchgrass	Dry, Prairie	3-4'	Summer, Fall	N/A
Pennisetum alopecuroides 'Hameln'	Dwarf Fountain Grass	Moist, sunny	1'	Summer	Various
Peonia fruticosa	Common Peony	Moist, Sunny	3-4'	Summer	Various
Rudbeckia hirta	Black-eyed Susan	Dry, Prairie	1-3'	Summer, Fall	Bright Yellow
Sedum spectabile 'Autumn Joy'	Autumn Joy Sedum	Sunny, Dry	1-2'	Fall	Red
Sedum spectabile 'Brilliantissima'	Brilliantissima Sedum	Sunny, Dry	1-2'	Fall	Pink
Sedum spectabile 'Neon'	Neon Sedum	Sunny, Dry	1-2'	Fall	Pink

SUBURBAN LANDSCAPE PLANTINGS CONT.

Deciduous Shrubs

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Caryopteris x clandonensis 'Bluebeard'	Bluebeard	Sunny, Dry	3-5'	Late Summer/Fall	Indigo
Caryopteris x clandonensis 'Longwood Blue'	Bluebeard	Sunny	3'	Late Summer/Fall	Indigo
Deutzia gracilis	Slender Deutzia	Varies	3'	Spring	White
Ilex verticillata	Michigan Holly	Wet, Sunny	3-7'	Not Showy	N/A
Kolkwitzia amabilis	Beauty Bush	Sunny, Dry	8-12'	Spring	Pink
Spiraea bumalda	Bumald Spirea	Spring, Summer	2-3'	Spring	Varies
Spiraea japonica	Japanese Spirea	Spring, Summer	4-5'	Spring	Varies
Spiraea nipponica	Snowmound Spirea	Spring, Summer	3-5'	Spring	White
Syringa vulgaris (and cultivars)	Common Lilac	Spring	6-12'	Spring	Varies
Syringa x chinensis	Chinese Lilac	Spring	6-8'	Spring	Varies
Viburnum burkwoodii 'Chenault'	Chenault Burkwood Viburnum	Spring	6-8'	Spring	White
Viburnum burkwoodii 'Mohawk'	Mohawk Burkwood Viburnum	Spring	6-8'	Spring	White
Viburnum carlecephalum	Fragrant Viburnum	Spring	8-12'	Spring	White
Viburnum carlesii	Korean Spice Viburnum	Spring	4-6'	Spring	White
Viburnum juddi	Juddi Viburnum	Spring	6-8'	Spring	White

Evergreen Shrubs

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Ilex x meserveae*	Meserve Hybrid Hollies	Sunny, Protected,	8-12'	N/A	N/A
Juniperus chinensis 'Sea Green'	Sea Green Juniper	Sunny, Dry	3-5'	N/A	N/A
Mahonia aquifolia*	Oregon Grape Holly	Sunny, Protected,	5-10'	Spring	Yellow
Pinus mugo	Mugo Pine	Sunny, Moist	8-15'	N/A	N/A

Ornamental Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Acer campestre	Hedge Maple	Sunny, moist	20-30'	N/A	N/A
Syringa reticulata 'Ivory Silk'	Ivory Silk Japanese Tree Lilac	Sunny, moist	20-30'	spring	white
Ilex opaca*	American Holly	Partial Shade, Moist	20'	N/A	N/A
Koelrueteria paniculata	Golden Raintree	Sunny, Varies	20-30'	Summer	Yellow

SUBURBAN LANDSCAPE PLANTINGS CONT.

Evergreen Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Bloom Color
Juniperus chinensis 'Keteleeri'	Keteleer Juniper	Dry, Sunny	15-20'	N/A	N/A
Juniperus scopulorum	Rocky Mountain Juniper	Dry, Sunny	25-30'	N/A	N/A
Juniperus virginiana	Eastern Redcedar	Dry, Sunny	25-30'	N/A	N/A
Picea omorika	Serbian Spruce	Dry, Sunny			

Shade Trees

Latin/Botanical Name	Common Name	Habitat	Height	Bloom Time	Fall Color
Acer x freemanii 'Autumn Blaze'	Autumn Blaze Maple	Varies	40-50'	N/A	Orange/Yellow/Red
Acer nigrum 'Green Column'	Green Column Black Maple	Varies	60-75'	N/A	Yellow
Pyrus calleryana	Bradford Pear	Varies	30-50'	N/A	Purple/Gold
Quercus palustris	Pin Oak	Varies	60-70'	N/A	Wine
Zelkova serrata 'Village Green'	Village Green Zelkova	Varies	50-80'	N/A	Wine/Gold

INDUSTRIAL ANALYSIS

Existing Industrial Development

Most industrial development in Lyon Township is located along Grand River Avenue between Lyon Center Drive – East and Napier Road. The Grand River corridor is considered the prime industrial district for the Township, where most industrial growth is expected in the future. The Township has installed sanitary sewer and municipal water utilities along the Grand River corridor, which will further encourage industrial development and/or redevelopment in this area.

A few industrial-type concerns are also located along Griswold Road between Nine and Ten Mile Roads. This area is expected to transition to higher quality industrial uses since Griswold Road between Nine and Ten Mile Road was paved in 2004.

Since 1996, two of the larger industrial employers have closed in Lyon Township, specifically U.S. Trailer and Jervis B. Webb. However, during that same period, two industrial parks have been developed, several new industrial concerns have located in the Township, a number of speculation buildings have been constructed and many existing entities have expanded. Table 6-1 lists industrial developments in the Township along with employment, revealing that industry accounts for almost 1,600 jobs in the Township. The expansion of existing industries and the location of new industries indicate an expansion of the Township’s industrial base.

Table 6-1

INDUSTRIAL BUSINESSES IN LYON TOWNSHIP	
GRAND RIVER CORRIDOR	
<u>Business</u>	<u>No. of Employees</u>
U. S. Food Service	475
Lord Corp.	20
Businesses in Quadrants Industrial – Research Centre	100
Kawasaki Robotics	70
A & M Label	60
Lyon Oaks Drive businesses	25
South Lyon Fence	14
Trident Industrial Blvd. businesses	25
Businesses across Grand River from BCBS	10

Table 6-1(cont.)

INDUSTRIAL BUSINESSES IN LYON TOWNSHIP GRAND RIVER CORRIDOR	
Richard Tool & Die	70
Nailco	50
Pratt & Miller	125
Solomon Plumbing	35
Other businesses along W. K. Smith Drive	45
Reilly Road businesses	15
Cummins	82
Pure-Pak	40
Ferguson Plumbing	55
Sloan Flushmate	50
Keebler	55
Other businesses in Lyon Industrial Research Centre	130
New Hudson Corporation	30
Total Industrial Employment	1,581

Source: McKenna Associates & Lyon Township Survey, 2010

Industrial Development Trends

According to the Southeast Michigan Council of Governments (SEMCOG) projections, 362,505 jobs will be added to the total employment of Southeast Michigan between 2000 and 2020. This is a 13.5 percent increase over the 2000 employment estimate of 2,673,052. This growth, however, will not come from the manufacturing sector. While manufacturing did increase slightly throughout the region between 1990 and 2000 (4,385 jobs or 1.6%), SEMCOG estimates that manufacturing jobs will decrease in the region over the 20-year period by 14,548 jobs or a negative three percent. The projections reveal that industry will be the weakest segment of the regional economy.

Notwithstanding this somewhat negative outlook for industry, there are some positive considerations:

- Although industrial growth is expected to be sparse in the region, Livingston and Washtenaw counties are expected to experience an increase in production jobs over the next twenty years.
- Lyon Township is positioned at the leading edge of growth in the region. Neighboring communities to the east, such as Wixom and Novi experienced substantial industrial growth in recent years but SEMCOG predicts that the manufacturing growth in these communities will level off. Between 2000 and 2020, Lyon Township will experience a growth of manufacturing jobs of 78%, as will the neighboring townships of Salem (almost 3,000 new jobs) and Milford Township (an increase of 81%), according to SEMCOG.

- The Walbridge-Aldinger site is one of the largest vacant parcels of industrially-zoned land in the region. This parcel will become increasingly valuable as other industrial properties in adjoining communities are built upon.
- The transition from an industrially-based to a service-based economy provides an opportunity to develop high tech research, industry-service-office, or other quasi-industrial districts, instead of plain “light industry” or “general industry” districts. The service segment of the regional economy will experience the greatest level of growth future.
- By broadening the definition of “industry,” the opportunity exists to tap into the growth of the service-oriented and knowledge-intensive economy. Communities that have already focused attention on this part of the economy have generated high paying professional/technical jobs in occupations that require a college education or specialized post-secondary technical training. The benefits of these jobs in the local economy is felt in residential neighborhoods and schools. High-tech infrastructure such as broadband or DSL help to attract these types of industries.

Industrial Development Potential

Broad shifts in the economy will affect industrial development in the Township. The outlook for industrial growth is affected by other market demand for industrial sites, residents’ opinions regarding industrial growth, zoning patterns, vacant land availability, adequacy of the public infrastructure, and so forth. An examination of these considerations follows:

- **Relationship to Other Industrial Districts.** Since development has occurred near the major interchanges at I-275 and US-23, the leading edge of development has pushed closer to Lyon Township’s borders. As land closest to the major interchanges gets used, land that is farther away -- including industrial land in Lyon Township -- will be in greater demand.
- **Support Services.** With the development of Lyon Towne Center, Lyon Township offers a range of commercial and support services near the industrial district. Accessibility to the Towne Center from the industrial district has been improved with the opening of the Lyon Center Drive – East extension in late 2009.
- **Transportation.** The primary industrial location determinant is convenient access to freeway transportation. Lyon Township is located in a strategic location with good access to I-96. The Township is midway between the I-275/I-96 and US-23/I-96 interchanges, providing excellent access to the rest of Oakland County, Ann Arbor, Lansing, and Flint.

The lack of air cargo services, rail, or water transportation along Grand River Avenue is not considered an impediment since competing industrial land in nearby communities lacks the same transportation services. In the long term, the inadequacies of the local road network, which was designed to serve a rural population, may impede continued development. For example, south Hill and Hass Roads could serve as collector roads to feed industrial or research-oriented traffic to Grand River but are not in a condition to do so today.

Traffic impact is one drawback to service-oriented businesses. In contrast with manufacturing, high-tech and research type operations are labor intensive. Thus, they generate much more automobile traffic. Light industry generates about 52.4 vehicle trips per acre per day; in contrast, research businesses housed in an office environment may generate up to 276 trips per acre per day.

If all of the developable industrially-zoned land in the Grand River corridor was developed for light industry or research-office use, Lyon Township roads would have to accommodate more than 50,000 more trips per day.

The opening of the Lyon Center Drive – East extension and roundabout in late 2009 will go a long way toward accommodating this traffic. Future planned improvements to the Grand River/Pontiac Trail/Milford Road intersection will also improve traffic conditions.

- **Housing.** At one time in the recent past, Lyon Township was viewed as lacking a variety of housing. This is no longer viewed as an impediment to industrial growth, because of the housing construction that has taken place in the last several years. There are now several housing choices for prospective residents of the Township.
- **Land Use Relationships.** Industries generally prefer locations where land uses are segregated. There is concern when residential development is nearby because residents may object to noise, trucks and other industrial impacts. Corporations hesitate to locate on sites where longevity on the site or opportunities for growth are limited.

In the past, the Township has strived to incorporate “transitional land use planning” in the industrial corridor. This concept provides for intermediate-intensive land uses as a buffer between industrial districts and residential districts. In the Grand River Avenue corridor, this could be accomplished by separating the industry from nearby residential districts by office, research, or other less intensive land uses.

- **Utilities.** The Township has developed public water and sanitary sewer utilities to service the Grand River corridor and other portions of the Township. The sanitary sewer master plan calls for all areas of the Township to eventually be serviced by sanitary sewer. One of the most significant impediments to development previously in Lyon Township was the inability to find land that could support a septic system. Clay soils and a high water table are prevalent throughout the industrial corridor. The utilities for the Grand River corridor were financed through special assessment districts.
- **Industrial Needs.** Two industrial needs that are difficult to meet in most communities are outdoor storage and warehousing. It is increasingly difficult to find sites where outdoor storage is permitted. Construction companies, landscape contractors, mechanical contractors, and other industrial concerns need sites in convenient locations where outside storage is permitted. Due to a 2010 zoning amendment, outside storage can be accommodated in both the I-1 and I-2 districts.

Another industrial need is land that can accommodate warehousing and automated distribution. Many companies are closing down older warehouses that rely primarily on non-automated inventory control.

Although the new distribution centers are not labor intensive, the automation equipment is expensive, providing an excellent property tax base. The most serious negative feature associated with warehousing and distribution centers is heavy truck traffic. Warehousing and distribution centers can be accommodated in the I-2 district.

- **Public Policies.** There is a strong relationship between public policies and the ability to successfully operate a business or industry. Public policies with the greatest impact on industry are reflected in adopted planning and zoning standards. Lyon Township's Master Plan and Zoning Ordinance are supportive of quality industrial development.

One measure of "quality industry" is based on consistency with the Township environmental policies. Residents place a high value on protection of the Township's natural resources, including wetlands, woods, and ground and surface water. Groundwater protection goals are of particular importance with respect to industrial development because of the following considerations:

1. Studies have shown that urbanization typically increases pollutant export to surface and groundwater by at least an order of magnitude over pre-development levels.
2. Groundwater contamination is typically related to the storage, use and disposal of hazardous substances, including solvents, petroleum based products, and chemicals.
3. If a land use is in an unsewered or unpaved area, the number of pathways of contamination is greater than when sewers are available and storage and vehicle maneuvering areas are paved.
4. Land use activities that typically pose the greatest threat to groundwater quality are classified as "industrial" or "commercial."

Grand River Avenue Industrial Corridor

An intensive examination of industrial development within the context of the Grand River Avenue corridor follows. For the purposes of this chapter, the corridor includes generally the area bounded by I-96 on the north and Twelve Mile Road on the south, from the Huron Valley trail to Napier Road (see Map 8). These boundaries also encompass a portion of the New Hudson hamlet.

There are two compelling reasons for this in-depth analysis. First, the Township's primary industrial district lies within the Grand River Avenue corridor. An analysis of most new industrial development in the Township can essentially be accomplished by focusing on the Grand River corridor. Second, there is a complex mix of industrial, commercial and residential

uses in the corridor. Rather than focusing on a single land use for study, examining industrial development as it relates to the land and to other uses in the area will render a more valuable picture of the situation.

Corridor Overview

In the earlier half of this century, Grand River Avenue was the main route linking Detroit and Lansing. Several small towns and settlements were established along this major transportation corridor including the New Hudson hamlet. New Hudson served both travelers on the Detroit-Lansing route, as well as residents of the Township. Aside from development along Grand River Avenue and in South Lyon, the remainder of the Township remained predominantly agricultural or vacant.

The construction of Interstate 96 in the late 1950's replaced Grand River Avenue as the main link between Lansing and Detroit while simultaneously making the Township more easily accessible and attractive for developers.

The freeway produced some unexpected impacts along Grand River Avenue because of inadequate drainage. Certain parcels that were at one time farmed became wetlands.

From a regional perspective, Lyon Township is located at the western edge of a regional growth pattern in southeastern Michigan. The leading edge of westward growth in the metropolitan area has reached Lyon Township, as evidenced by a 26.0 percent increase in population in Lyon Township between 2000 and 2009. The Grand River corridor is certain to experience continuous change as the leading edge of regional development continues to move west.

General Land Use Patterns

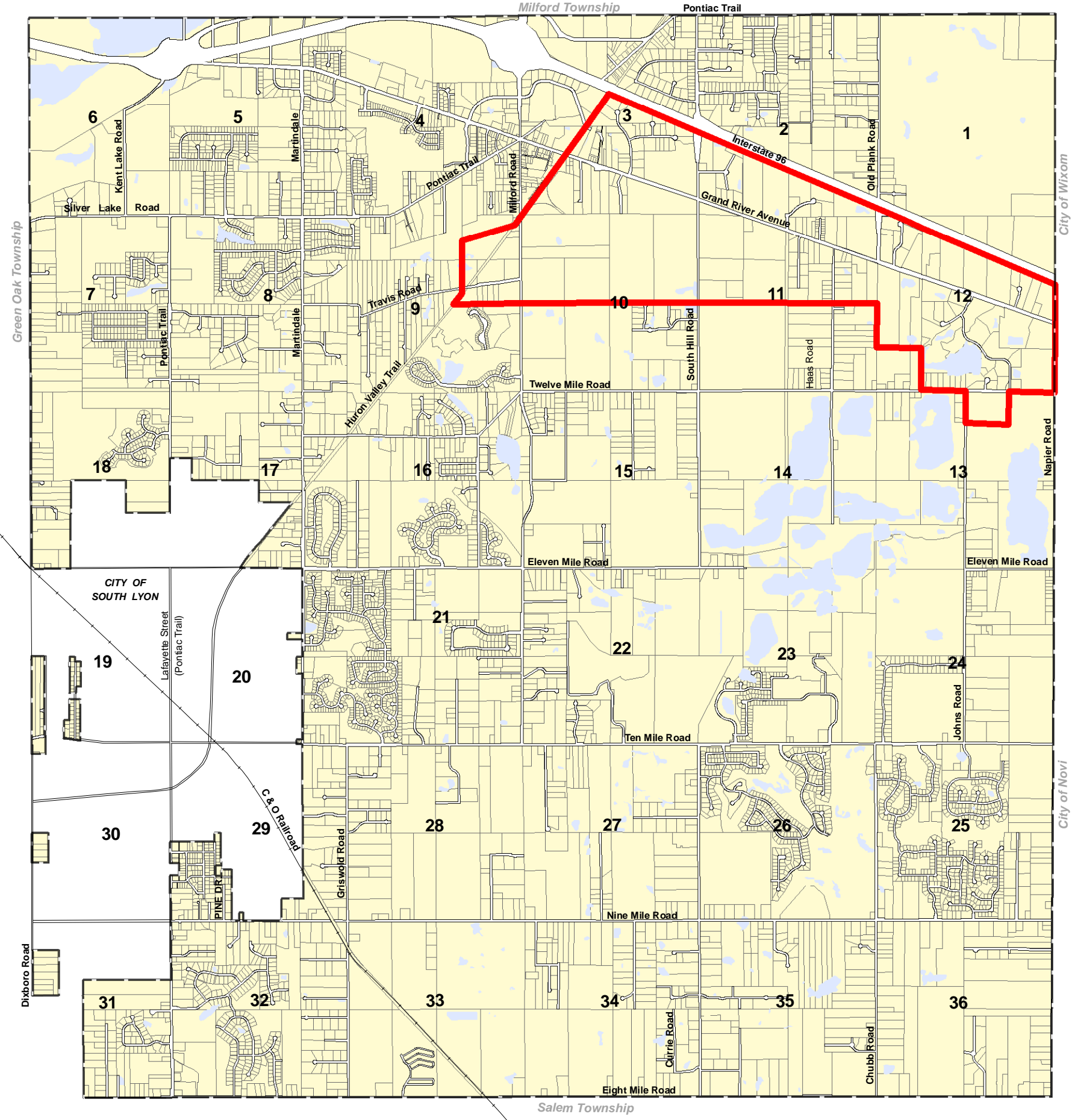
The general pattern of land use in the Grand River Avenue corridor has been molded by several key parameters: the predominance of agriculture, the early development of the corridor as a major transportation route, patterns of regional growth, and the introduction of public water and sanitary sewer utilities.

Agricultural land use once was a dominant land use in the corridor, occupying large tracts of land. Agricultural parcels still exist on the Walbridge-Aldinger site, but a mix of new uses developed over the years as Grand River Avenue emerged as a major transportation corridor. The mixed use development along Grand River Avenue was accomplished by dividing the larger parcels, producing a fragmented land use pattern in some areas.

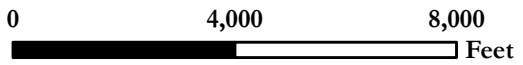
More recently, as a result of regional growth, industrial land use has emerged as the prevailing land use along Grand River, east of New Hudson. Most of the new industrial uses are located within industrial parks that have been developed due to the availability of municipal water and sanitary sewer.

Map 8 Grand River Avenue Industrial Corridor

Charter Township of Lyon,
Oakland County, Michigan



Base Map Source: Oakland County, GIS Utility, 2003



MCKenna
ASSOCIATES



13/2012 EA Projects\Oakland\Worksp\GIS Maps\maps\Master_Plan_maps_New\Map8_Grand River Avenue Industrial Corridor.mxd

Today, the Grand River corridor is characterized by a mixture of land uses, including vacant, residential, industrial, agricultural, and commercial uses (see Map 9). Table 6-2 summarizes existing land use in the Grand River corridor. A description of each of the land use categories follows the table.

Table 6-2
EXISTING LAND USE – GRAND RIVER AVE.
CORRIDOR (2010)

<u>Land Use</u>	<u>Area (acres)</u>	<u>Area (percent)</u>
Agriculture	551.5	28.3
Single Family Residential	122.6	6.3
Commercial & Office	77.3	4.0
Industrial	661.4	34.0
Public/Quasi-Public	11.0	0.6
Vacant	376.9	19.4
Open Water	33.9	1.7
Right-of-Way	112.1	5.7
TOTAL	1,946.8	100.0

Source: McKenna Associates

- **Agricultural and Vacant Land.** As indicated in Table 6-2, agricultural and vacant lands are still prevalent, occupying over 28.3 percent of the total land area. The largest concentration of agricultural and vacant lands is on property owned by Waldbridge-Aldinger, on the south side of Grand River Avenue, east of Milford Road.
- **Residential Land Use.** Residential is no longer the predominant "developed" land use in the Grand River corridor. Whereas residential once occupied 350 acres (1990 plan), single family residential land uses now account for 122.6 acres, or about 6.3 percent of the total land area. Most of the residential uses are on Haas Road, although there are a couple of single family uses remaining on Grand River Avenue.
- **Industrial Land Use.** The 1990 land use survey revealed that 257 acres of land in the Grand River corridor was used for industrial. Industrial uses now account for 661.4 acres, or 34.0 percent of the total land area. There are three types of industrial operations along Grand River Avenue:
 1. Older industrial operations are located on small parcels, primarily in the vicinity of New Hudson. Many of these operations suffer from cramped site conditions, inadequate site design, and deteriorated buildings.
 2. In the 1990's, modern industrial facilities were constructed on more spacious parcels. These modern facilities, such as Pure-Pak, Inc., raised the level of industrial development in the corridor. Due to a lack of public utilities at the time of their

construction, these individual businesses located on separate parcels rather than in industrial parks.

3. Since water and sanitary sewer facilities have been made available in the Grand River corridor, industrial parks have been developed in Lyon Township. New industrial uses in these parks account for a large amount of new industrial development in the Township since 2000 but industrial entities continue to locate on large, vacant parcels with frontage on Grand River.
- **Commercial and Office Land Use.** The commercial and office land use category includes retail, service, office and restaurant uses. These uses occupy 77.3 acres, or 4.0 percent of the total land area in the corridor. There are two concentrations of commercial use along the corridor, at the extreme west end, and at the east end (Brainer's Greenhouse). The primary office use is Blue Crosse Blue Shield.
 - **Public and Quasi-Public Land Use.** Public and quasi-public uses occupy 11 acres of land along the corridor. The primary such use is the Township well site, on the east side of South Hill Road, South of Grand River Avenue.
 - **Road Right-of-Way.** Road right-of-way accounts for 5.7 percent of the total land area. Grand River Avenue is included, but I-96 is not included in the right-of-way tabulation.

In summary, the predominant trend in the Grand River corridor is the emergence of industrial development and the corresponding decrease in the amount of residential, vacant, and agricultural land use. There remains large amounts of agricultural and vacant lands, on which industrial development is planned.

Land Use Issues

There are certain key issues that have had, and will continue to have, a substantial impact on development of the Grand River corridor. These issues include zoning, wetlands, soils, and obsolescence of older uses.

Existing Zoning. The zoning classification of land -- particularly vacant land -- within the corridor will determine the land use patterns that emerge. Table 6-3 indicates the amount of available vacant acreage within each zoning district in the Grand River corridor.

Three zoning districts account for over 95 percent of the vacant land in the Grand River Avenue corridor: I-1 Light, I-2 General Industrial and R-1.0 Residential-Agricultural. The zoning classification of vacant land contrasts with the existing land use summary. Whereas only 34 percent of the total land is currently used for industrial purposes, over 78 percent of the vacant land in the corridor is zoned for industrial use.

Table 6-3

ZONING CLASSIFICATION OF VACANT AND AGRICULTURAL LAND - GRAND RIVER AVE. CORRIDOR

<u>Zoning District</u>	<u>Vacant Acreage</u>	<u>Agricultural Acreage</u>	<u>Total Acreage</u>
R-1.0 Residential-Agricultural District	102.0	86.1	188.1
RO Research Office	2.3	0.0	2.3
B-1 New Hudson Development District	9.4	0.0	9.4
B-3 General Business District	5.1	0.0	5.1
I-1 Light Industrial District	231.0	90.4	321.4
I-2 General Industrial District	27.1	375.0	402.1
TOTAL	376.9	551.5	928.4

Source: Lyon Township Zoning Map (2010) and Existing Land Use Map (2010)

Over 20 percent of the vacant land (188.1 acres) is zoned Residential-Agricultural (R-1.0). Principal permitted uses in the R-1.0 district include single family dwellings and farming, although the farming is being phased out on many R-1.0 zoned lands in the Township.

If the corridor is eventually developed in accordance with existing zoning, there would be a dramatic shift in the land use in the corridor. The amount of land used for industrial purposes would more than double.

Land Use Obsolescence. The potential obsolescence of existing land uses is another determinant of development potential in the Grand River corridor. Certain uses are becoming obsolete, either because they are no longer compatible with the newer uses or because they are simply old and no longer functional. Consequently, an accurate evaluation of the development potential in the corridor must assess the degree to which existing uses are subject to change in the next several years.

In order to make this evaluation, the following criteria have been established to determine if existing land uses are "subject to change" or are permanent:

Zoning. Certain existing uses are nonconforming with respect to the Zoning Ordinance, so there are restrictions placed on expansion or future development of such uses. Also, there are certain sites which are "spot zoned" such that the existing zoning is not compatible with the zoning of abutting properties. Finally, some parcels will not be developed as zoned due to size, shape and the traffic levels along Grand River. These zoning inconsistencies tend to limit the permanence of such uses.

Examples of zoning inconsistencies include:

- Agricultural or residential zoning in predominantly industrial areas along Haas Road.
- Industrial zoning in the New Hudson hamlet, surrounded by more viable commercial zoning.

Condition of buildings and structures. There are a number of sites along Grand River Avenue occupied by older buildings or uses that are in a deteriorated condition. Also, there are industrial buildings and sites which are simply obsolete according to modern standards, because of size or design. As new development occurs and the value of land increases, such sites are prime for redevelopment.

Examples of obsolete buildings or sites include:

- Various old industrial establishments which are located on small sites with little or no room for expansion. If these industries remain successful, it is likely that they will search for new facilities elsewhere, thereby creating new development opportunities on Grand River Avenue.
- There are a few deteriorated buildings which no longer house viable businesses, including vacant buildings in the New Hudson area.

Compatibility with surrounding land uses. As the density of development and the traffic increases along Grand River Avenue, the incompatibility between various existing land uses will become more and more evident. The combination of incompatibility, improper zoning, and physical deterioration are likely to cause the demise of longstanding establishments but provide the opportunity for development which is more consistent with the surrounding land uses.

Examples of such land use incompatibilities include:

- Residential development within the emerging industrial district on Grand River Avenue and Haas Road.
- Commercial and services uses within the emerging industrial district.
- Industrial uses within the New Hudson commercial district.
- Single-family residential homes with direct frontage on Grand River, especially in the New Hudson area.

Relation of investment to land value. Certain land uses in the corridor have of a low level of investment and are very likely to relocate if property values escalate. Examples of these land uses include contractor storage yards and landscape supply yards.

The purpose of this analysis is not to predict the out-migration or demise of longstanding Lyon Township businesses. Rather, the purpose of this discussion is to point out that the conditions under which many existing uses were originally developed have changed. As a result, many

existing businesses no longer function under ideal conditions necessary for their continued success. Within the next five to fifteen years, it is likely that many of these businesses will take it upon themselves to find other more suitable sites or buildings in which to continue operating.

Summary

The previous discussion of land use obsolescence indicates that in the next several years the land use pattern will change as a result of two actions:

1. Vacant lands will continue to develop as the leading edge of regional growth moves farther west. Development of vacant lands will be affected by zoning, wetlands, and other factors to be examined later in the Master Plan. Table 6-3 summarizes the development potential on vacant lands, indicating that 723 acres of developable industrial-zoned land and 14 acres of developable commercial-zoned are located in the corridor. In addition, there are 188 acres of land zoned Residential - Agricultural that are potentially developable.
2. Obsolete sites and buildings will be redeveloped as existing businesses move and as land values increase to the level that makes redevelopment economically feasible. The development potential of the Grand River corridor, therefore, includes vacant plus redevelopment acreage.

The preceding analysis of the industrial market revealed that a viable industrial development plan must be flexible enough to allow high-tech research and quasi-industrial uses into the range of permitted uses, provided that acceptable land use relationships can be achieved.




Actions that can be taken to make the Township's industrial districts more appealing to quality industry include:

- Completion of drainage improvements to alleviate periodic flooding identified in the Storm Water Management Master Plan.
- Continued upgrading the local road network, particularly through New Hudson.
- Continued development of support services in the New Hudson area (i.e., restaurants, convenience stores, office supply, etc.).
- Removal of conflicting land uses.
- Adherence to quality development standards.

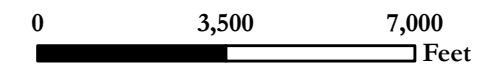
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Map 9 Industrial Corridor Existing Land Use

Charter Township of Lyon,
Oakland County, Michigan

-  Grand River Avenue Industrial Corridor
-  Open Water
- Existing Land Use**
-  Vacant
-  Agriculture
-  Single Family Residential
-  Multiple Family Residential
-  Office
-  Commercial
-  Industrial
-  Public and Quasi-Public Land
-  Vacant Building

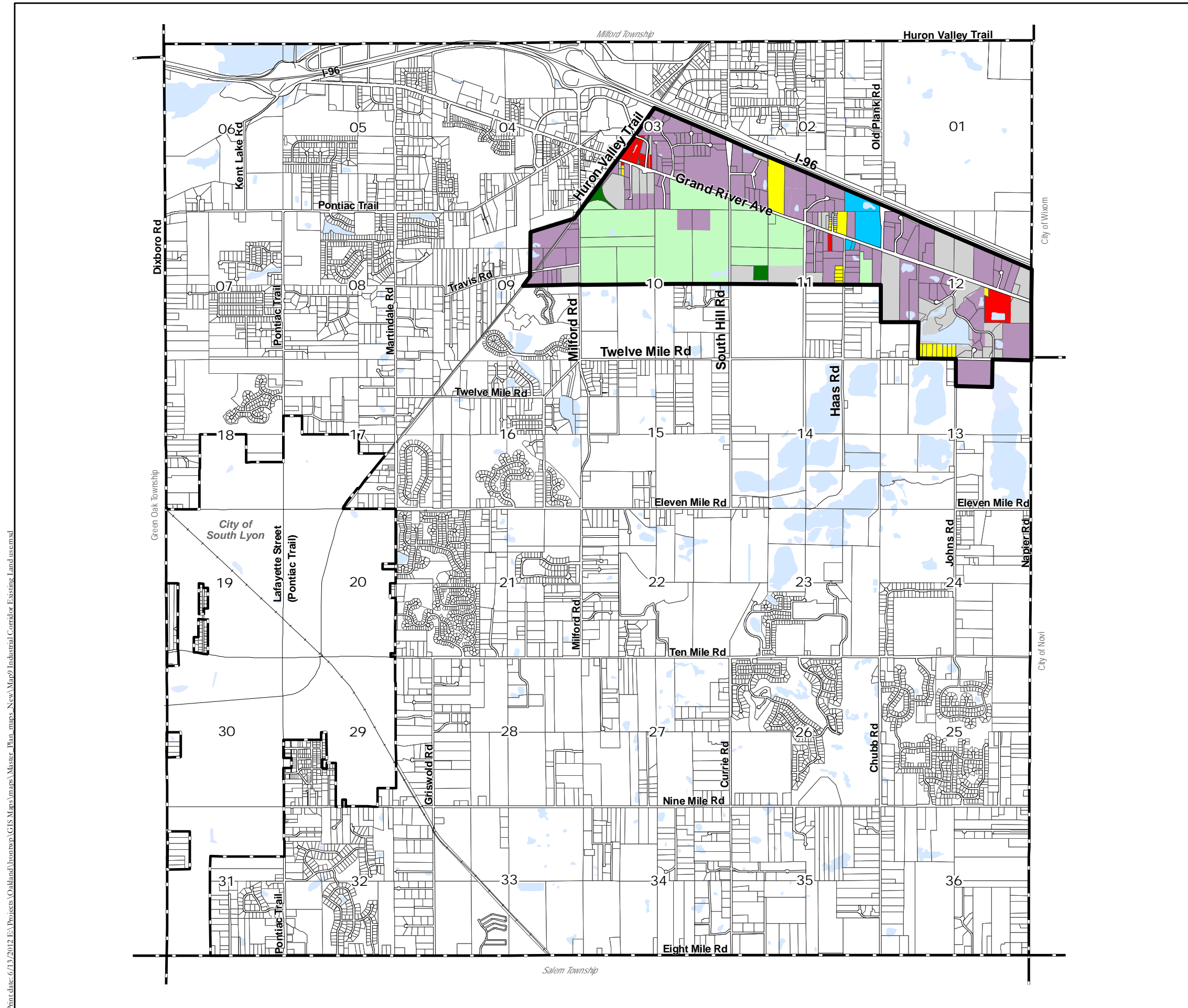
Base Map Source: Oakland County, GIS, 2006
Data Source: McKenna Associates, Inc., 12/09



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TRANSPORTATION ANALYSIS

Introduction

The road system is of vital importance for the overall wellbeing of the Township and its residents. At its most basic level, the road system provides the means of moving people and goods within and through the Township. The road system serves many other functions, however.

Roads and road rights-of-way provide locations for utilities, such as water, sewer, gas, electric, and telephone lines. Roads provide the means by which emergency and public services are delivered to residents. Roads provide access to parcels of land, thereby increasing the development potential of vacant and agricultural lands. Most important, the road system establishes the basic form of the Township.

Because of the many functions of the road system, transportation has a significant impact on the economy, environmental quality, energy consumption, land development, and the general character of the Township. Accordingly, it is prudent to identify and understand deficiencies in the road system and to identify alternatives to address those deficiencies. Many of the transportation related issues in Lyon Township are outside the realm of land use planning and more in the realm of maintenance. Nonetheless, these issues are important to the viability and efficiency of the Township's transportation network, and include:

- Traffic congestion in and around South Lyon
- Lack of paved north-south routes that traverse the entire Township
- Poor condition of gravel roads
- Design and condition of private roads
- Lack of funding
- Inflexible design standards – lack of local control over design standards
- Intermittent pedestrian/bicycle facility connections
- Poor access management in commercial districts

While there are many transportation challenges that the Township will need to address in the future, over the past five years, significant improvements, including the following, have been made:

- A ring road around New Hudson has been planned and portions constructed. This roadway plays a pivotal role in the overall Township economic development strategy by opening land for development and providing an alternate route around the 5-points intersection at Grand River, Pontiac Trail, and Milford Road.
- Several roads have been paved by developers of adjacent properties at no cost to the Township. These roads include Nine Mile Road, between Chubb Road and Napier Road; Martindale Road, south of Grand River Avenue, and Eleven Mile Road, between Martindale Road and Milford Road.

Existing Road System

Public roads in Lyon Township are under the jurisdiction of two agencies, the Michigan Department of Transportation (MDOT) and the Road Commission for Oakland County (RCOC). MDOT has jurisdiction over Interstate 96 (I-96). All other public roads are under the jurisdiction of the RCOC.

Between 2004 and December 31, 2008 (the most recent data available), approximately 13 miles of new roads were developed in the Township - from 96 miles to 109 miles of roads. Of the current 109 miles of roads, 96 miles are paved.¹

The existing road system can be described as an irregular grid network of roads that are located on section and quarter section lines. The exceptions to this pattern are Grand River Avenue and the portion of Pontiac Trail that runs diagonally through the northern part of the Township.

The north-south routes provide access to and from I-96 for the many daily commuters. Pontiac Trail, Milford Road, and Napier Road are the primary north-south routes. Pontiac Trail is the only continuous north-south route in the Township.

There are four continuous east-west routes in the Township. Besides I-96, Grand River Avenue, Ten Mile Road, and Eight Mile Road are paved roads that provide uninterrupted access across the Township; Nine Mile Road provides access across the Township, although it is unpaved between Griswold Road and Chubb Road.

Many of the unpaved roads in the Township are in fair to poor physical condition. Many roads are narrow, with soft or no shoulders. Funding for maintenance and upgrading has not kept pace with the increased wear caused by development. This lack of funding and maintenance of roads are directly related to one another. Roads will continue to deteriorate until such time as funding for their repair and maintenance becomes available.

¹ RCOC figures, gathered April 1, 2010, exclude I-96 or private road mileage information.

With development of the Township, the road system that was originally designed to serve an agricultural community now must serve a different function, providing access to developing commercial areas and residential subdivisions. As development trends shifted toward non-agricultural uses, so too did the primary function of the Township's road network.

Traffic Volumes

Traffic counts, or volumes, are an important measure to use in analyzing transportation trends (see Table 7-1 and Map 10). The Southeast Michigan Council of Governments ("SEMCOG") compiles transportation data, and is the source of data found within this chapter unless otherwise noted.² The highest traffic volumes were recorded on Pontiac Trail in South Lyon and on the roads providing access to it. Over 21,000 trips per day were recorded in 2008 on Pontiac Trail south of Ten Mile (a decline of roughly 18% since 2004). Milford Road north of I-96 carried almost 29,000 vehicles per day in 2008 (a decline of roughly 6% since 2004). Pontiac Trail carries through traffic between Ann Arbor and Pontiac, and serves as the primary commuter route providing access to I-96.

Ten Mile Road serves as the primary east-west thoroughfare serving South Lyon and the south part of the Township. The highest volumes on Ten Mile Road are recorded in the segments closest to Milford Road. These segments (east of Milford and west of Chubb and east of Griswold) increased over 5% since 2004. Ten Mile and Milford Roads are used as an alternate route to I-96.

Milford Road continues to be one of the most travelled roads in the Township, with between 8,688 and 10,167 vehicles per day in the segment between Ten Mile Road and Grand River Avenue. The largest increase in traffic volumes along Milford Road since 2004 was north of Grand River, with over a 108% increase in volume. As noted above, a substantial amount of the traffic can be attributed to traffic seeking access to I-96 and the commercial developments located in the area of I-96 and Pontiac Trail. While overall traffic volumes along the entire stretch of Milford Road increased since 2004, several segments experienced decreases in traffic volume. These segments include: north of Travis to Grand River; and I-96 to Pontiac Trail. These decreases in traffic volumes may be a result of the decrease in residential development activity in the Township.

Grand River Avenue's highest traffic volumes, between 11,600 and 13,300 vehicles per day, occur east of Milford Road. The traffic on Grand River Avenue is attributed to commercial and industrial development on Grand River Avenue and in New Hudson. Grand River Avenue also carries the spillover from I-96 when the interstate is congested. This is illustrated by the increase in volumes east of Milford Road and west of Old Plank. Grand River Avenue as a whole has seen a decrease in overall traffic volume of 2.59% since 2004. The reduced volumes have been experienced in those road segments west of Milford Road and east of Old Plank.

² Southeast Michigan Council of Governments, accessed online at <http://www.semco.org/Data/bycommunity.cfm>

Decreasing Volume

Traffic volume has decreased since 2004. In fact, traffic in southeast Michigan as a whole has decreased for six consecutive years. According to SEMCOG, declines in traffic counts are attributable to economic decline, joblessness, and an increase in gas prices.³ Sixty-five percent of the Township's 63 road segments for which traffic volume data was available in 2004 and 2008/2009 experienced a decline in traffic volume. Put simply, there are fewer automobiles on Township roads.

Some of the greatest percentage decreases in traffic since 2004 have occurred on the following road segments (see Table 7-1 for more detailed information):

- Chubb Road between Eight and Ten Mile Roads.
- Haas Road between Eleven Mile and Grand River.
- Napier Road between Eight and Twelve Mile Roads, except for a 2.27% increase in the segment between Nine and Ten Mile Roads.
- All segments of Twelve Mile Road within the Township.

While there has been an overall decline in traffic since 2004, there has still been volume increases along 35% of those road segments for which data was available; notable increases include:

- Griswold between Nine and Ten Mile Roads, which saw a 204% increase in traffic volume between 2004 and 2009, probably as a result of the construction of the school bus garage on Griswold Road.
- Twelve Mile Road between Pontiac Trail and Napier Road.
- Nine Mile Road between Pontiac Trail and Griswold, which experienced a 167% increase in traffic volume between 2004 and 2009, probably as a result of being recently paved.

Geographic Analysis of Traffic Volumes

- **Southeast Quadrant**

This area of the Township experienced high increases in traffic volume in the 1990's due to residential growth. During that period, Eight Mile and Ten Mile Roads began to be used as east-west alternatives to I-96. Since 1998, however, traffic volume in the southeast quadrant has stabilized and even decreased in certain portions. From 2004 to 2008, Napier Road traffic between Eight and Eleven Mile Roads decreased 27%.

- **Southwest Quadrant/South Lyon Area**

Traffic volumes continue to increase in this area of the Township. Roads that have experienced the greatest increase include Eight Mile (west of Pontiac Trail), Nine Mile,

³ Helms, M. (2010, April 1). Traffic in metro Detroit down for 6th year in a row. *Detroit Free Press*.

Griswold, and Dixboro. The increase in traffic on these road segments is a result of drivers using them to bypass South Lyon to access I-96.

- Northeast Quadrant

Significant increases in traffic took place in this portion of the Township in the 1990's as a result of two primary factors: industrial growth along Grand River Corridor and the increased development and use of Lyon Oaks County Park, which is located off of Pontiac Trail. As in other quadrants, though, this quadrant has seen little to no increase in traffic volumes and in some instances, even reductions in volume, with the exception of Grand River Avenue, west of South Hill Road, and Milford Road, north of Eleven Mile Road. Grand River and Milford continue to experience increases in traffic, due to the industrial and commercial establishments that have developed there.

- Northwest Quadrant

Traffic volumes have continued to increase in this area, with the number of trips more than doubling along Silver Lake Road, west of Kent Lake Road. The increase in traffic in this quadrant is the result of drivers bypassing South Lyon and utilizing the Kent Lake Road access ramp to I-96 in lieu of the Milford Road ramp to avoid congestion.

- Town Center/New Hudson

The I-96/Milford Road interchange handles some of the heaviest traffic volumes in the Township. The interchange is the primary means of expressway access for Township residents and industries. Traffic counts along Milford Road in New Hudson increased by 108% from 2004 to more than 26,000 vehicles a day. Traffic volumes along Milford Road are expected to continue to increase as residents travel the road to gain access to shopping opportunities at the Lyon Towne Center, and expressway access at the interchange.

Accident Rates

Intersection traffic accident (crash) data from SEMCOG for 2008 are shown on Map 11. The map provides total accidents as well as accident rates. On the more heavily traveled roads, the accident rate (number of accidents per 1,000 vehicles passing through an intersection) is a more meaningful indicator of potential public safety problems. (Accident rates may not identify problems on low volume roads where only one or two accidents occurred, such as Nine Mile Road. Under such circumstances, it is not possible to rule out the possibility the accidents were random occurrences. Police accident reports may help to identify specific or recurring problems on these roads.)

Table 7-1

TRAFFIC VOLUMES⁴			
<u>Road Segment</u>	<u>2004 Count</u>	<u>2008/2009 Count⁵</u>	<u>Percent Change</u>
Chubb, north of Eight Mile	624	300	-51.93%
Chubb, north of Nine Mile	513	344	-32.94%
Currie, north of Eight Mile	1,800	1,279	-28.94%
Currie, north of Nine Mile	1,749	1,270	-27.39%
Dixboro, north of Eight Mile	781	641	-17.16%
Dixboro, north of Eleven Mile	741	637	-14.04%
Dixboro, north of Nine Mile	1,346	869	-35.44%
Eight Mile, east of Chubb	8,334	8,341	.08%
Eight Mile, east of Currie	7,497	7,805	4.11%
Eight Mile, east of Dixboro	2,064	2,495	20.88%
Eight Mile, east of Pontiac Trail	10,316	9,505	-7.86%
Eleven Mile, Spaulding to Milford	-	4,296	N/A
Eleven Mile, east of Dixboro	3,865	2,334	-39.61%
Eleven Mile, east of Johns	271	318	17.34%
Eleven Mile, east of Martindale	988	1,700	72.06%
Eleven Mile, east of Milford	323	453	40.24%
Eleven Mile, east of Pontiac Trail	3,535	4,715	33.38%
Grand River, County Line to Kent Lake	3,702	2,745	-25.85%
Grand River, east of Haas	11,322	12,104	6.91%
Grand River, east of Kent Lake	5,228	4,393	-15.97%
Grand River, east of Martindale	5,817	4,682	-19.52%
Grand River, east of Milford	11,505	14,349	24.72%
Grand River, east of Old Plank	16,160	13,322	-17.56%
Grand River, east of South Hill	11,184	11,682	4.45%
Griswold, north of Eight Mile	1,213	1,241	2.31%
Griswold, north of Nine Mile	1,854	5,628	203.56%
Haas, north of Twelve Mile	2,695	1,010	-62.52%
Haas, south of Twelve Mile	1,153	448	-61.14%
Johns, north of Eleven Mile	329	389	18.24%
Johns, north of Ten Mile	720	979	35.97%
Kent Lake, north of Silver Lake	14,456	8,340	-42.31%
Martindale, north of Eleven Mile	794	669	-15.74%
Martindale, north of Ten Mile	2,013	2,904	44.26%
Martindale, north of Travis	1,913	899	-53.01%
Martindale, north of Twelve Mile	614	632	2.93%

⁴ 24-hour two-way traffic unless otherwise noted.

⁵ Data were collected throughout 2008 and 2009.

Transportation Analysis

Milford, I-96 freeway to Pontiac Trail	30,628(1998)	28,804	-5.96%
Milford, north of Eleven Mile	6,850	9,340	36.35%
Milford, north of Grand River	12,907	26,966	108.93%
Milford, north of Ten Mile	7,013	8,688	23.88%
Milford, north of Travis	12,031	10,167	-15.49%
Milford, north of Twelve Mile	8,028	10,200	27.06%
Napier, north of Eight Mile	2,272	1,330	-41.46%
Napier, north of Eleven Mile	4,680	3,134	-33.03%
Napier, north of Nine Mile	1,891	1,934	2.27%
Napier, north of Ten Mile	1,650	979	-40.67%
Nine Mile, east of Chubb	460	410	-10.87%
Nine Mile, east of Currie	326	314	-3.68%
Nine Mile, east of Griswold	798	718	-10.03%
Nine Mile, east of Pontiac Trail	1,987	5,301	166.78%
Pontiac Trail, east of Martindale	7,269	6,960	-4.25%
Pontiac Trail, east of Milford	9,250	12,083	30.63%
Pontiac Trail, east of Old Plank	12,611	10,228	-18.90%
Pontiac Trail, east of Silver Lake	6,850	7,266	6.07%
Pontiac Trail, east of South Hill	10,354	8,508	-17.83%
Pontiac Trail, north of Eight Mile	17,224	19,715	14.46%
Pontiac Trail, north of Eleven Mile	12,925	13,311	2.99%
Pontiac Trail, north of Nine Mile	26,502	21,634	-18.37%
Pontiac Trail, north of Ten Mile	13,343	16,163	21.13%
Silver Lake, east of Dixboro	3,936	4,297	9.17%
Silver Lake, east of Kent Lake	9,474	11,614	22.59%
South Hill, north of Eleven Mile	216	186	-13.89%
South Hill, north of Grand River	969	1,699	75.36%
South Hill, north of Twelve Mile	510	292	-42.75%
Spaulding, Eleven Mile to Twelve Mile	378	369	-2.38%
Ten Mile Road, east of Chubb	11,930	10,188	-14.60%
Ten Mile Road, east of Currie	13,252	13,321	.52%
Ten Mile Road, east of Dixboro	12,387	-	-
Ten Mile Road, east of Griswold	14,201	14,380	1.26%
Ten Mile Road, east of Johns	13,581	12,886	-5.12%
Ten Mile Road, east of Martindale	14,412	-	-
Ten Mile Road, east of Milford	12,694	13,122	3.26%
Ten Mile Road, east of Pontiac Trail	14,606	-	-
Twelve Mile, east of Haas	461	426	-7.59%
Twelve Mile, east of Johns	442	381	-13.80%
Twelve Mile, east of Martindale	448	352	-21.43%
Twelve Mile, east of Milford	497	346	-30.38%
Twelve Mile, east of South Hill	374	289	-22.72%
Twelve Mile, east of Spaulding	1,224	874	-28.59%

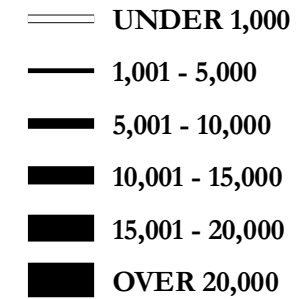
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Map 10 Traffic Volume Data

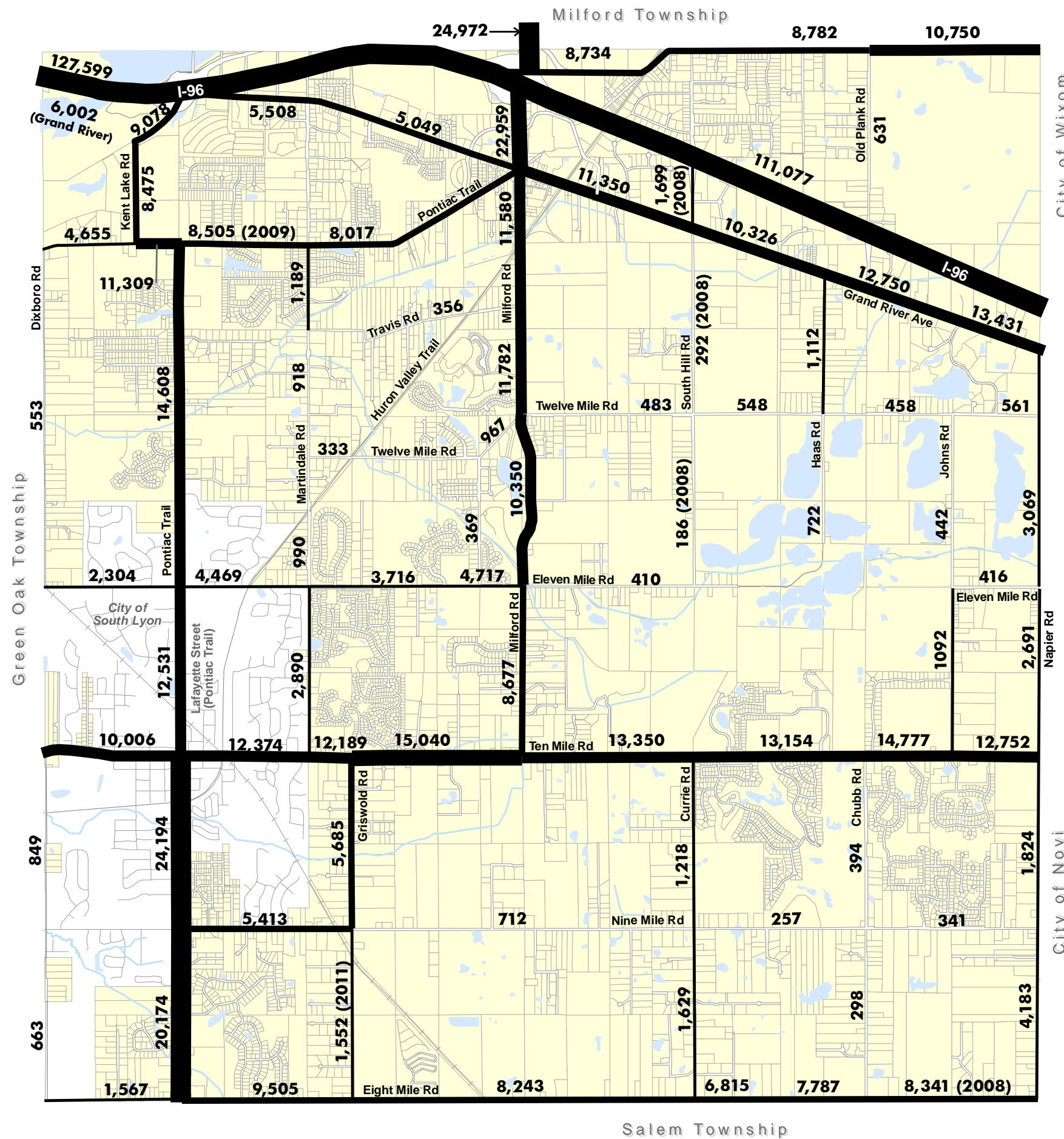
Charter Township of Lyon
Oakland County, Michigan

Based on most recent 24-hr. 2-way traffic counts (2010 unless otherwise noted)

Lyon Center Drive, 1-way traffic counts
• West Bound, East of Milford Rd. - 7,086
• East Bound, West of Milford Rd. - 2,633



Parcel Data Source: Oakland County GIS, December 2006.
Road Data Source: Oakland County GIS,
Data Source: SEMCOG, MDOT



After calculating the accident rates at each intersection in the Township, the intersections that are potential problems are labeled in red on Map 11 and may warrant further study to improve their safety. An intersection with a consistently high accident rate is in New Hudson, at Grand River/Milford Rd./Pontiac Trail. Measures are being taken to address the congestion and accident problems at this intersection, through construction of the ring road and planned reconstruction of the intersection.

The Eleven Mile/Martindale intersection experience the highest accident rate in 2008, 8.82 accidents per 1,000 trips. Several intersections along Eight Mile Road experienced high accident rates, including Eight Mile at Napier Road, Currie Road, Griswold Road, and Pontiac Trail.

Road Classifications

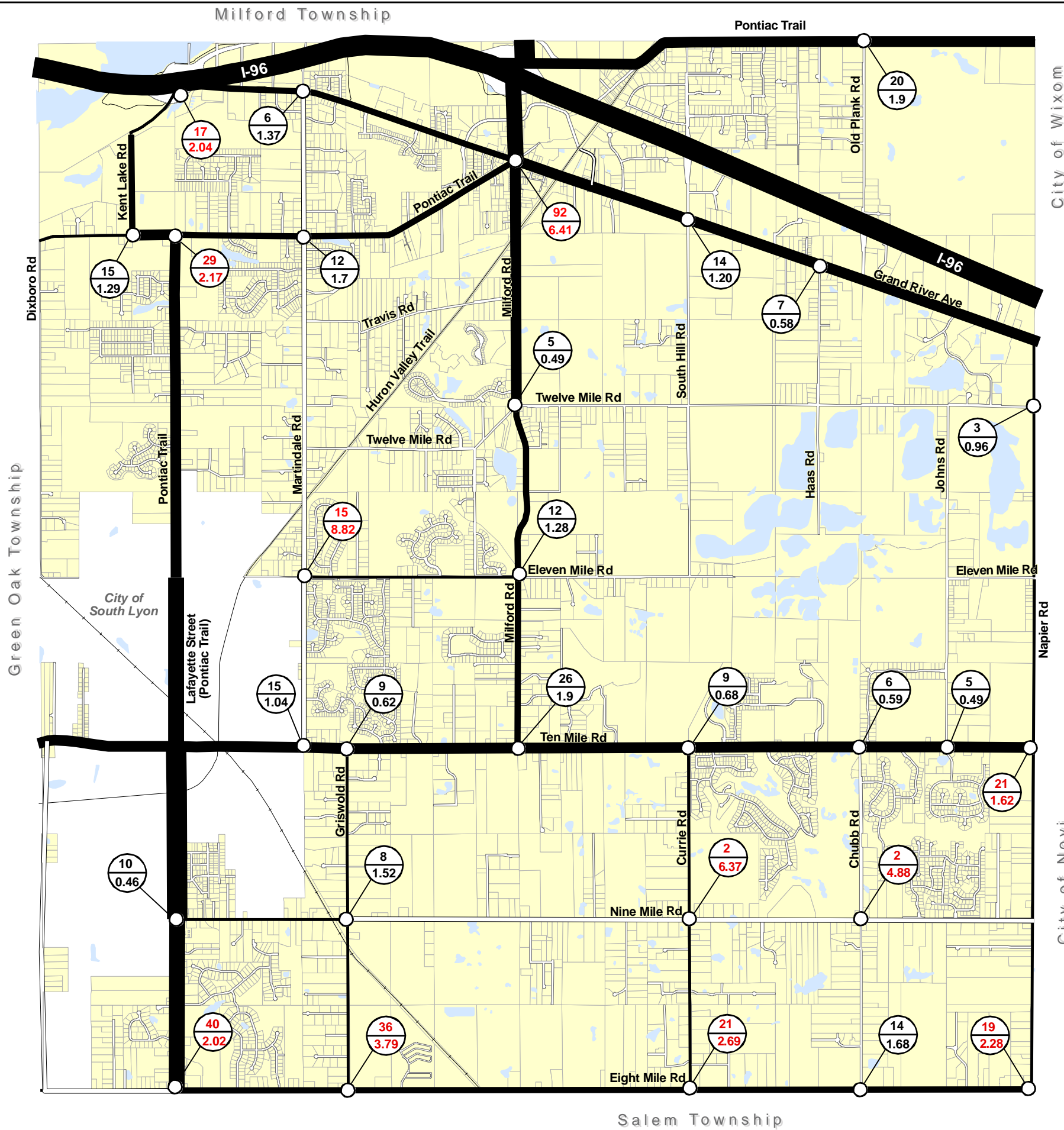
The purpose served by each road or highway in the circulation system is best described through classification of the roads. Road classifications identify the type and volume of traffic that are appropriate for each segment of the road network. The classifications establish expectations among residents, Township officials, and transportation engineers concerning the operational characteristics of each road.

Road classifications also establish the eligibility of roads for various funding programs. For example, federal funds may only be used on road improvements in urban areas on roads that are classified as collector or arterial roads on the Functional Classification map.

The Highway Functional Classification Reference Manual, published by the United States Department of Transportation Federal Highway Administration (FHWA) in March 1989, sets forth criteria for classification of all roads that function within the guidelines of the Federal-Aid Highway Act of 1973 and the Intermodal Surface Transportation Efficiency Act of 1991 (ISTEA). The four functional classifications for urbanized areas are urban principal arterials, minor arterial roads, collector roads, and local roads.




The criteria for classifying roads are related to trips serviced, areas served, and characteristics of the roads. The criteria include service to activity centers, system continuity, land use considerations, route spacing, trip length, traffic volume, and control of access. The Southeast Michigan Council of Governments (SEMCOG), as the Metropolitan Planning Organization for the Detroit urbanized area, is responsible for using these criteria to classify roads and to program federally funded transportation improvements.

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Map 11 Intersection Traffic Accidents

Charter Township of Lyon
Oakland County, Michigan

-  Total Accidents, 2004-2008
-  Accident Rate (Per 1,000 Vehicles)
-  Accident Rate Greater Than 2.0 Per 1,000 Vehicles

Parcel Data Source: Oakland County GIS, December 2006.
Road Data Source: Oakland County GIS,
Data Source: SEMCOG, MDOT



Descriptions of the four road classifications that apply to Lyon Township follow (see Map 12). The classifications are based on recommendations of the Road Commission for Oakland County and SEMCOG.

- **Principal Arterial** roads are intended to serve the major centers of activity in a metropolitan area, the highest traffic volume corridors, and the longest trips. Principal arterials serve major traffic movements within the Township. There are three categories of principal arterials: interstate highways, other freeways and expressways, and non-freeway principal arterials. The only principal arterial serving Lyon Township is I-96.
- **Minor Arterial** roads interconnect with the principal arterial system and provide trips of moderate length with a lower level of traffic mobility. Minor arterial roads place more emphasis on land access than principal arterials. Minor arterial roads are generally no more than a mile apart in fully developed areas, but may be two to three miles apart in suburban fringe areas.

Pontiac Trail, Grand River Avenue, Napier Road, Eight Mile Road (between Pontiac Trail and Napier Road), and Milford Road north of Grand River Avenue are designated minor arterial roads in Lyon Township.

- **Collector** roads provide access to abutting properties and traffic circulation within residential, commercial, industrial, and agricultural areas. The purpose of a collector road is to collect traffic throughout the Township and channel it to the arterial system. Generally, in the design of new road systems, efforts are made to discourage direct residential access onto collector or arterial roads, since the added curb cuts increase traffic conflicts and congestion. However, in communities like Lyon Township, direct residential access is not uncommon because many roads serve a dual purpose.

Rural Major/Urban Collector roads in Lyon Township include Milford Road, between Grand River Avenue and Ten Mile Road; Currie Road, between Eight and Ten Mile Roads; Kent Lake Road; Silver Lake Road; Ten Mile Road; and Nine Mile Road, between Dixboro and Griswold Roads.

Rural Minor Collector roads in Lyon Township include Griswold Road, between Nine and Ten Mile Roads, and Eight Mile Road, between Dixboro and Pontiac Trail.

- **Local** roads primarily provide direct access to abutting land and to collector and arterial streets. Movement of through traffic is usually discouraged on local roads. Examples of local roads in Lyon Township include local subdivision streets and county roads that carry low levels of traffic.

Another road classification system is used by the Road Commission to establish funding priorities in accordance with Michigan Public Act 51 of 1951. The Act requires county road commissions to classify roads as either Primary or Local roads. Improvements to County Primary roads are financed chiefly through fuel and weight taxes that have been deposited in the state transportation fund and through various federal funding programs.

In comparing the two classification systems, principal and minor arterials are generally classified as County Primary roads, and collector and local roads are generally classified as County Local roads. The following roads are classified as County Primary roads:

- Pontiac Trail
- Grand River Avenue
- Milford Road
- Ten Mile Road
- Napier Road between Eight and Twelve Mile Roads
- Eight Mile Road between Currie and Napier Roads
- Eight Mile Road between Dixboro and Pontiac Trail
- Kent Lake Road
- Silver Lake Road
- Currie Road

Other Modes of Transportation

Railroads

Railroads are an important mode of transportation serving industries in the region, even though there are no scheduled railroad stops in Lyon Township. One CSX rail line cuts through the southwest corner of the Township. This line carries freight between Detroit, Saginaw, Toledo, and Grand Rapids.

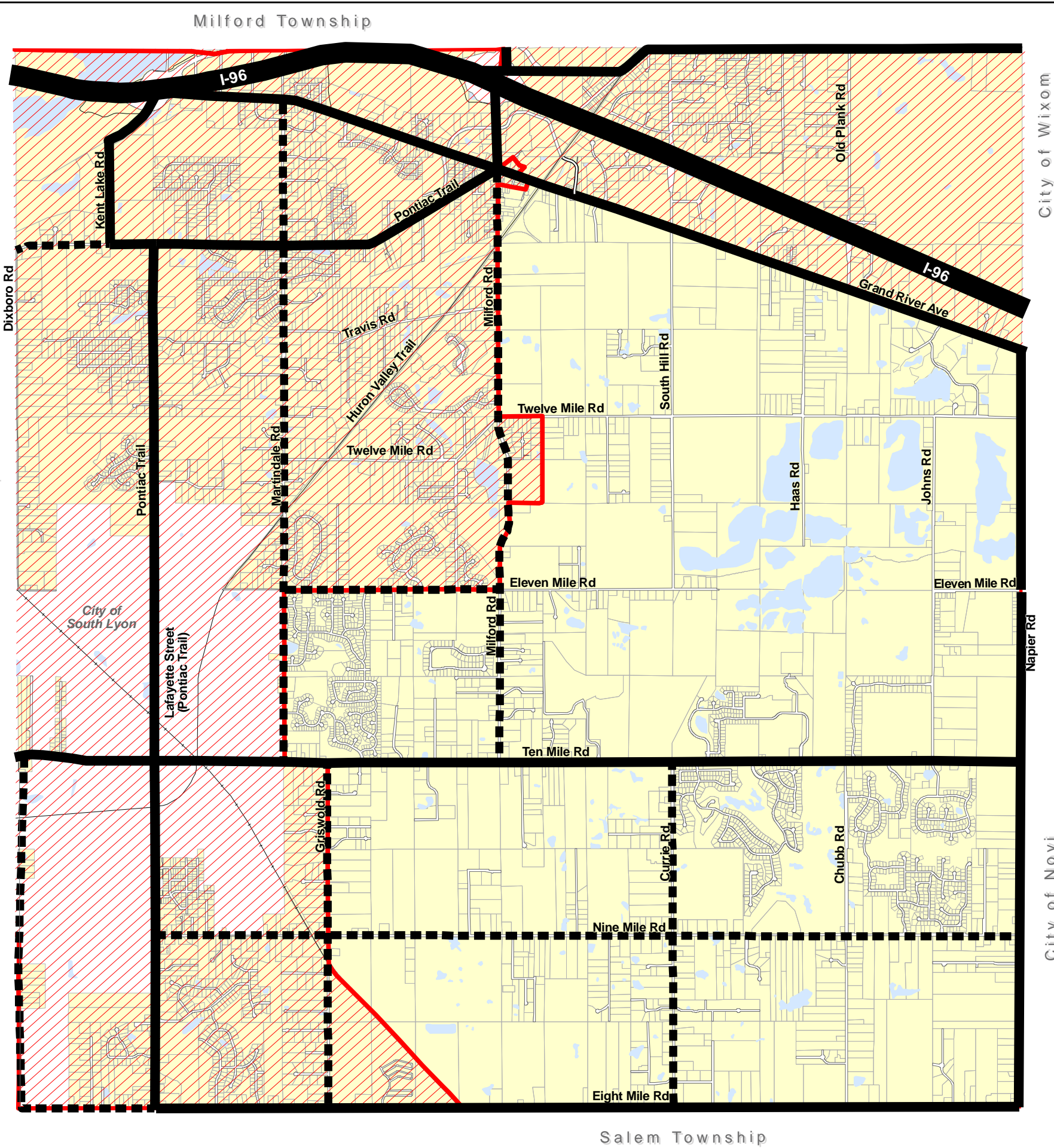
Intermodal conflict is a continuing problem which is aggravated by the increased vehicular traffic on City and Township roads. Intermodal conflict is greatest at the at-grade rail crossings on Pontiac Trail and Ten Mile Road, causing increased traffic congestion on the most heavily traveled roads in the Township.

Pedestrian/Bicycle Pathways

At one time streets were designed for one purpose - to efficiently and effectively move automobiles from one destination to the next as fast and efficient as possible. Today, we realize that a street should not be designed for only one mode of transportation. The most effective transportation networks provide more options and are multi-modal. They are often referred to as complete streets.

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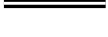

Green Oak Township



Map 12 Functional Classification of Roads

Charter Township of Lyon
Oakland County, Michigan

Road classification

-  Interstate
-  Minor Arterial
-  Major Collector
-  Local
-  Federal Aid Urban Boundary

Parcel Data Source: Oakland County GIS, December 2006.
Road Data Source: Oakland County GIS, 2006
Data Source: MDOT, 12/22/10



MCKenna
ASSOCIATES

4/9/12



Salem Township

City of Novi

City of Wixom

Milford Township

Dixboro Rd

Kent Lake Rd

Pontiac Trail

Lafayette Street
(Pontiac Trail)

Griswold Rd

Martindale Rd

Currie Rd

Travis Rd

Huron Valley Trail

Milford Rd

Pontiac Trail

Ten Mile Rd

Twelve Mile Rd

Eleven Mile Rd

Eight Mile Rd

Nine Mile Rd

Chubb Rd

South Hill Rd

Milford Rd

Old Plank Rd

Haas Rd

Johns Rd

Grand River Ave

I-96

Eleven Mile Rd

Twelve Mile Rd

Napier Rd

In 2010, Public Acts 134 and 135 were enabled to provide for complete streets in Michigan. The Acts amended Public Act 51 of 1951 and Public Act 33 of 2008 to accomplish their intent.

Michigan Public Act 51 of 1951, as amended, defines complete streets as roadways planned, designed, and constructed to provide appropriate access to all legal users in a manner that promotes safe and efficient movement of people and goods whether by car, truck, transit, assistive device, foot, or bicycle.

Act 51 calls for the state transportation commission to adopt a complete streets policy and to develop a model complete streets policy or policies for use by municipalities and counties. A complete streets policy is defined as a document that provides guidance for the planning, design, and construction of roadways or an interconnected network of transportation facilities being constructed or reconstructed and designated for a transportation purpose that promotes complete streets and meets all of the following requirements:

- (a) Is sensitive to the local context and recognizes that needs vary according to urban, suburban, and rural settings.
- (b) Considers the functional class of roadway and project costs and allows for appropriate exemptions.
- (c) Considers the varying mobility needs of all legal users of the roadway, of all ages and abilities.

Public Act 33 of 2008, as amended, the Michigan Planning Enabling Act, indicates that master plans shall provide for “a system of transportation to lessen congestion streets and provide for safe and efficient movement of people and goods by motor vehicles, bicycles, pedestrians, and other legal users.

In Lyon Township a complete street policy would ensure that options for pedestrians and bicyclists, in addition to cars, are incorporated into our daily transportation decisions. No transit is available in the Township for inclusion in a complete street policy at this time. The availability of multiple modes of transportation improves the safety of the Township’s roadways and provides residents and visitors with options to access key commercial, recreational, and employment centers in the community and the region.





The Bicycle Path Plan (Map 13) proposes a network of paths in Lyon Township to accomplish the following purposes:

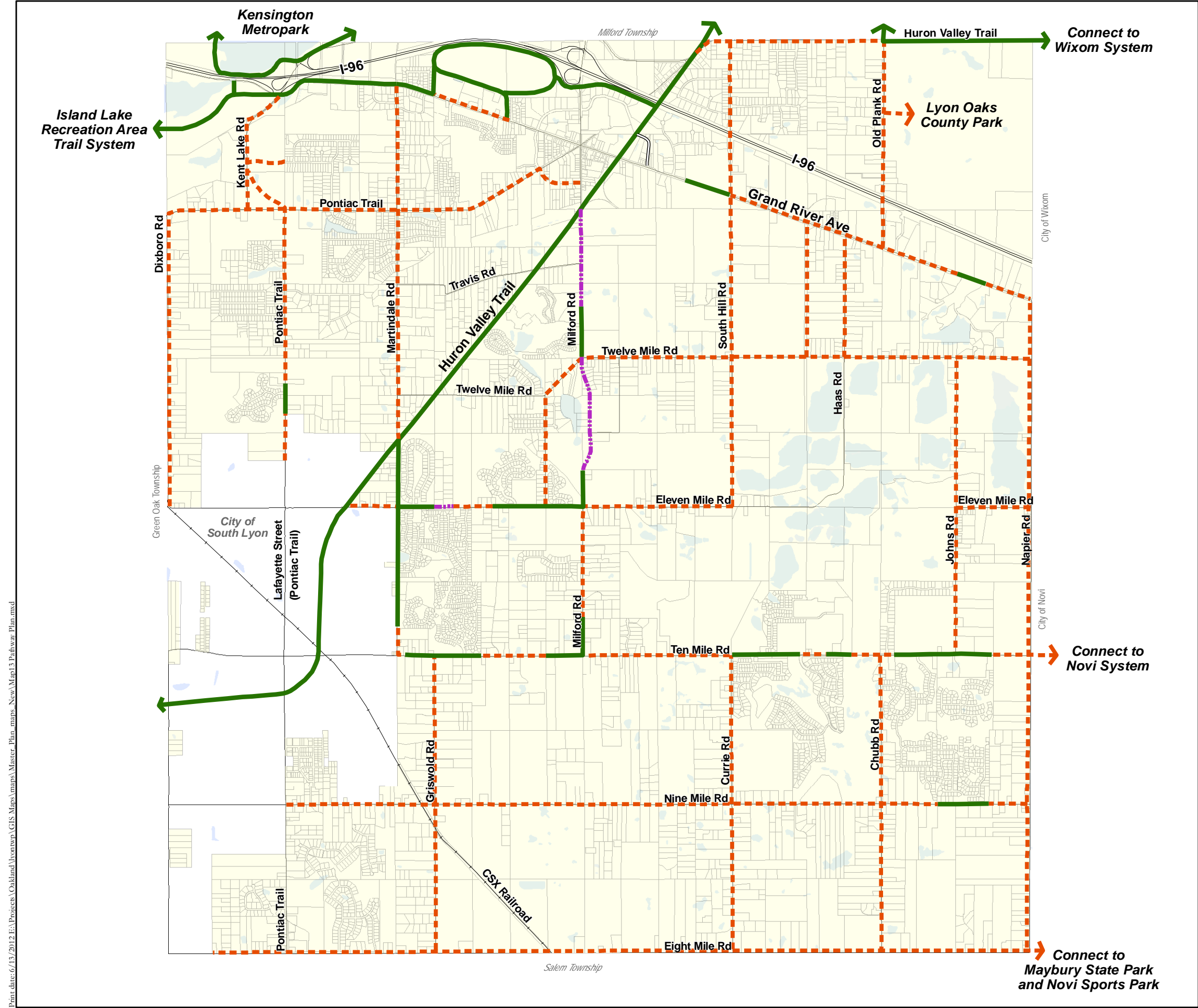
- Provide linkages between residential areas and major recreation destinations, including the James F. Atchison Memorial Park, Lyon Oaks County Park, Island Lake Recreation Area, and Kensington Metropark.
- Link with and build upon the Huron Valley Trail (also known as the Lakeland Trail State Park), which is located along the former Grand Trunk Railroad right-of-way.

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Map 13 Pathway Plan

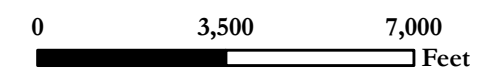
Charter Township of Lyon,
Oakland County, Michigan

-  Existing Pathway
(on at least one side of road)
-  Planned Pathway
-  Planned Pathway - Priority Route
-  Open Water



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Base Map Source: Oakland County, GIS , 2006
Data Source: McKenna Associates, Inc.



McKenna
ASSOCIATES



- Provide linkages to planned or developed bicycle path systems in adjacent communities.
- Provide safe access to other significant destinations, such as Downtown South Lyon and the South Lyon middle and senior high schools.
- Provide a system of looped paths for the benefit of recreational bicyclists.

The Township promotes participation in the Safe Routes to School (SR2S) program. This is a national program created to provide safe, convenient, and fun routes for children to bicycle and walk to school. The program's philosophy is that when routes are safe, walking or biking to and from school is an easy way to get the regular physical activity children need for good health. Additionally, the program is founded in the belief that SR2S initiatives help ease traffic jams and air pollution, unite neighborhoods and contribute to students' readiness to learn in school. Current SR2S initiatives are being planned to improve routes to Dolsen Elementary School while at the same time improve access to the Huron Valley Trail.

The Huron Valley Trail, a rails to trails project, traverses through the Township and is part of the Oakland County Trail Network. This trail provides a connection from Lyon Oaks County Park to Dixboro Road. The trail also provides a link through the James F. Atchison Memorial Park along Grand River Avenue to Kensington Metro Park.

The Township, led by the Downtown Development Authority (DDA), has designed and in 2012 or 2013 will begin construction of a streetscape enhancement project along Grand River that will include consolidation of driveways, on-street parking, and sidewalks and crosswalks that will greatly improve pedestrian mobility in this area of the Township.

Lyon Township also requires, by ordinance, that developers construct bicycle paths and sidewalks along the road frontage of new developments.

Planned and Proposed Road Improvements

The 2011-2013 Financial Plan completed by the Road Commission for Oakland County identified only one project scheduled for Lyon Township. This project, paving of Dixboro Road to Pontiac Trail is scheduled for fiscal year 2011, to be completed in 2012.

However, more recently a paving project was approved, the paving of Eight Mile Road, between Pontiac Trail and Dixboro. This project is substantially federally funded through the Livingston Federal Urban Aid District. Lyon Township and the City of South Lyon are the other financial participants. This project is expected to be completed by June 2012.

The timing of road improvements is dependent on the availability of funding. The Road Commission depends on State-collected vehicle fuel and registration taxes as the primary source of funding for road maintenance and improvements. This funding has been declining

over the past several years and is projected to continue to decline for the foreseeable future. The Township may solicit other funding sources for specific projects. Methods of funding road improvements are discussed later in this chapter.

In addition to the Road Commission's planned road projects, the DDA will be improving the intersection at Grand River/Milford Road/Pontiac Trail to eliminate this 5-point intersection by terminating Pontiac Trail before it reaches Grand River Avenue, and by closing New Hudson Road. This road project will also include the streetscape and pedestrian enhancements consistent with the Lyon Center Vision Plan. Grand River Avenue will be reconstructed with curb and gutter and new pavement, from the east ring road to just west of the 5-point intersection. All of this work is scheduled to take place in 2012 or 2013.

Circulation System Deficiencies

Traffic volume has increased significantly in the Township since the 1990s. However, the rate of growth experienced during that time is not projected to continue. According to SEMCOG projections, the population of the Township will continue to grow, but slowly. The 2010 population estimate for Lyon Township is 14,542; it will reach nearly 20,200 by 2035. This projection in population is significantly less than the 2004 projection of nearly 50,000 by 2030. Based on traffic engineering standards of 9.6 daily vehicle trips per household, this growth can be expected to create 14,467 new trips daily by 2015, and another 23,117 new trips daily by 2035.

While the Township will continue to see a growth in traffic on its roadways, this growth is far more manageable than previously predicted (based on population projections).

An estimate of the volume of traffic that could be expected on Township roads at build-out can be made under the assumption that traffic growth will be distributed on roads in the same way that existing traffic is distributed. If traffic growth is distributed uniformly, Pontiac Trail can be expected in 2010 to carry 35,804 trips daily between Nine Mile and Ten Mile Roads, and several segments of Pontiac Trail, Ten Mile Road, Grand River, and Kent Lake can be expected to carry 20,000 daily trips or more.

Approximately 11% of daily trips will be made during the period of heaviest traffic, or "peak hour," per the Institute of Transportation Engineers. During the peak hour on a weekday in 2010, an estimated 3,938 vehicles will drive the section of Pontiac Trail in downtown South Lyon (see Table 7-2). The intersection of Pontiac Trail, Milford Road, and Grand River Avenue will see 3,646 vehicles during peak hour under this estimation.

Table 7-2

Road Segment	PROJECTED TRAFFIC VOLUMES					
	Projected 24-hour Traffic Volumes			Projected Peak Hour Volumes		
	<u>2010</u>	<u>2020</u>	<u>2030</u>	<u>2010</u>	<u>2020</u>	<u>2030</u>
Pontiac Trail, north of 8 Mile	20,233	23,866	27,499	2,226	2,625	3,025
Pontiac Trail, north of 9 Mile	29,859	34,479	39,099	3,284	3,793	4,301
Pontiac Trail, north of 10 Mile	14,492	14,614	14,736	1,594	1,607	1,621
Pontiac Trail, north of 11 Mile	14,963	16,547	18,131	1,646	1,820	1,994
Ten Mile Road, east of Chubb	15,774	19,155	22,536	1,735	2,107	2,479
Ten Mile Road, east of Currie	15,361	18,443	21,526	1,690	2,029	2,368
Grand River, east of Kent Lake	7,507	9,044	10,580	826	995	1,164
Grand River, east of Martindale	5,899	5,618	5,337	649	618	587
Grand River, east of Milford	14,298	16,442	18,586	1,573	1,809	2,044
Grand River, east of Old Plank	18,056	22,589	27,122	1,986	2,485	2,983
Milford, north of 10 Mile	8,308	10,163	12,018	914	1,118	1,322
Milford, north of 11 Mile	8,321	10,303	12,285	915	1,133	1,351
Milford, north of 12 Mile	10,103	12,785	15,467	1,111	1,406	1,701

¹ Peak hour/design hour volumes are equal to 13.6 percent of 24-hour volumes (Institute of Transportation Engineer’s standard).

After future traffic levels are projected, they may be compared to road capacity. According to the Institute of Traffic Engineers, a 2-lane rural highway under ideal conditions could carry between 1,800 and 2,000 passenger cars per hour. This is affected by several factors, however, including the flow rates in each direction, the speed of travel, the number of driveways and other access points, the variance in speed in the traffic stream, and the availability of passing sight distance. Variance in speed is especially a factor when the traffic flow includes trucks or recreational vehicles. Computation of exact capacity for a road segment would require detailed study of these factors, but typical conditions reduce capacity to around 1,320 vehicles per hour at Level of Service “C” (where traffic flow is heavy, but stable).

The analysis presented above indicates that, in the absence of major road improvements or other changes, it is likely that the level of traffic congestion experienced today will likely remain the same or improve in the future. Several segments will likely need improvements based on the increased number of vehicles that will be using them in the future. These include Grand River, east of Old Plank, Grand River, east of Kent Lake, and Ten Mile, east of Chubb. Funding for road improvements is extremely limited. In this context, land use plans and zoning should be carefully considered for their impacts on a limited road system.

Freeway Access. The issue of “road deficiencies” deals with much more than just road capacity. Of equal importance are efficient movement of traffic, public safety, and convenience. Consideration of these other issues focuses attention of the I-96 access. The existing interchange at Kent Lake Road is inadequate for the following reasons:

- Jogs in Kent Lake Road about one quarter mile south of the interchange and at Silver Lake Road diminish its capacity to carry traffic to the freeway.
- The Kent Lake Road interchange is adjacent to Grand River Avenue, creating confusing and hazardous road connections.

No improvements to the Kent Lake Road interchange are proposed by MDOT at this time.

Intersection Improvements. In addition to road capacity, improvements are or will be needed at certain intersections. Accident data provide one indication of intersection deficiencies. Accident data from 2008 indicate that the problem intersections are:

- Kent Lake and Grand River
- 11 Mile and Martindale
- 8 Mile and Pontiac Trail
- 8 Mile and Griswold
- 8 Mile and Currie
- 8 Mile and Napier
- Grand River/Pontiac Trail/Milford 5-point intersection
- Pontiac Trail and Silver Lake

The 5-point intersection at Grand River/Pontiac Trail/Milford Road will receive major improvements as part of the major road enhancement project planned for 2013. These improvements include closing Pontiac Trail to eliminate a conflict point at this intersection.

Access Control. The capacity of a highway or road and traffic safety can quickly deteriorate if development is allowed to occur without proper attention to access control. Access control is a particular concern along Grand River Avenue and Pontiac Trail, where most of the intensive development in the Township exists and is planned to occur. As the ring road is developed in New Hudson and new land is available for development, access control must be managed. As developments are proposed, attention must be focused on spacing between driveways, driveway design, potential for shared access, the need for acceleration/deceleration lanes, number of driveways per site, sight lines, and similar considerations.

In addition to the intersection and pedestrian improvements planned for the New Hudson area, the Lyon Center Vision Plan also includes the consolidation of driveways and the provision of on-street parking.

Non-Motorized Traffic. As more families move into the Township, there will be more bicyclists and pedestrians. Pathways are a necessity for residents of all ages and abilities since most recreational facilities and retail establishments are located beyond walking distance. Pedestrian and bicycle options that were once considered amenities in communities are now considered necessities.

Lyon Township has successfully incorporated new paths and sidewalks into new developments. However, the Township must recognize that non-motorized traffic and motorized traffic cannot be thought of independently. As previously discussed, streets must now be designed in consideration of different modes of transportation and pedestrian abilities. These streets, known as “complete streets,” have the potential to reduce the number conflicts between cars, bicyclists and pedestrians, even as traffic volumes increase. The Township should continue to work with private developers and the RCOC to ensure that multiple transportations options are incorporated into planned road improvements.

There are several alternatives to accommodate non-motorized traffic: conventional sidewalks, paved shoulders that are dedicated and marked for bicycle use (subject to RCOC approval); or separate bicycle pathways adjacent to the road. Providing a complete street is more than just providing a pathway or bicycle lane along the side of the roadway. Safe and convenient crossings (crosswalks, pedestrian islands, etc.), signage, and markings must be incorporated into the road design, too.

Access to Undeveloped Lands. The road system in many communities is inadequate because the traffic is confined to major thoroughfares and local roads, rather than being spread out on a complete road network. One of the keys to developing a road network is to preserve road corridors for future collector and minor arterial roads as development occurs. As new development does occur, the Township must be sensitive to the need to preserve road corridors along section and quarter section lines, thereby building on the existing road network. Another way to create a road network is to design adjoining subdivisions so their roads connect to each other.

Private Roads. Many residential neighborhoods were developed with private roads. Property owners throughout the Township split their property in a manner that avoided the platting requirements of the Land Division Act, and then installed private gravel roads to provide access to the new parcels. This method of dividing large tracts of land has resulted in an inefficient road network. Many of these private roads do not meet current engineering and design standards and cannot be easily accessed by emergency vehicles.

There are also liabilities associated with private roads. The most serious deficiency, from a transportation planning point-of-view, is that private roads typically do not relate to the rest of the road system. Usually, private roads are dead-end roads that do not link with other private or public roads, other than the public road that provides primary access. Private roads are often not spaced according to sound transportation criteria. In short, private roads are in conflict with the goal of developing an efficient road network. Private roads also suffer from lack of maintenance, so their capacity diminishes over the years.

In spite of their deficiencies, private roads provide a means of access that many residents find satisfactory. Recognizing the continued use of private roads, the Township adopted a Private Road Ordinance in 1990. Recently, the Ordinance was amended to prohibit the construction of new private roads in the Township and addresses existing private road deficiencies, including road extension, and maintenance requirements.

Recommendations

Three broad considerations form the basis for the road system improvement recommendations which follow. These considerations include:

1. The projections of future trip generation on Township roads. Trip generation is based on projected population growth and other development activity, as reflected on the Township's future land use map and in regional forecasts.
2. Road system deficiencies identified previously in this chapter.
3. The continued "philosophy" of the Township with respect to development of and improvement to the road system.

The philosophy of the Township is an important consideration. Most residents would probably agree that the Township needs a transportation system that allows for quick, efficient, safe, and convenient access, that accommodates pedestrians, bicyclists, and vehicles throughout the Township. Many residents, however, would be willing to compromise on "efficiency" and "convenience" for the purposes of preserving rural character. Furthermore, residents probably would be willing to continue using the indirect routes to their homes and other destinations if it meant that the level of regional pass-through traffic could be kept to a minimum. All proposed road improvements, whether they involve new roads or widening or reconstruction of existing roads, should be evaluated and designed to avoid or minimize impact on wetlands, valuable natural resources, and neighborhoods.

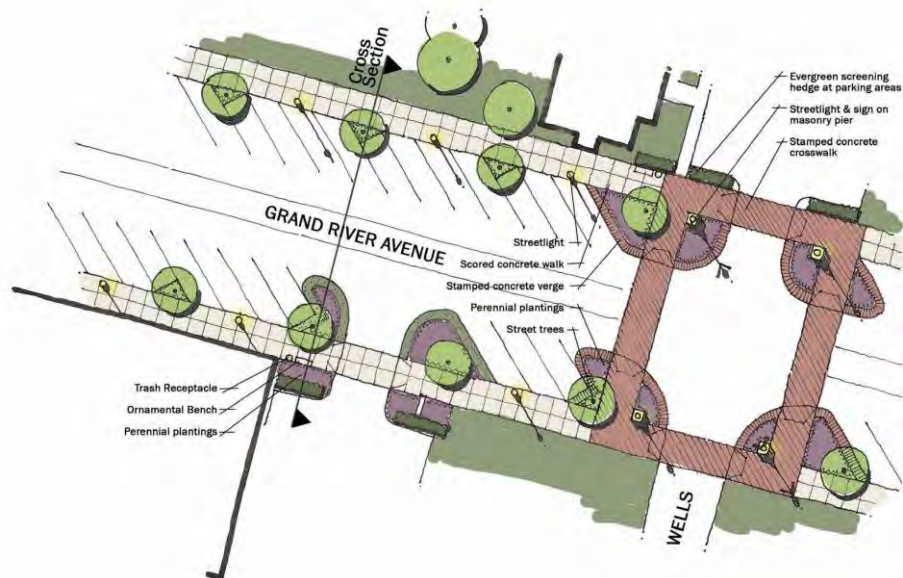
Based on these considerations, the following recommendations are offered as solutions to the transportation deficiencies in Lyon Township:

- **Upgrade the Existing Road System.** Upgrading the existing roads should take precedence over new road construction proposals. Priority improvements are as follows:
 1. The Pontiac Trail/Milford Road/Grand River intersection must be upgraded. Closing Pontiac Trail, consolidating driveways, providing on-street parking, and beautification enhancements are required pursuant to the Lyon Center Vision Plan. Construction of these improvements is anticipated in 2011.

Other intersections that need improvement are identified on Map 11.

2. Roads that are the backbone of the Township's circulation system must be continuously maintained and upgraded as needed. These roads include Pontiac Trail, Milford Road, Grand River Avenue and Ten Mile Road. Improved road geometrics, turning and bypass lanes, repaving, intersection improvements and signalization improvements are required.
3. Improve the gravel road maintenance program to include more grading, ditching and brush cutting.
4. Pave the following roads:
 - Martindale, from Grand River Avenue to Pontiac Trail (partially complete)
 - Old Plank Road, from Grand River Avenue to Pontiac Trail (partially complete)
 - Napier Road, from Nine Mile to Twelve Mile Rd. (partially complete)
5. Grand River Avenue requires special attention because it serves New Hudson and the Township's industrial corridor. Efficient movement of truck traffic, employee traffic, and through traffic should be balanced with the needs of pedestrians and automobile traffic. Implementation of the Lyon Center Vision Plan will not only improve the character of this area of the Township, but it will also improve traffic flow and pedestrian safety. Figure 7-1 illustrates the proposed enhancements planned for Grand River Avenue.

Figure 7-1 Grand River Avenue Improvement Plan



6. Improvements to Pontiac Trail at the north end of the Township are needed to carry traffic generated by industrial development in adjoining communities, by new residential development in the vicinity, and by the Lyon Oaks County Park.

7. Martindale Road, between Eleven Mile Road and Pontiac Trail, must be improved. The intersection of Eleven Mile Road and Martindale must be upgraded to address any deficiencies that may contribute to the traffic accident record at the intersection.

Road improvements may include paving, shoulder improvements, changes in vertical and horizontal alignment, removal of obstructions adjacent to the road, and so forth. Intersection improvements may include the addition of turn lanes, increasing the curve radii, signalization, improvements in corner sight distance, and improvements to intersection geometrics. The specific improvements in particular locations are subject to detailed engineering studies at the time the improvements are contemplated.

In light of residents' desire to preserve the rural character of the community, road design will be very important. Straight, five-lane paved roads that provide for maximum speeds do not preserve rural character. If additional lanes are needed to address capacity problems, then the additional lanes should be added only in the road segments where needed. Additional turn lanes, passing flares, and deceleration lanes should be located where they would achieve the same purposes as large scale road widening.

- **Complete the New Hudson Ring Road.** Completion of the new arterial road around New Hudson is proposed to alleviate congestion at the Grand River/Milford Road/Pontiac Trail intersection. In addition to improving traffic circulation, the development of the ring road would serve the following purposes:
 1. Improve access to I-96 by allowing through traffic to bypass the Grand River/Milford Road/Pontiac Trail intersection.
 2. Revitalize New Hudson by defining boundary lines for intensive mixed use development.
 3. Create an opportunity to make New Hudson more pedestrian friendly.
 4. Provide access to additional land for development.
- **Interchange Improvements.** Improvements to the Kent Lake Road/I-96 interchange are needed, including straightening the jog in Kent Lake Road.
- **Prepare and Adopt an Access Management Plan.** An Access Management Plan should be prepared and adopted by the Township. The plan should contain standards to control spacing between driveways, driveway design, potential for shared access, the need for acceleration/deceleration lanes, number of driveways per site, sight lines, and similar considerations. The Access Management Plan should also set forth a process for review of site plans and other development proposals to determine compliance with the access management standards. For example, the standards could be adopted as a part of the Zoning Ordinance, and then the plans could be directed to the Township Engineer for review prior to site plan approval.

- **Accommodate Non-Motorized Traffic.** Implementation of a complete streets plan is an essential element of the Township's transportation program. Bicycle and pedestrian transportation should be made an objective of all future road construction projects. Additional funding for bike path and sidewalk construction should be sought, either from MDOT or MDNR.
- **Plan for a Road Network.** Because the Township's road system is based on a grid, the most straightforward approach to building on the existing road network involves the preservation of road corridors along section and quarter section lines. However, the overriding goal of preserving natural features and resources takes precedence, so future roads should not be located where they would destroy or negatively impact wetlands or other valuable natural resources.

The top priority in developing an efficient road network should be to develop additional continuous north-south routes (direct or indirect) to carry some of the traffic now using Pontiac Trail. Some of these routes could be accomplished by requiring newly constructed roads to be connected to existing roads or easements provided for their future connection. Cul-de-sacs should only be utilized where connections are not feasible.

The development of a road network would also be furthered by requiring connections between subdivision roads so that a network of roads develops among several adjoining subdivisions. More efficient use of the existing road network could be achieved by paving the existing roads, thereby providing better connections between roads.

- **Require Traffic Studies for Major Development.** The current approach to dealing with traffic problems are reactive solutions that are sought after traffic congestion has already become severe. With major developments, it is possible to identify and deal with certain traffic problems before they are created.

It is recommended that the Township require traffic studies at the time of site plan review for all major non-residential and large residential developments. The traffic studies should be completed by qualified transportation planners or engineers, and should analyze traffic generated, impact on road capacity, turning movements, and similar impacts. The traffic studies should also identify on- and off-site, public and private improvements necessary to mitigate the traffic impact of the proposed developments.

Traffic impact is one of several considerations that the Township may consider when determining if a proposed development will have an impact on public health, safety and welfare. The fact that a proposed development would contribute to existing congestion on a public road would not be sufficient cause to reject a proposed development. However, there may be sufficient cause to reject a site plan that exhibits an obvious defect that would threaten public safety.

- **Develop Transportation Demand Management Programs.** Transportation Demand Management (TDM) addresses travel needs through a combination of measures designed to reduce the number of single-occupant vehicle trips, especially during peak periods. By maintaining personal mobility while reducing vehicle miles traveled (VMT), the demand for new and/or expanded road and parking facilities can be reduced and the performance of existing roads improved.

Examples of TDM measures include:

- Car pooling
- Van pooling
- Transit services (route, express, subscription)
- Employer incentives for shared-ride travel or disincentives for single occupant travel
- Parking supply and cost
- Flex-time
- Compressed work week
- Non-motorized travel
- Work from home

While many of these measures may have seemed impractical in the past, we are in the midst of a new economy. As energy and petroleum costs continue to rise, the need to think of alternative transportation options will be imperative. Additionally, Federal programs created using funds from the American Recovery and Reinvestment Act (ARRA) are targeted towards investing in the creation of alternate transportation options. The availability of funds targeted towards some TDM programs make them more practical today than in the past.

The Township may eventually find it is in its interest to work with local employers, SEMCOG, the Suburban Mobility Authority for Regional Transportation (SMART), and the Road Commission for Oakland County to develop TDM strategies to reduce the long-term need for substantial road improvements.

- **Coordinate Efforts with Other Public Agencies.** The roads in Lyon Township are a small part of a much larger system that is under the jurisdiction of the Michigan Department of Transportation and Road Commission for Oakland County. A successful transportation system for the Township depends on coordination with the state and county agencies as well as with the plans of surrounding communities, including South Lyon.

One of the first coordination efforts should focus on re-classification of certain Township roads to establish eligibility for future Federal funding. Certain roads currently classified as "local" or "collector" are functioning as "collector" or "arterial" roads.

Road Improvement and Maintenance Funding

Road improvement and maintenance funds will continue to be a concern as revenues shrink and other demands increase. The Township, along with the Road Commission for Oakland County, have attempted to maintain roads to the best of their ability. Continued diligence and effective use of resources will be necessary to maintain an effective improvement program. A description of various funding sources follows:

Transportation Enhancement Program

The Transportation Enhancement Program, administered by the Michigan Department of Transportation, is a competitive grant program that funds projects such as non motorized paths, streetscapes, and historic preservation of transportation facilities. The projects are intended to enhance Michigan's intermodal transportation system.

The Transportation Enhancement Program is a federal program, authorized under the Safe, Accountable, Flexible, Efficient, Transportation Equity Act: A Legacy for Users (SAFETEA-LU). Eligible activities that might be of interest to Lyon Township include:

- Provision of facilities for pedestrians and bicyclists.
- Landscaping and other scenic beautification along transportation corridors.

Applicants must be ACT 51 agencies, so Lyon Township would have to apply through the Road Commission for Oakland County.

Federal Highway Administration

The FHA allocates federal-aid monies to states and local agencies for the Federal-Aid Secondary and Federal-Aid Urban systems of roadways. In addition to allocating funds for these systems, federal funds are designated for special programs which go toward elimination of unsafe roadway and traffic conditions on any federal-aid route, except for the Interstate system.

Act 51 Funds

This fund is generated from gas and weight taxes through MDOT and can be used for general road improvements including intersection reconstruction, paving, curbing, sidewalks, turn arrows, and streetscapes. Projects on primary road systems do not require a local match; projects on local roads generally require a 50 percent match. The Township's share of Act 51 revenue is given to the Road Commission for Oakland County.

Highway Trust Fund

The money in this fund comes from the federal government and is allocated to the programs described below. All of the money in these funds is then distributed to the Local Road Task Force. Contact should be made with the Local Road Task Force, through the Road Commission for Oakland County, as soon as the Township or developer has a need for information on a proposed transportation improvement project.

MDOT Transportation and Economic Development Fund (TEDF)

The TEDF was created in 1987 to provide increased revenues to jurisdictions so that traffic demands created by economic development could be met. The fund is available to jurisdictions and the state to use for highway funding needs related to impending economic development. Category A and C funds, as described in the following paragraphs, may be of benefit in Lyon Township in the future.

- **Category A**

Road projects related to economic development opportunities in agriculture or food processing, tourism, forestry, high technology research, manufacturing, or eligible office center developments are eligible for Category A funding. Category A projects are intended to improve the network of highway services essential to economic competition, improve accessibility to target industries as a catalyst for economic growth, support private initiatives that create or retain jobs, and to encourage economic developments that improve the health, safety, and welfare of Michigan citizens.

In order to access this fund, the Township must work with the Road Commission for Oakland County. Projects must satisfy several requirements regarding proof of need, a letter of commitment from a company or firm along with projected number of jobs to be developed or retained, enhancement of economic activity, and the support of governmental units. Local matching funds of at least 20 percent are required.

- **Category C**

These funds are for the reduction of congestion on County primary roads and major streets within counties with a population greater than 400,000 through the addition of travel lanes, left turn lanes, or intersection improvements. The project must demonstrate that, prior to April 1, 1993, the two lane road carried more than 10,000 vehicles per day, or carried more than 25,000 vehicles per day on roads with more than two lanes.

The goal of Category C is to promote increased economic potential and improve the quality of life by reducing urban traffic congestion levels. The objective of eligible road projects must be to improve the operational level of service in heavily congested areas,

reduce the accident rate on heavily congested roadways, and improve the social, economic, and environmental conditions of areas adjacent to heavily congested roadways.

The project must be located on a County primary or major street on a Federal Aid System (urban or secondary). Eligible applicants for funding under this category are limited to County and City road agencies and a 20 percent match is required. Project costs include all those related to highway construction except for routine maintenance. The local Federal Aid Urban Task Force, through the Road Commission for Oakland County, reviews all proposed projects and makes recommendations for funding to the State Transportation Commission on a quarterly basis.

MDOT Bonding Programs

Periodically, MDOT issues loans for specific road projects. Budget authority for this funding must be specifically authorized by the State legislature, so the funding is limited.

Economic Development Administration (EDA)

This Public Works and Economic Development grant program is administered by the U.S. Department of Commerce Economic Development Administration for economic development activities that create jobs, including road and infrastructure improvements related to the economic development activity. Funding is limited under this program because it is annually subject to Congressional approval or renewal.

Special Assessment Districts

Road improvements can be financed locally through Special Assessment Districts (SAD's). SAD's may require some cost-sharing by the local government and the benefitting property owners. Based on Michigan case law, the cost assessed to the property owners must be directly related to the benefit derived by the improvement. For example, it would not be appropriate to establish a SAD to finance road widening to accommodate through traffic. SAD's can be used to fund conventional road improvements, sidewalks, secondary service roads, driveway closures, and other improvements.

Downtown Development Authority (DDA)

The Lyon Township DDA was created pursuant to Michigan Public Act 197 of 1975, as amended, for the purpose of halting the property value deterioration and to increase property tax valuation where possible in and around New Hudson, to eliminate the causes of deterioration, and to promote economic growth. The DDA uses tax increment financing (TIF) to fund projects in the district. These funds can be used for transportation improvements as is the case with construction of the ring road in New Hudson and improvements to Grand River Avenue. These funds may only be used on roads within the boundaries of the development district.

Oakland/Southwest Airport

Oakland/Southwest Airport, which is operated by Oakland County, is located southwest of New Hudson, with access off of Pontiac Trail. According to a 2005 study, facilities at the airport include an administration building, three executive/corporate hangars, and 19 T-hangar buildings that provide a total of 113 T-hangar units. General aviation services are provided, including aircraft rental, maintenance, charter, and pilot supplies. There were about 15,000 operations in the year 2000, consisting of 13,812 single engine, 660 multi-engine, and 528 business jet operations.

In March of 2008, Oakland County filed an **Airport Layout Plan** with the Township, which was prepared by Barnard Dunkelberg & Company in August 2005. Section 203 of the Michigan Zoning Enabling Act (Act 110 of 2006) indicates “If a local unit of government adopts or revises a plan [i.e., a Master Plan] required under subsection (1) after an airport layout plan or airport approach plan has been filed with the local unit of government, the local unit of government shall incorporate the airport layout plan or airport approach plan adopted under subsection (1).”

Section 203 further notes that a zoning ordinance adopted before March 28, 2001 (as is the case for Lyon Township), it is not required to be consistent with any airport zoning regulations, airport layout plan, or airport approach plan. However, section 203 indicates “a zoning ordinance adopted or variance granted after March 28, 2001 shall not increase any inconsistency that may exist between the zoning ordinance and structures or uses and any airport zoning regulations, airport layout plan, or airport approach plan.”

The **Airport Layout Plan** is a graphic depiction of existing and ultimate airport facilities that will be required to enable the airport to properly accommodate future demand (see Maps 14 and 15). In forecasting future growth, the Plan uses an average annual growth rate of 2.1%, which results in 23,208 annual operations by 2021. The Plan also provides information about airport and runway design criteria, which are necessary to define relationships with applicable standards.

According to the Plan, the airport’s runway configuration will remain structured around one runway, which is programmed to retain its overall pavement length of 3,128 feet. The Plan calls for an increase in width of the runway to 75 feet (currently 40 feet). Other planned improvements include increasing the width of the taxiway to 35 feet (currently 22 feet), upgrading the airfield lighting system, and improvements to various landside facilities, such as the terminal, aircraft parking aprons, hangars, aircraft maintenance facilities, automobile access and parking, and support facilities. These planned improvements are illustrated on Map 14, the Conceptual Airport Layout Plan, and Map 15, the Future Airport Layout Plan.

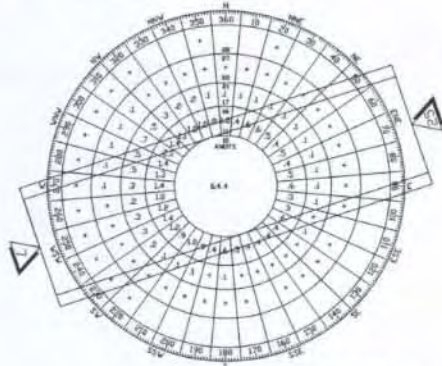
From a land use point-of-view, key facets of the maps are possible land acquisition needs and runway protection zones. The Plan states the following regarding property easements and acquisition:

“To accommodate airport design standards and to protect the existing runway approaches, some property or easement acquisition is recommended. To accommodate Runway Safety Areas and the object free area of the relocated taxiway, approximately 2.2 acres of land are required for acquisition. To protect the existing approaches through acquisition of control of the current Runway Protection Zones (RPZ), approximately 13.72 acres of property should be brought under the management of the Airport through a combination of acquisition, easements, or development rights. The ultimate result of this effort is to control the height of objects and land use with the RPZ areas. While this can be accomplished through acquisition of easements, the FAA recommends fee simple ownership, where practical.”

Notwithstanding the previous paragraph, the largest land acquisition area, at the west end of the runway, is labeled “Potential Development Area—Not suggested at this time” on the Conceptual Airport Layout Plan.

Runway Protection Zones are another important land use issue. McKenna Associates has transposed recommended runway protection zones on a Township parcel map (see Map 16), using information from a drawing titled Land Use Plan for Oakland/Southwest, prepared by the Michigan Department of Transportation, Bureau of Aeronautics. The Accident Safety Zone Land Use Matrix that follows Map 16, which is from the Michigan Department of Transportation publication titled “Land Use Guidelines for State of Michigan Airport Approach Plans,” provides information to interpret Map 16. As might be expected, the zones adjacent to the runway and at the ends of the runway require the greatest degree of protection, as reflected by the fact that the recommended density is 0-5 people per acre (5 people per acre is comparable to R-0.5 zoning). Within the inner turning zone (zone 3), or farther from the runway in zone 4, the density may be increased, according to the guidelines. In zone 3, the recommended density is less than 25 people per acre, and zone 4 it is less than 40 people per acre.

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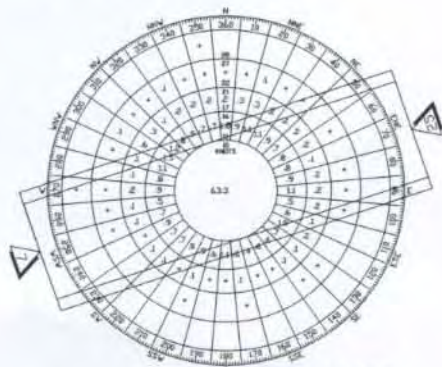


ALL WEATHER WINDROSE

Wind Coverage Provided Under All Weather Conditions

Runway 7	51.09%	55.78%
Runway 25	65.99%	75.91%
Combined 7/25	84.76%	92.90%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center, Source: NOAA/Texas A&M/McGraw-Hill, based on Bureau 1981-1999



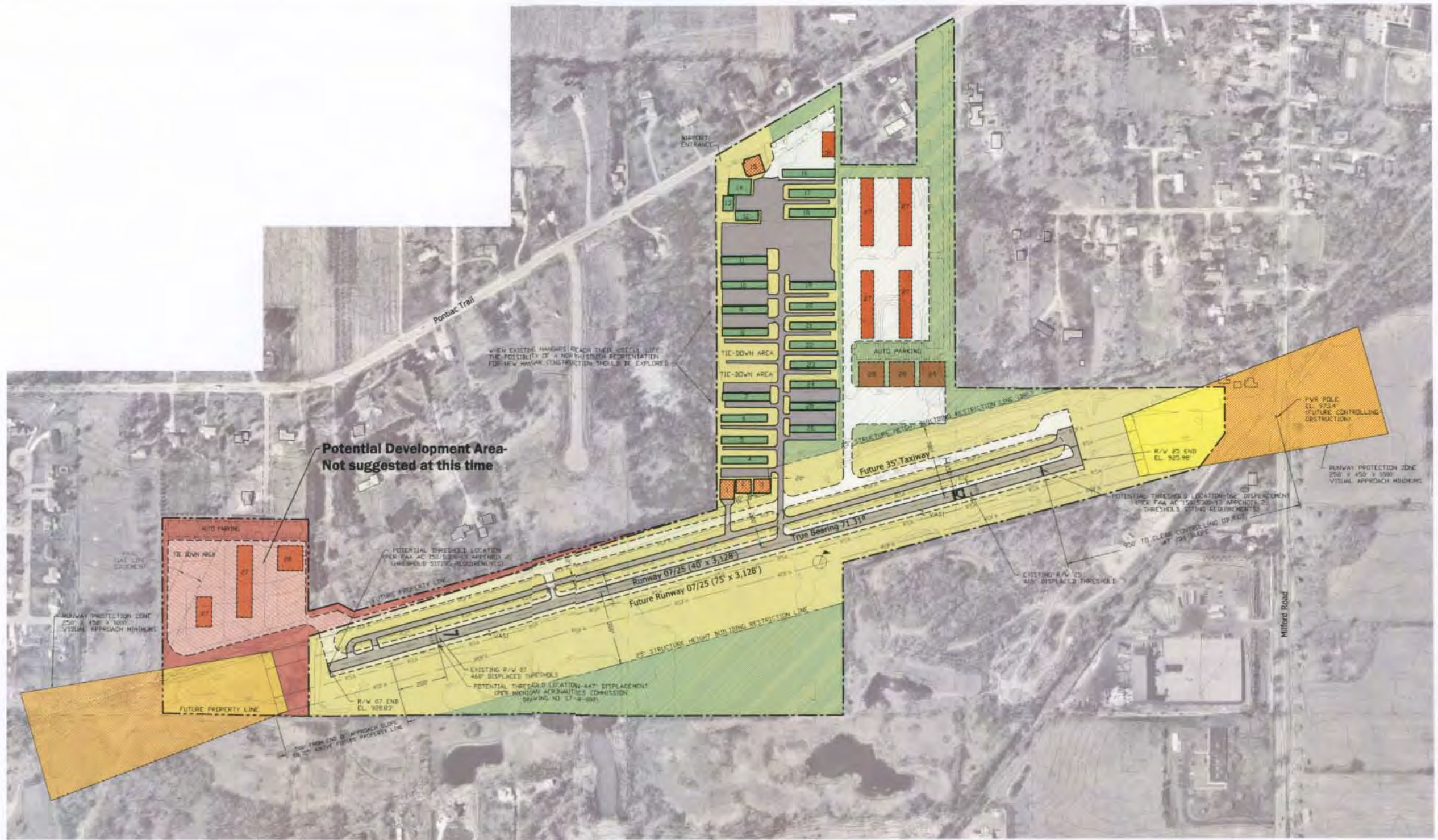
IFR WINDROSE

Wind Coverage Provided Under IFR Conditions

Runway 7	59.97%	65.36%
Runway 25	59.58%	65.11%
Combined 7/25	82.76%	90.76%

Source: National Oceanic and Atmospheric Administration, National Climatic Data Center, Source: NOAA/Texas A&M/McGraw-Hill, based on Bureau 1981-1999

RUNWAY DATA		RUNWAY 07/25	
	EXISTING	FUTURE	
APPROACH VISIBILITY MINIMUMS	VISUAL/VISUAL	VISUAL/VISUAL	
FAR PART 77 CATEGORY	A (V)/A (V)	A (V)/A (V)	
FAR PART 77 APPROACH SURFACE SLOPE	20.1/20.1	20.1/20.1	
RUNWAY WIDTH X LENGTH	40' X 3,128'	40' X 3,128'	
PAVEMENT TYPE	ASPHALT	ASPHALT	
PAVEMENT STRENGTH (IN 1000 LBS.)	12.5 SW	12.5 SW	
RUNWAY LIGHTING	LRL	LRL	
RUNWAY MARKING	BASIC/VISUAL	BASIC/VISUAL	
EFFECTIVE RUNWAY GRADIENT %	0.2	0.2	
MAXIMUM GRADE WITHIN RUNWAY LENGTH	EXISTING	FUTURE	
RUNWAY LINE-OF-SITE	CRITERIA MET	CRITERIA MET	
WIND COVERAGE % (10.5/13 KNOTS)	84.76/92.00	84.76/92.00	
VISUAL APPROACH AIDS	VASI	PAPI	
INSTRUMENT APPROACH AIDS	VOR	VOR, GPS-A	
AIRPORT REFERENCE CODE	B-I (SMALL A/C)	B-I (SMALL A/C)	
CRITICAL AIRCRAFT	PAPER CATEGORY	PAPER CATEGORY	
RUNWAY SAFETY AREA DIMENSIONS	120' X 3,368'	120' X 3,368'	
RUNWAY OBJECT FREE AREA DIMENSIONS	250' X 3,368'	250' X 3,368'	
OBSTACLE FREE ZONE CRITERIA	CRITERIA MET	CRITERIA MET	
RUNWAY END COORDINATES	LAT: 42°30'06.300"N LON: 82°37'45.100"W	LAT: 42°30'06.300"N LON: 82°37'45.100"W	
RUNWAY ELEVATIONS	END: 921.0/926.0' HIGH POINT: 926.0' LOW POINT: 921.0'	END: 921.0/926.0' HIGH POINT: 926.0' LOW POINT: 921.0'	
TOUCHDOWN ZONE ELEVATION	TOGA: 925.3/926.0'	TOGA: 925.3/926.0'	
DECLARED DISTANCES	TOGA ASDA LDA	TOGA ASDA LDA	
DISPLACED THRESHOLD COORDINATES	LAT: 42°30'07.760"N LON: 82°37'34.300"W	LAT: 42°30'07.760"N LON: 82°37'34.300"W	
	LAT: 42°30'14.730"N LON: 82°37'11.440"W	LAT: 42°30'14.730"N LON: 82°37'11.440"W	



LEGEND

- Proposed Property Acquisition Area (Approx. 12 Acres)
- Additional Property To Be Considered For Acquisition (Fee or Easement Approx. 12 Acres)
- Structures To Be Considered For Removal
- Proposed New Runway/Taxiway Pavement (MDOT ALP)
- Potential Landside Development Area (Approx. 24 Acres)

REVISIONS

NO.	ITEM	DATE	COMMENTS

NOTES

- This drawing reflects current planning standards applicable to Oakland Southwest Airport to the greatest extent possible. This drawing should not be used as a standard for planning or design.
- All coordinate data is NAD83.

BUILDING DATA

NO.	DESCRIPTION	ELEVATION	NO.	DESCRIPTION	ELEVATION
1	HANGAR	947.28'	16	HANGAR	927.48'
2	HANGAR	949.88'	17	HANGAR	956.26'
3	HANGAR	951.61'	18	HANGAR	955.14'
4	HANGAR	945.19'	19	HANGAR	951.32'
5	HANGAR	944.10'	20	HANGAR	950.85'
6	HANGAR	946.65'	21	HANGAR	949.84'
7	HANGAR	946.97'	22	HANGAR	948.61'
8	HANGAR (w/ LIGHT)	949.67'	23	HANGAR	947.39'
9	HANGAR	950.76'	24	HANGAR	947.41'
10	HANGAR	959.42'	25	HANGAR	947.37'
11	HANGAR	953.11'	26	HANGAR	947.39'
12	HANGAR	926.70'	27	FUTURE T-HANGAR	
13	HANGAR	959.88'	28	FUTURE FBO HANGAR	
14	HANGAR	966.79'	29	FUTURE HANGAR/TERMINAL/OFFICE	
15	HANGAR	966.49'	30	FUTURE COUNTY STORAGE BUILDING	

BUILDING HEIGHT ELEVATIONS SURVEYED BY PECKHAM ENGINEERING, INC. (11/09/01)

AIRPORT DATA

	EXISTING	FUTURE
AIRPORT ELEVATION (AMSL)	926.0'	926.0'
AIRPORT REFERENCE POINT (ARP)	US & SOVIET	US & SOVIET
AIRPORT REFERENCE CODE	B-I (SMALL A/C)	B-I (SMALL A/C)
NPAS CATEGORY	CA	CA
MEAN MAX TEMPERATURE (HOTTEST MONTH)	81.6°	81.6°
TAXIWAY LIGHTING	NONE	NONE
TAXIWAY MARKING	CENTERLINE	CENTERLINE
AIRPORT PROPERTY (ACRES)	76	76
UNCOM (MFL)	-	-
CONTROL TOWER (MFL)	NONE	NONE

LAYOUT PLAN LEGEND

	EXISTING	FUTURE
AIRPORT PROPERTY LINE	---	---
AIRPORT SECURITY FENCE	---	---
AIRPORT BUILDINGS	█	█
APPROACH PAVEMENT	---	---
PAVED ROADS	---	---
RUNWAY PROTECTION ZONE	---	---
BUILDING RESTRICTION LINE	---	---
RUNWAY SAFETY AREA	---	---
RUNWAY OBJECT FREE AREA	---	---
FUEL STORAGE AREA	---	---
LIGHTED WIND CONE & SEGMENTED CIRCLE	---	---

Graphic 1 - Conceptual Airport Layout Plan
 Oakland/Southwest Airport
 Charter Township of Lyon, Oakland County, Michigan

Source: Airport Layout Plan
 Barnard Dunkelberg & Company,
 August 2005

SOURCE: AERIAL PHOTOGRAPHY FROM OAKLAND COUNTY GIS DEPARTMENT, OAKLAND COUNTY, MICHIGAN.
 CAD FILE FROM PECKHAM ENGINEERING, INC., TRAVERSE CITY, MICHIGAN.

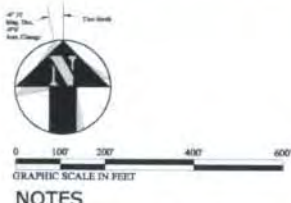
RUNWAY DATA	RUNWAY 08*		RUNWAY 26*	
	EXISTING	FUTURE	EXISTING	FUTURE
APPROACH VISIBILITY MINIMUMS	VISUAL	VISUAL	VISUAL	VISUAL
FAR PART 77 CATEGORY	A (1)	A (1)	A (1)	A (1)
FAR PART 77 APPROACH SURFACE SLOPE	20:1	20:1	20:1	20:1
RUNWAY WIDTH X LENGTH	40' X 3,128'	75' X 3,128'	40' X 3,128'	75' X 3,128'
PAVEMENT TYPE	ASPHALT	ASPHALT	ASPHALT	ASPHALT
PAVEMENT STRENGTH (IN 1000 LBS.)	12.5 SW	12.5 SW	12.5 SW	12.5 SW
RUNWAY LIGHTING	ML	ML	ML	ML
RUNWAY MARKING	BASIC(VISUAL)	BASIC(VISUAL)	BASIC(VISUAL)	BASIC(VISUAL)
EFFECTIVE RUNWAY GRADIENT %	0.2	0.2	0.2	0.2
MAXIMUM GRADE WITHIN RUNWAY LENGTH	EXISTING	FUTURE	EXISTING	FUTURE
RUNWAY LINE-OF-SITE	CRITERIA MET	CRITERIA MET	CRITERIA MET	CRITERIA MET
WIND COVERAGE % (10.5/13 KNOTS)	84.76/92.00	84.76/92.00	84.76/92.00	84.76/92.00
VISUAL APPROACH AIDS	VASI	PAPI	VASI	PAPI
INSTRUMENT APPROACH AIDS	VOR	VOR OPS-A	VOR	VOR OPS-A
AIRPORT REFERENCE CODE	B-1 SMALL A/C	B-1 SMALL A/C	B-1 SMALL A/C	B-1 SMALL A/C
CRITICAL AIRCRAFT	CS30M 421	CS30M 421	CS30M 421	CS30M 421
RUNWAY SAFETY AREA WIDTH	120'	120'	120'	120'
RUNWAY SAFETY AREA LENGTH BEYOND R/W END	240'	240'	240'	240'
RUNWAY OBJECT FREE AREA WIDTH	250'	250'	250'	250'
RUNWAY OBJECT FREE AREA LENGTH BEYOND R/W END	240'	240'	240'	240'
OBSTACLE FREE ZONE WIDTH	250'	250'	250'	250'
OBSTACLE FREE ZONE LENGTH BEYOND R/W END	200'	200'	200'	200'
RUNWAY END COORDINATES	LAT 42°30'06.300"N LON 83°37'48.120"W	LAT 42°30'06.300"N LON 83°37'48.120"W	LAT 42°30'18.200"N LON 83°37'05.560"W	LAT 42°30'18.200"N LON 83°37'05.560"W
RUNWAY ELEVATIONS	END HIGH POINT LOW POINT TOUCHDOWN ZONE ELEVATION	921.0' 926.0' 921.0' 925.3'	925.98' 926.0' 921.0' 925.98'	925.98' 926.0' 921.0' 925.98'
DISPLACED THRESHOLD COORDINATES	LAT 42°30'07.700"N LON 83°37'49.200"W	NONE	LAT 42°30'14.700"N LON 83°37'11.440"W	LAT 42°30'18.600"N LON 83°37'07.610"W
THRESHOLD DISPLACEMENT	460'	NONE	465'	162'
EFFECTIVE RUNWAY LANDING LENGTH	2668'	3128'	2663'	2966'

* RUNWAY DESIGNATIONS CHANGED DUE TO MAGNETIC DECLINATION UPDATE.



TAXIWAY DATA	
ITEM	AIRPLANE DESIGN GROUP 1
TAXIWAY WIDTH	25'
TAXIWAY EDGE SAFETY MARGIN	5'
TAXIWAY SHOULDER WIDTH	10'
TAXIWAY SAFETY AREA WIDTH	49'
TAXIWAY OBJECT FREE AREA WIDTH	89'
TAXIWAY OBJECT FREE AREA LENGTH	79'

WETLANDS LEGEND	
	PALUSTRINE EMERGENT WETLAND (PEM)
	PALUSTRINE SCRUB-SHRUB WETLAND (PSS)
	PALUSTRINE FORESTED WETLAND (PFO)
	PALUSTRINE EMERGENT/SCRUB-SHRUB WETLAND (PEM/PSS)
	WATER



NOTES
 1. This drawing reflects current planning standards applicable to Oakland Southwest Airport to the greatest extent possible. This drawing should not be used as a standard for planning or design.
 2. All coordinate data is NAD83.

REVISIONS		
NO.	ITEM	DATE

BUILDING DATA			
NO.	DESCRIPTION	ELEVATION	NO.
1	HANGAR	947.25'	16
2	HANGAR	949.86'	17
3	HANGAR	951.61'	18
4	HANGAR	945.19'	19
5	HANGAR	944.10'	20
6	HANGAR	946.65'	21
7	HANGAR	946.97'	22
8	HANGAR (w/ LIGHT)	945.67'	23
9	HANGAR	950.76'	24
10	HANGAR	959.47'	25
11	HANGAR	953.11'	26
12	HANGAR	958.70'	27
13	HANGAR	959.86'	28
14	HANGAR	946.79'	29
15	HANGAR	956.49'	30

BUILDING HEIGHT ELEVATIONS SURVEYED BY PECKHAM ENGINEERING, INC. (11/09/01)

AIRPORT DATA		
EXISTING	FUTURE	
926.0'	926.0'	AIRPORT ELEVATION (AMSL)
88.5°/205.2°	88.5°/205.2°	AIRPORT REFERENCE POINT (ARP)
B-1 (SMALL A/C)	B-1 (SMALL A/C)	AIRPORT REFERENCE CODE
GA	GA	NPAS CATEGORY
83.6°	83.6°	MEAN MAX. TEMPERATURE (HOTTEST MONTH)
NONE	ML	TAXIWAY LIGHTING
CENTERLINE	CENTERLINE	TAXIWAY MARKING
78.24	82.81	AIRPORT PROPERTY (ACRES)
NONE	NONE	CONTROL TOWER (MHz)
NONE	NONE	SECTION, TOWNSHIP AND RANGE

LAYOUT PLAN LEGEND		
EXISTING	FUTURE	
		AIRPORT PROPERTY LINE
		AIRPORT SECURITY FENCE
		AIRPORT BUILDINGS
		AIRFIELD PAVEMENT
		RUNWAY PROTECTION ZONE (RPZ)
		RPZ OR OBSTRUCTION EASEMENT
		BUILDING RESTRICTION LINE
		RUNWAY SAFETY AREA
		RUNWAY OBJECT FREE AREA
		FUEL STORAGE AREA
		LIGHTED WIND CONE & SEGMENTED CIRCLE
		VISUAL APPROACH SLOPE INDICATOR (VASI)
		THRESHOLD LIGHTS
		PRECISION APPROACH PATH INDICATOR (PAPI)
		RUNWAY END IDENTIFIER LIGHTS (REIL)

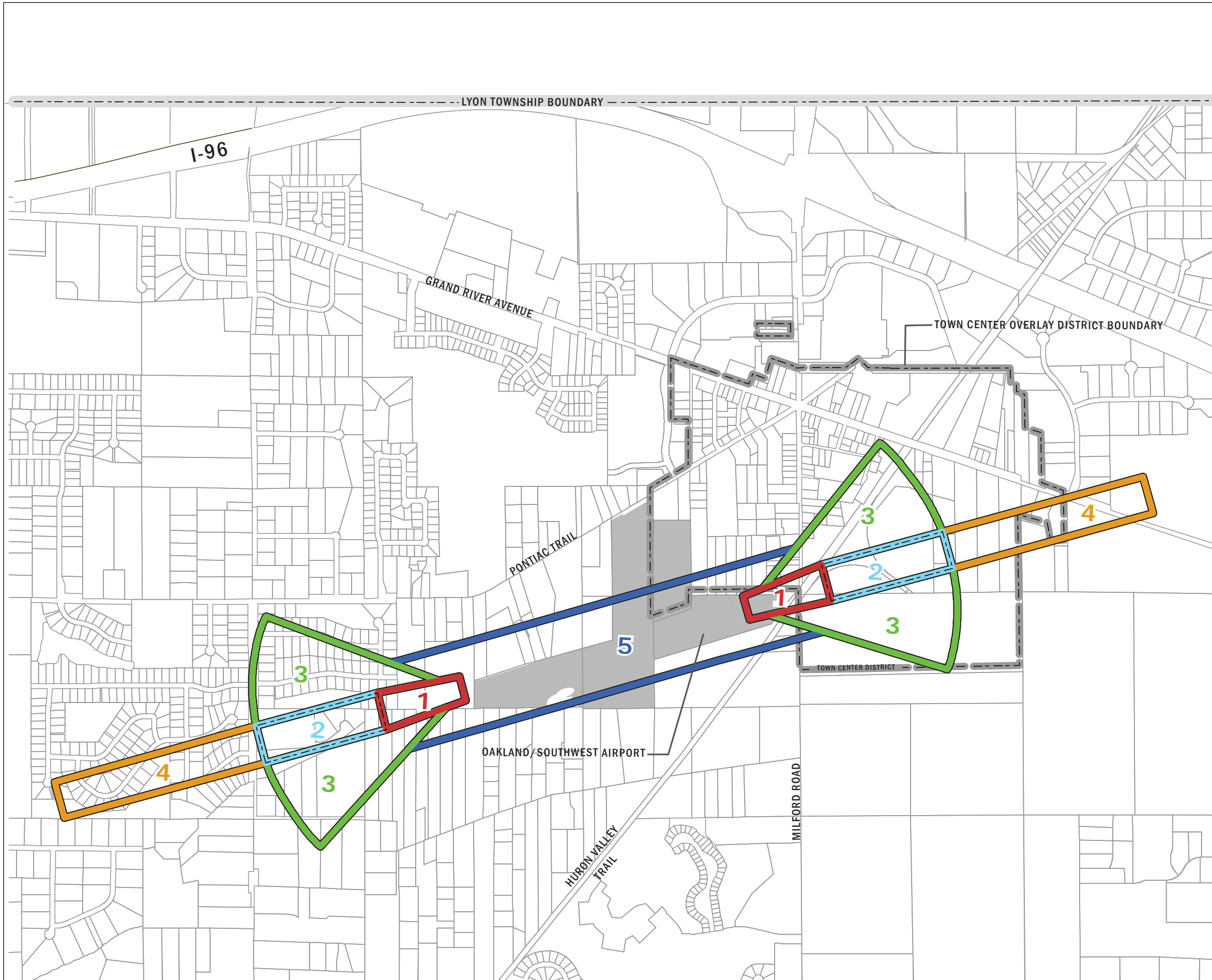
Graphic 2 - Future Airport Layout Plan
Oakland/Southwest Airport
 Charter Township of Lyon, Oakland County, Michigan

Source: Airport Layout Plan
 Barnard Dunkelberg & Company,
 August 2005

Graphic 3 Runway Protection Zones Oakland/Southwest Airport

Charter Township of Lyon,
Oakland County, Michigan

- 1** RUNWAY PROTECTION ZONE
- 2** INNER SAFETY ZONE
- 3** INNER TURNING ZONES
- 4** OUTER SAFETY ZONE
- 5** SIDELINE SAFETY ZONE



Base Map Source: Oakland County, GIS, 2006
 Data Source: Land Use Plan for Oakland/Southwest,
 Michigan Department of Transportation,
 Bureau of Aeronautics, Undated



Accident Safety Zone Land Use Matrix		
Accident Safety Zone	Land Use Guidelines	Land Use Planning Strategies
1	<p>Avoid land uses which concentrate people indoors or outdoors.</p> <p>Prohibit all residential uses. All non-residential uses permitted outright subject to population density and special function guidelines.</p> <p>Prohibit all special function land uses.</p>	<ol style="list-style-type: none"> 1. 0-5 people/acre 2. Airport sponsor should purchase property if possible. 3. Zone land uses, which by their nature will be relatively unoccupied by people. 4. Create a height hazard overlay ordinance around the airport. 5. Airport sponsor should obtain aviation and obstruction easements. 6. During site development process, shift structures away from the runway centerline, if possible. 7. Landscaping requirements shall establish only low growing vegetation. 8. Prohibit high overhead lighting, and require that it be focused downward. 9. Prohibit overhead utilities and all noise sensitive land uses. 10. Zone for land uses other than schools, play fields, hospitals, nursing homes, day care facilities, and churches. 11. Limit storage of large quantities of hazardous or flammable material. 12. Ensure that permitted use will not create large area of standing water, or generate smoke, steam, etc.
2	<p>Avoid land uses which concentrate people indoors or outdoors.</p> <p>Prohibit all residential uses. All non-residential uses permitted outright subject to population density and special function guidelines.</p> <p>Prohibit all special function land uses.</p>	<ol style="list-style-type: none"> 1. 0-5 people/acre 2. Zone land uses, which by their nature will be relatively unoccupied by people. 3. Create a height hazard overlay ordinance around the airport. 4. During site development process, shift structures away from the runway centerline, if possible. 5. Prohibit mobile home parks. 6. Landscaping requirements shall establish only low growing vegetation. 7. Prohibit high overhead lighting, and require that it be focused downward.

Accident Safety Zone Land Use Matrix		
Accident Safety Zone	Land Use Guidelines	Land Use Planning Strategies
		<ul style="list-style-type: none"> 8. Prohibit overhead utilities and all noise sensitive land uses. 9. Evaluate all possible permitted special land uses to assure compatible land use. 10. Zone for land uses other than schools, play fields, hospitals, nursing homes, day care facilities, and churches. 11. Limit storage of large quantities of hazardous or flammable material. 12. Ensure that permitted use will not create large area of standing water, or generate smoke, steam, etc.
3	<p>Avoid land uses which concentrate people indoors or outdoors.</p> <p>Limit residential development to low density housing standards. All non-residential land uses permitted outright should be subject to the Special Function Land Use guidelines.</p> <p>Prohibit all special function land uses.</p>	<ul style="list-style-type: none"> 1. Less than 25 people/acre 2. Zone land uses, which by their nature will be relatively unoccupied by people. 3. Create a height hazard overlay ordinance around the airport. 4. Obtain avigation and obstruction easements 5. During site development process, shift structures away from the runway centerline, if possible. 6. Prohibit mobile home parks. 7. Landscaping requirements shall establish only low growing vegetation. 8. Prohibit high overhead lighting, and require that it be focused downward. 9. Prohibit overhead utilities and all noise sensitive land uses. 10. Evaluate all possible permitted special land uses to assure compatible land use. 11. Zone for land uses other than schools, play fields, hospitals, nursing homes, day care facilities, and churches. 12. Limit storage of large quantities of hazardous or flammable material. 13. Ensure that permitted use will not create large area of standing water, or generate smoke, steam, etc.

Accident Safety Zone Land Use Matrix		
Accident Safety Zone	Land Use Guidelines	Land Use Planning Strategies
4	<p>Limit population concentrations.</p> <p>Limit residential to low density housing standards.</p> <p>All non-residential land uses permitted outright should be subject to the Special Function Land Use guidelines.</p> <p>Prohibit all special function land uses.</p>	<ol style="list-style-type: none"> 1. Less than 40 people/acre in buildings, less than 75 people/acre outside buildings. 2. Create a high hazard overlay ordinance around airport. 3. Obtain avigation easements. 4. Clustered development is acceptable to maintain density provided that open space remains unbuilt. Place clustered development away from extended runway centerline. 5. Prohibit mobile home parks. 6. Prohibit high overhead utilities and all noise sensitive land uses. 7. Zone for land uses other than schools, play fields, hospitals, nursing homes, day care facilities, and churches. 8. Limit storage of large quantities of hazardous or flammable material. 9. Evaluate noise sensitive land uses in light of aircraft noise contour lines (if available) when establishing new zoning. 10. Ensure that permitted use will not create large area of standing water, or generate smoke, steam, etc.
5	<p>Avoid land uses which concentrate people indoors or outdoors.</p> <p>Limit residential development to low density housing standards. All non-residential land uses permitted outright should be subject to the Special Function Land Use guidelines.</p> <p>Prohibit all special function land uses.</p>	<ol style="list-style-type: none"> 1. 0-5 people/acre 2. Airport sponsor should purchase property if possible. 3. Zone land uses, which by their nature will be relatively unoccupied by people. 4. Create a height hazard overlay ordinance around the airport. 5. Airport sponsor should obtain avigation and obstruction easements. 6. During site development process, shift structures away from the runway centerline, if possible. 7. Landscaping requirements shall establish only low growing vegetation.

Accident Safety Zone Land Use Matrix		
Accident Safety Zone	Land Use Guidelines	Land Use Planning Strategies
		<ol style="list-style-type: none"> 8. Prohibit high overhead lighting, and require that it be focused downward. 9. Evaluate all possible permitted special land uses to assure compatible land use. 10. Prohibit overhead utilities and all noise sensitive land uses. 11. Zone for land uses other than schools, play fields, hospitals, nursing homes, day care facilities, and churches. 12. Limit storage of large quantities of hazardous or flammable material. 13. Ensure that permitted use will not create large area of standing water, or generate smoke, steam, etc.

Summary

The 2005 Airport Layout Plan for Oakland/Southwest Airport identified two concerns that could affect land use: 1) acquisition of land through easements, fee simple acquisition of acquisition of development rights, and 2) the location and guidelines affecting runway protection zones.

The Plan identifies parcels of land that ideally should be acquired to facilitate improvement to the airport. However, based on a note on the Conceptual Airport Layout Plan, the airport does not appear to be inclined to move forward with acquisition at this time.

The runway protection zones overlap areas that are or could be developed in accordance with the underlying land use zoning. Based on the densities specified in the above chart, residential development in zones 1, 2 and 5 could occur in the R-0.5 or the R-1.0 land use zoning classifications. Residential development in zones 3 and 4 could occur in any land use zoning classification.

Notwithstanding the Airport’s current intentions or timetable for acquisition, or the locations or guidelines for runway protection zones, it is Section 203 of the Michigan Zoning Enabling Act (Act 110 of 2006) that is of greatest significance with respect to this Master Plan as well as the Zoning Ordinance. As noted previously, a zoning ordinance adopted before March 28, 2001 (as is the case for Lyon Township), is not required to be consistent with any airport zoning regulations, airport layout plan, or airport approach plan. However, section 203 indicates “a zoning ordinance adopted or variance granted after March 28, 2001 shall not increase any inconsistency that may exist between the zoning ordinance and structures or uses and any airport zoning regulations, airport layout plan, or airport approach plan.” In consideration of this provision, as well as the uncertainties regarding development of the airport, it would be premature to make any changes to the Master Plan or the Future Land Use Map related to the Oakland/Southwest Airport at this time.

COMMUNITY FACILITIES

Introduction

The desirability of a community is related in part to the level and quality of public services offered, including education, parks and recreation, administrative services, police and fire services, and public utilities. This chapter of the plan addresses major public service and facility needs except for parks and recreation, which are discussed in a separate chapter. The purpose of this analysis is to identify public service needs that have an impact on land use.

Responsibility for providing public services to residents of the Township is shared by several public entities, including the Township, various Oakland County departments, various state offices, the South Lyon Community School District, and other agencies.

Over the years, the public service base in the Township has expanded in response to continued growth and the transition from a rural, self-sufficient community to a more suburban community. Municipal water and sanitary sewer systems have been created. Changes in the size and composition of the population have generated more and diverse needs. Future growth and residents' desires for improved quality of life are likely to create additional future public facility needs.

Key determinants of future need for public services are total population, number of households, public policy, changing Federal or state laws or regulations, and declining quality or availability of existing resources (such as water quality and sanitary sewer capacity). The public service base expands in part to the relationship to the growth in population. Under current zoning, it is estimated that the population could reach 20,162 by 2035 according to SEMCOG estimates. The number of households is projected to increase to 7,801 by 2035.

There is not a one-to-one relationship between population and household growth and expansion of public services, however. Growth of the public service base is also affected by public policy.

The declining quality or availability of existing resources can affect the public service base, as observed in New Hudson, where contamination of groundwater resulted in the construction of a public water system. Local units of government frequently are being forced to expand services because of new standards or mandates from the state.

Township Facilities

The Township Hall was previously located on a site that is about 0.8 of an acre in size at 57100 Pontiac Trail in New Hudson. The 4,800-sq.ft. building housed the offices of the Supervisor, Clerk, Treasurer, building, zoning, and planning functions, Fire Chief, and Oakland County Sheriff. The offices occupied about 2,800 square feet, and the garage for fire fighting vehicles and equipment occupied about 2,100 square feet.

There were numerous deficiencies with the Township Hall: parking was inadequate, the meeting room was too small for most Planning Commission and Township Board meetings, the building was too small to house multiple functions simultaneously (such as voting and regular Township business), there were no enclosed offices making it difficult to protect citizen's privacy or engage in meetings without disrupting other operations.

It became evident that the Township had outgrown the existing facility, so in 1994 the Township secured the services of an architect to begin planning for a new municipal building at 58000 Grand River Avenue. The building program developed by the architect after consultation with department heads and employees anticipated growth in employment to 13 administrative employees (increase of 4) and 12 sheriff deputies or staff (increase of 3) by 1999.

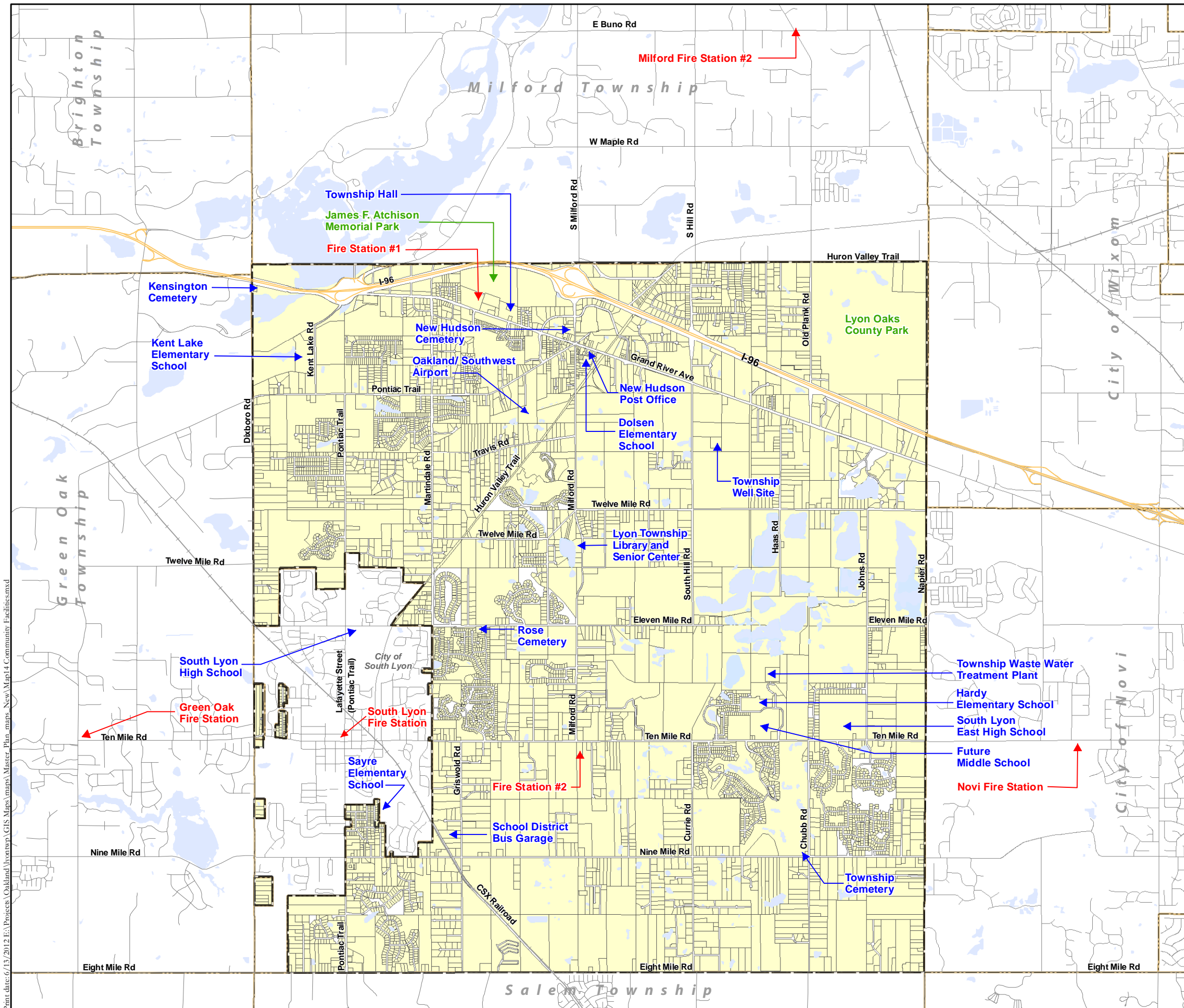
Completed in late 1996, the present Township Hall is located on Grand River Avenue, about one-half mile west of Milford Road at the entrance to the James F. Atchison Community Park (see Map 14). It provides 8,140 square feet of gross floor area on the main floor and another 4,450 square feet of gross floor area on a lower level. In 2002, the lower level was finished. Administrative functions of the Township, storage, and meeting space are located on the main floor. The building includes an assembly hall designed to accommodate 120 people. The lower level houses the Sheriff's facilities.

The location of the Township Hall was selected after a study of alternate sites by the Planning Commission and consideration of the following findings:

- The Grand River Avenue site would keep the Township Hall in New Hudson, which is considered important for the long term viability and image of New Hudson.
- The Grand River Avenue site is on land that was deeded to the Township by BFI, Inc. Studies indicated that utilities could be provided to a Township Hall on this site. In contrast, an alternative site in the center of the Township was not owned by the Township, was occupied by wetlands which, combined with a high water table, limited development potential.
- The presence of the park adjacent to the Township Hall provides Township employees with attractive surroundings and proximity to a variety of nearby recreation facilities.
- The Grand River Avenue location places the Township Hall near the population center of the Township (although the population center is shifting southward with new development).

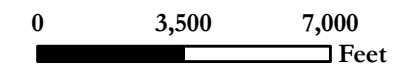
Map 14 Community Facilities

Charter Township of Lyon,
Oakland County, Michigan



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Base Map Source: Oakland County, GIS, 2006
Data Source: McKenna Associates, Inc.



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McKenna
ASSOCIATES

With respect to Township administrative functions, it should be possible to accommodate any additional space requirements in the next 10 to 15 years within the existing Township Hall. If administrative needs do expand unexpectedly, consideration should be given to electronic storage or off-site records storage as a means of achieving more usable floor space.

Fire Protection Services

The Lyon Township Fire Department currently operates out of two fire stations:

- Fire Station #1, the main station, is located at 58800 Grand River Avenue on the north side of Grand River, west of the Township Hall. Completed in February 2001, this station contains 12,327 square feet.
- Fire Station #2, at 56675 Ten Mile Road, is located on the south side of Ten Mile east of Milford Road. This 5,563-square foot station was completed in January 2001.

The ability of fire fighters to respond adequately to the initial alarm is a key consideration in determining the appropriate locations for stations. A general rule of thumb is that within five minutes of sounding the alarm, the first piece of apparatus should arrive at the emergency scene.

The optimum fire company service radius depends on the type of use being served. High hazard and high value districts have more stringent service requirements than low hazard occupancies. The following list indicates one method of determining appropriate fire department response:

- **High Hazard Occupancies.** Schools, hospitals, nursing homes, mobile home parks and industrial uses which have a high fire potential.
- **Medium Hazard Occupancies.** Apartments, offices, mercantile and industrial occupancies not normally requiring extensive rescue or fire fighting services.
- **Low Hazard Occupancies.** Single family dwellings and scattered small businesses and industrial occupancies.

In general, high hazard or high value districts should not be farther than three-quarters to one mile from an engine, hose, or engine-ladder company. Under ideal conditions, single family residential districts, which are considered low hazard occupancies, should be located no farther than two or three miles from the fire companies. In Lyon Township, the location of high and medium hazard occupancies relative to the CSX railroad line affects fire station locational standards. Response time could be delayed by train traffic.

Fire Station #1, the northern station, provides good coverage for the most densely developed portions of the Township, including the medium and high-hazard occupancies in New Hudson, such as Dolsen Elementary School, South Lyon East High School, Kent Lake Elementary School, the apartments and mobile homes near Kent Lake Road, and industrial and commercial buildings along Grand River Avenue (see Map 15). Station #1 is in an optimal location relative to I-96, since accidents on the freeway generate a high demand for public safety services.

Fire Station #2, the southern station, provides good coverage for the densely developed areas of the Township south of the City of South Lyon, the Tanglewood development, Hardy Elementary School, and developing high value area in the central part of the Township. Clubhouses and restaurants at Tanglewood, Walnut Creek, Riverbank, and Cattails golf courses qualify as medium hazard occupancies, so the proximity of fire fighting equipment is a public safety concern.

Township fire protection is augmented by several aid and assistance agreements. The Township is a member of the Western Oakland Mutual Aid Association as well as the Washtenaw County Mutual Aid Association. Huron Valley Ambulance also provides assistance upon request. There has even been discussion at the State level of creating a state-wide mutual aid association. Nearby fire stations able to help with fire protection include a Novi Fire Department station at Ten Mile and Wixom Roads, a South Lyon Fire Department station at Ten Mile Road and Pontiac Trail, a Milford Township Fire Department station at Old Plank and Buno Roads, and a Greek Oak Township station at Ten Mile and Rushton Roads.






Based on the location of most new development in the Township, the existing stations should serve the Township adequately for at least 10-15 years. Should more development occur in the northeast part of the Township, for example, around the lakes owned by Levy, then another station might be needed in that vicinity.

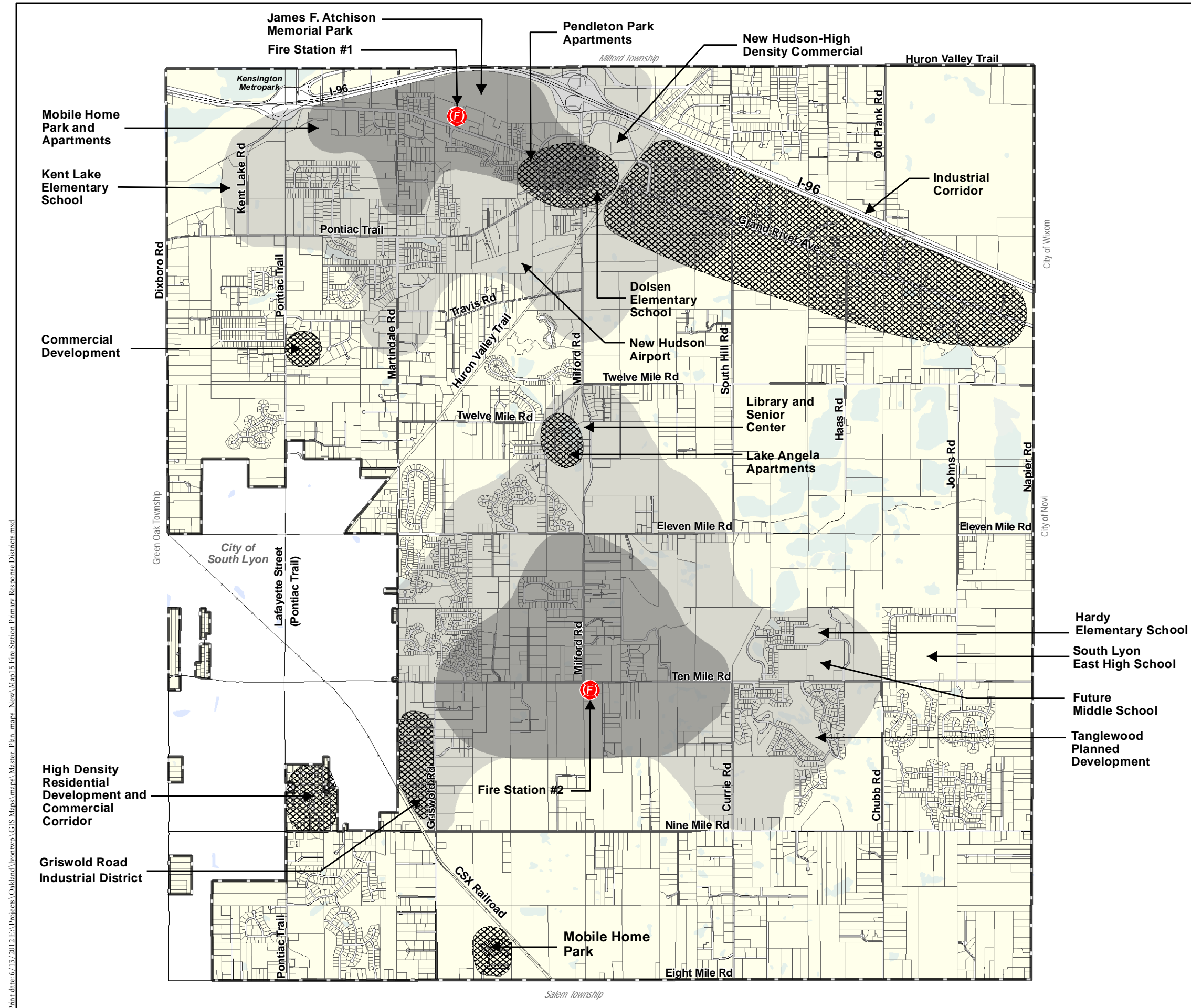
Public Utilities

Three public utilities typically associated with growth and higher density development are sanitary sewers and wastewater treatment, public water supply, and storm water management. In rural or semi-rural communities, sanitary sewers and wastewater treatment and public water utilities are often not a topic for discussion because each dwelling unit or development is expected to address these needs on their own site. Storm water management is a concern regardless of the density of development, but management of storm water is approached from a different perspective in rural communities where maintaining the productivity of agricultural lands is the priority.

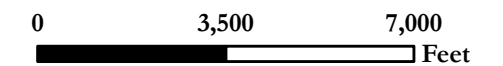
Map 15 Fire Station Primary Response Districts

Charter Township of Lyon,
Oakland County, Michigan

-  One Mile Service Radius
-  Two Mile Service Radius
-  Beyond Two Mile Radius
-  High/Medium Hazard Occupancy Areas
-  Fire Station



Base Map Source: Oakland County, GIS, 2006
Data Source: McKenna Associates, Inc.



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The decision whether to construct public utilities depends foremost on the intensity of development desired in the Township. Intensive development in the absence of public utilities creates the potential for public safety and environmental problems. From a public safety perspective, a public water supply system is desirable for fire protection services whenever a high-hazard or high value use is developed. From an environmental perspective, a public sanitary sewer system is desirable instead of septic systems whenever medium or high-density residential or intensive non-residential development is anticipated.

The experience in Lyon Township demonstrates that the decision whether to construct public utilities cannot be made purely on the basis of the desired intensity of development. The decision is sometimes beyond the control of the existing Township officials, such as when a solution is needed to address an immediate groundwater pollution problem that was created many years earlier when intensive development was permitted and not monitored or was permitted on soils that had limited suitability for septic systems.

Sometimes the decision to provide public utilities is more closely related to public policies adopted by other governmental bodies and the desire to prevent development of land within existing Township boundaries for inappropriate uses. Utilities, for example, have been at the heart of debates concerning annexation of land into the City of South Lyon. In the past property owners sought annexation to gain access to public sanitary sewers and the public water system, thereby permitting higher density development accompanied by an immediate increase in land values. From the Township's perspective, however, annexation strikes at the desire to avoid overcrowding in schools, stores, and public facilities; to prevent congestion and accidents on roads; and to preserve tree stands, wetlands, streams, animal habitats, and other natural features that attracted many people to the Township originally.

The attempt to address the need or desire for public utilities creates a paradox. The desire to protect the Township's natural features and control growth suggests that public utilities should not be considered within the Township boundaries. However, persistent annexation over the years demonstrates that the only effective means available to the Township to control planning and development within its boundaries is installation of public utilities, thereby preventing the continuing expansion of the City.

Federal funds are no longer available for public utilities, unlike the time when South Lyon installed their waste water treatment system. Future users in the Township will be required to pay the full cost of water mains, sanitary sewers and waste water treatment facilities, primarily through special assessment districts. The feasibility of constructing public utilities depends on continued growth within the utility service boundaries. On one hand, such an approach may end annexation; on the other hand, it would result in more intensive development that the Township wishes to avoid.

High quality commercial, residential, and industrial development is desired in New Hudson, along Grand River Avenue. Such development needs public water for fire protection, drinking and process water, as well as sanitary sewers and waste water treatment. Accordingly, sanitary and storm sewers will be constructed as part of the Grand River Ave. streetscape project to give New Hudson a full complement of utilities.

Wastewater Treatment and Sanitary Sewers - Engineering studies were undertaken in 1997-98, in part because of an attempt to annex a portion of the Grand River industrial corridor to the City of Wixom. The studies resulted in an immediate plan to provide sanitary sewer service to the annexation lands, using a waste water treatment plant constructed about a half mile north of Ten Mile Road in Section 23.

The waste water treatment plant has a permitted capacity of 3,000,000 gallons per day. The actual built capacity currently is 750,000 gallons per day. The plant is processing 300,000 - 350,000 gallons of waste water per day (2010).

In late 1998 a sanitary sewer master plan for the entire Township was prepared by Giffels-Webster Engineers, the Township's Engineer. The sewer plan proposes to initially serve the Grand River Avenue corridor and land adjacent to the City of South Lyon, consistent with the Township's goals to develop its non-residential tax base and to bring a halt to annexations. Long-term, the sewer plan calls for sanitary sewers to be available throughout the Township, depending on the capacity of the waste water treatment plant. The build-out based on current zoning shows that the waste water treatment system will be able to absorb the planned growth.

Public Water System - The existing water system consists of four wells, the main Township well site is the Woodwind well, located in the Woodwind Planned Development, Ten Mile Road, west of Johns Road. The other three wells include the New Hudson well, the Carriage Club well, and the Tanglewood well. All four of the Township wells are connected, however, the system is not yet looped. Two miles of water main on Johns Road still needs to be constructed to loop the system. Water lines extend along the full length of Grand River Avenue, throughout New Hudson, and south on Kent Lake Road. Water lines also extend throughout the Carriage Club development.

In the longer-term, treatment is needed for the water system so that individual users will not need water softeners, which cause elevated sodium levels in the waste water treatment system. Currently, there are not enough customers on the municipal water system to make treatment financially viable.

Library Facilities

The Township operates a library at 27005 Milford Road, north of Eleven Mile Road, near Lake Angela. The library shares a building with the senior center, occupying 3,900 square feet of the building. In 2009, 100,662 items circulated, a 9.5% increase over the previous year. There were 77,923 patron visits and 10,640 computer users.

The library offers programming for both children and adults. Children's programs primarily involve reading programs or story hours. A summer reading program is held for children, generating 570 participants in 2009. For adults, programming includes genealogy groups, discussion groups of all varieties, and film series.

A six-member elected library board directs the library. The members serve four-year terms. The main source of revenue for the library is a millage.

In 2009, the library collection held 50,679 materials, an increase of 5,191 over the previous year. Through a library cooperative, cardholders can request materials from 40 local libraries. In addition, in 2009, the library became a participating library in Mel Cat, a statewide resource sharing catalog with other Michigan libraries, allowing access to millions of items for patrons.

Other developments of note in 2009, include the addition of a second T-1 line to increase band width and improve the speed of the library's internet connection. Also, the library began on-site service to Abbey Park, an assisted living facility in Lyon Township.

In May 2004, the Township engaged the services of George Lawson, Library Planner, to complete a Needs Assessment for the Lyon Township Public Library. The study found that the library should plan in 2025 for a book collection of 108,223 volumes, media collections of 11,438 items, and a periodical collection of 269 titles. The 2025 service population will require 133 seats for general user seating at 30 sq. ft. per seat. About 35 public computer workstations will be needed in 2025.

Altogether, the Needs Assessment projected a Total Gross Space Requirement of 41,330 sq. ft. for 2025. With the current population, the assessment found that the library should have 15,912 sq. ft. of gross space. By 2015, the service population is expected to be 27,126, which translates into a Gross Space Requirement of 29,660 sq. ft.

Aside from the current facility being too small, the existing library site contains wetlands. Wetlands and adjacent development limit the possibility for expansion on the existing site. The Township is currently evaluating sites for a new library building, including a 13-acre site on the west side of Milford Road, north of Twelve Mile Road. The Township has a commitment through a consent judgment for this area on the Mill River development.

Land has also been identified by the Lyon Center Vision Plan in New Hudson that could accommodate a new library. There is merit to locating the library in the downtown – it attracts patrons for businesses and contributes a desirable image for the area.

Post Office

Lyon Township is covered by portions of five different zip codes, and therefore it is serviced by five different post offices: New Hudson, South Lyon, Northville, Wixom, and Milford. Two of these serve the majority of the Township. The New Hudson post office serves the north section of the Township, and the post office located in South Lyon serves the southern section.

The only post office building located within the Township is the New Hudson post office. This building is almost 70 years old, and due to the growth that has been experienced in its service area, it suffers from many inadequacies. Space, parking, technology, and infrastructure are

concerns. The postal service for the area includes four rural routes, 2,424 deliveries, and 419 post office boxes.

Although a regional U.S. Postmaster office concluded that a building expansion or a new building was required in the late 1990's, there appear to be no plans for any expansion or new construction of a post office in the New Hudson area.

Generally the U.S. Postmaster leases space for its post offices, which is the case for the New Hudson post office. With all the new commercial development that occurred and is expected in the New Hudson area over the next 5-15 years, it is hopeful a creative and entrepreneurial developer will see this opportunity to assist the Post Office and incorporate a new post office into their development project

The Lyon Center Vision Plan strongly suggested that the post office should remain in the hamlet of New Hudson. The traffic a post office generates will assist local business.

Cemeteries

There are four municipal cemeteries in the Township. Only the New Hudson Cemetery, located on Milford Road north of Grand River Avenue, has capacity. No more plots are available in the three other cemeteries, which are: Rose Cemetery at Eleven Mile Road west of Stancrest, Kensington Cemetery on Grand River near Kent Lake, and the Township Cemetery at Nine Mile and Chubb Roads. There are no privately-owned or church cemeteries; the Township is the sole provider of cemetery space in the Township.

The New Hudson Cemetery is nearing capacity and all the vacant land surrounding it is privately owned. Therefore, expansion would require purchasing additional land. Alternatively, the Township could establish a fifth cemetery on suitable land owned or acquired by the Township. There are no plans in place to achieve either of these options. Past attempts to establish sites have been unsuccessful. Perhaps the best solution is to expand the Kensington Cemetery. The Michigan Department of Natural Resources, which owns the land adjacent to this cemetery, would not sell or trade land when previously approached. Renewed efforts may yield better results. Additional capacity may be found in South Lyon or Wixom as well.

School Facilities

Education plays a vital role in the development of a community. While the Township has a limited effect on school policies, municipal policies, especially in respect to population growth, can have an enormous impact on the school system. Ideally, the relationship between the Township and School District planning is one of coordination and cooperation. The purpose of this section is to assess school facilities as a factor in setting planning goals. Secondly, the section attempts to identify opportunities where the Township can work with the School District in solving existing and potential education problems.

Most of Lyon Township lies within the South Lyon Community School District. The district has seven elementary schools, two middle schools, and two high schools. Three of the elementary schools - Dolsen, Hardy, and Kent Lake - are located in the Township. The new South Lyon East High School is also located within the Township. In addition, the district's environmental services/transportation facility, which includes the school bus garage and transportation yard, is located in the Township.

High Schools - *South Lyon High School*, which includes grades 9 through 12, was completed in 1990. It is a 315,820 square foot building on a 101.75-acre site on Pontiac Trail, south of Eleven Mile Road. The enrollment for the 2009-10 school year was 1,220 students, and the approximate capacity for the building is 1,670 students.

South Lyon East High School, located at the intersection of Ten Mile Road at Johns Road, opened in 2007. The 314,927-square foot facility is located on 55.4 acres and has a capacity of 1,200 students. The school had 897 students in the 2009-10 school year.

Middle Schools - There are also two middle schools in the South Lyon district, both of which are located in the City of South Lyon.

Centennial Middle School was constructed in 1976. At that time, it served as a junior high school. Then, in 1990, when South Lyon High School was built, the original high school building was converted into a middle school, and Centennial became an elementary school. It served that purpose until 2001. Reopened in the fall of 2002 after extensive renovations, Centennial once again serves grades 6-8 as the district's second middle school. The 109,428-square foot facility, on 15 acres, is located in South Lyon on Nine Mile Road east of Dixboro Road. The 2009-10 enrollment was 807 students and the capacity is 725 students.

Millennium Middle School, the other middle school, is located at Nine Mile Road and Pontiac Trail in South Lyon. Serving grades 6-8, the 2009-10 enrollment was 879. The 188,830-square foot facility has a capacity of 1,150 students. When the structure was built in 1969, it originally served as the district high school. Then, in 1990 when South Lyon High School was built, this structure was converted to the middle school and has remained as such ever since.

When these middle schools near capacity and the school district sees and anticipates growing elementary school populations, the potential for a third middle school to be constructed at Ten Mile Road, east of Chubb Road has been discussed. The district has purchased 35 acres next to Hardy Elementary School and could open a new middle school on that site.

Elementary Schools - South Lyon Community School District currently operates seven elementary schools. Three of these facilities are located within the Township.

Sayre Elementary School, constructed in 1960, is one of the older structures in use. The 41,215-square foot building is located on a 17.6-acre site on Valerie Street, north of Nine Mile Road in the City of South Lyon. The 2009-10 enrollment was 532 students, and the school's capacity is 520 students.

Dolsen Elementary School, located near the center of New Hudson, is the district's oldest school. The original building was constructed in 1922. There have been several additions to the building since, and the renovations have included technological upgrades that have placed teacher and student computers in each classroom, as well as allow for computer presentations by teachers. It is the only school in the district which does not meet the minimum recommended size established by the National Education Association. The NEA recommends a minimum site area of 10 acres for an elementary school. The 2009-10 enrollment of 353 students is less than the building's capacity of approximately 575 students.

Maintaining a public use like an elementary school is an essential element for the traditional town plan developed for New Hudson. The playground at the school provides for vital recreational opportunities for children living in the surrounding neighborhood. Plus, a school makes the area more attractive to developers and buyers.

Bartlett Elementary School is located on School Street in South Lyon, northwest of Lake and Lafayette. Constructed in 1951, the 70,157-square foot building on 28 acres has a capacity of 520 students. Bartlett's 2009-10 enrollment was 392 students.

Salem Elementary School, constructed in 1963, is located in Salem Township. Grades K-5 are housed within the 38,717-square foot building on 10.6 acres. Salem Elementary had an enrollment of 302 in 2009-10.

Brummer Elementary School is a 68,585–square foot K-5 facility that opened in the fall of 2000. It is located in Green Oak Township. The 2009-10 enrollment of 452 was below the school's 610 student capacity. The school was designed around a neighborhood theme, with each of the four different neighborhoods working as a school within a school. This promotes unity and belonging as teachers establish communities within the school.

Kent Lake Elementary School was open for the 2001-02 school year. The 72,113-square foot facility is located on 34 acres in the Township, on Kent Lake Road between Silver Lake Road and Grand River Avenue. The 2009-10 enrollment of 586 students was below its 635-student capacity.

Hardy Elementary School, opened in the fall of 2004, is the seventh elementary school in the system. With a capacity of 610 students, it is located in Lyon Township on Ten Mile Road, east of Chubb Road on a 17.5-acre site. Hardy Elementary is a 72,685-square foot facility, the largest elementary school yet. Hardy Elementary recorded 660 students in the 2009-10 school year.

The recession that brought housing construction to a halt in the latter part of the decade, coupled with a restructuring of the regional economy, brought an awareness that the population of the Township and surrounding communities would not grow at the pace once projected. Consequently, it is likely that capacity in existing schools will be able to accommodate student enrollments in the next 5-10 years. If the need develops, the School District owns property in the Elkow Farms Planned Development for an elementary school, and the Woodwind Planned Development for a middle school.

RECREATION PLAN

Existing Facilities

There are several major parks and recreation facilities close to Lyon Township (i.e., within a 10-mile radius) including four State parks, two Metroparks, and two County parks. Other regional public recreation facilities include the Rock Financial Showplace, Novi Civic Center, Camp Dearborn, and Proud Lake State Recreation Area. Twelve Oaks Mall and the Twelve Mile Crossing are popular shopping and leisure destinations (see Map 16, Map 17, and tables at end of chapter).

Many of the parks and recreation facilities within the Township are concentrated in the northern section (Map 17). The extreme northwest corner of the Township contains a part of the Island Lake State Recreation Area and Kensington Metropark. The premier municipal recreation facility, the James F. Atchison Memorial Park, is located in the north central part of the Township.

As Map 17 illustrates, the western half of the Township is adequately served by public parks and recreation facilities, whereas the eastern half lacks significant public recreation facilities. Lyon Oaks County Park occupies 1,024 acres at the northeast corner of the Township. The park has an 18-hole golf course, picnic shelters and recreation fields.

Residents in the southwest quadrant of the Township are served by the parks in the City of South Lyon, particularly McHattie Park and school playgrounds located within and around the City.

Private golf courses and driving ranges comprise many of the recreation facilities on the east and south sides of the Township, as this area has become a regional center for golf. Other recreational opportunities on the east and south sides of the Township are offered by the various schools. In addition, residents in the southeast part of the Township have access to the ITE Community Sports Park at Napier and Eight Mile Roads in Novi. This park has play structures, soccer fields, baseball fields, as well as tennis and basketball courts. A comprehensive list of recreational opportunities found within the Township is provided in Tables 9-1 and 9-2.

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Map 16 Regional Recreation Resources

Charter Township of Lyon,
Oakland County, Michigan

- **State of Michigan Facilities**
 1. Brighton Recreation Area
 2. Highland Recreation Area
 3. Island Lake State Recreation Area
 4. Proud Lake Recreation Area
 5. Maybury State Park
 6. Pontiac State Recreation Area
- **Huron-Clinton Metroparks**
 7. Huron Meadows Metropark
 8. Kensington Metropark
- **Oakland County Parks**
 9. Lyon Oaks County Park
 10. White Lake Oaks County Park
- **Other Public Facilities**
 11. Rock Financial Show Place
 12. Novi Civic Center
 13. Camp Dearborn
 14. Hickory Glen Park
- **Private Facilities**
 15. Twelve Oaks Mall & Twelve Mile Crossing

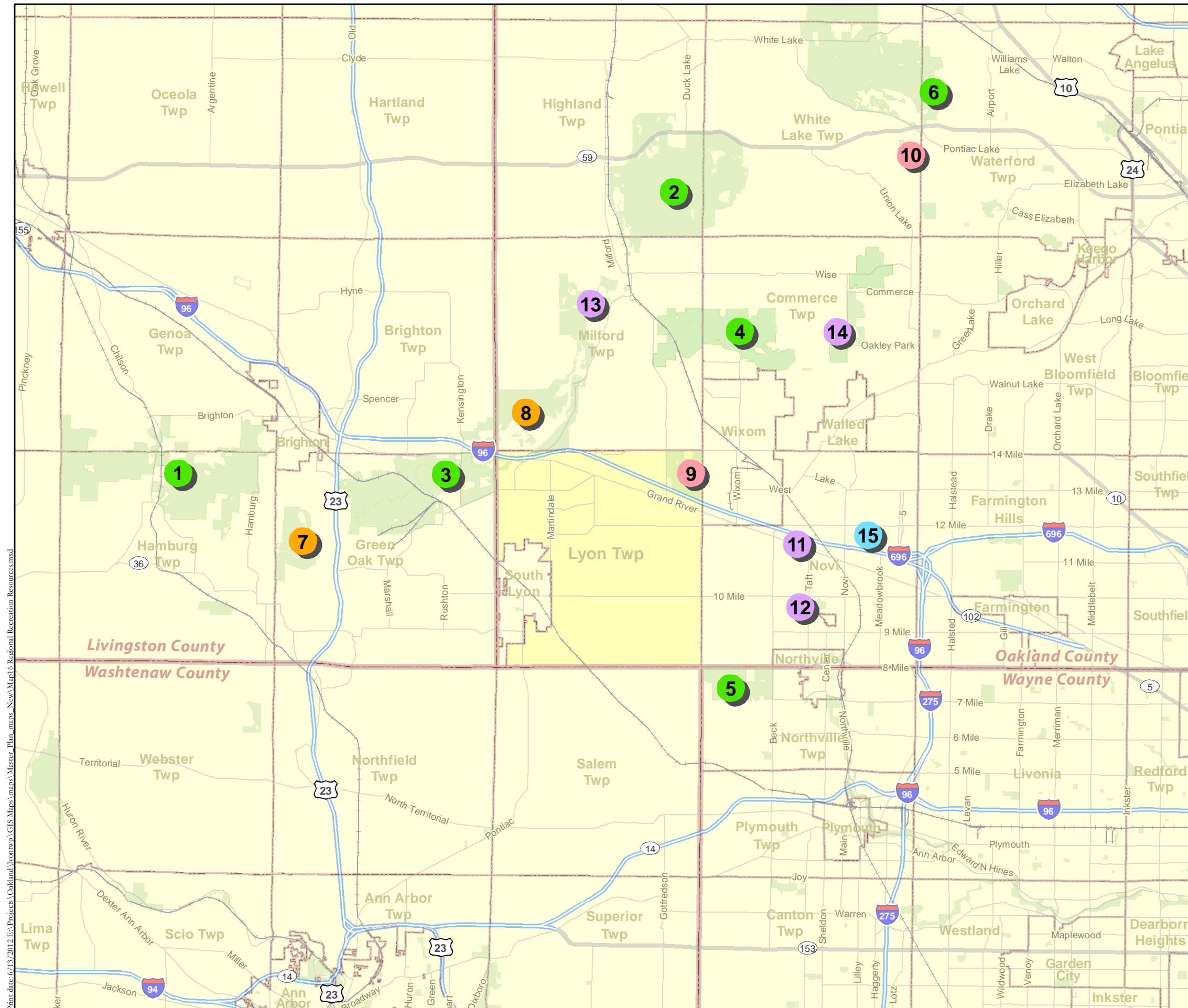
Base Map Source: Data Source: Michigan Geographic Framework, Michigan Center for Geographic Information, Version 8a.

Data Source: McKenna Associates, Inc.

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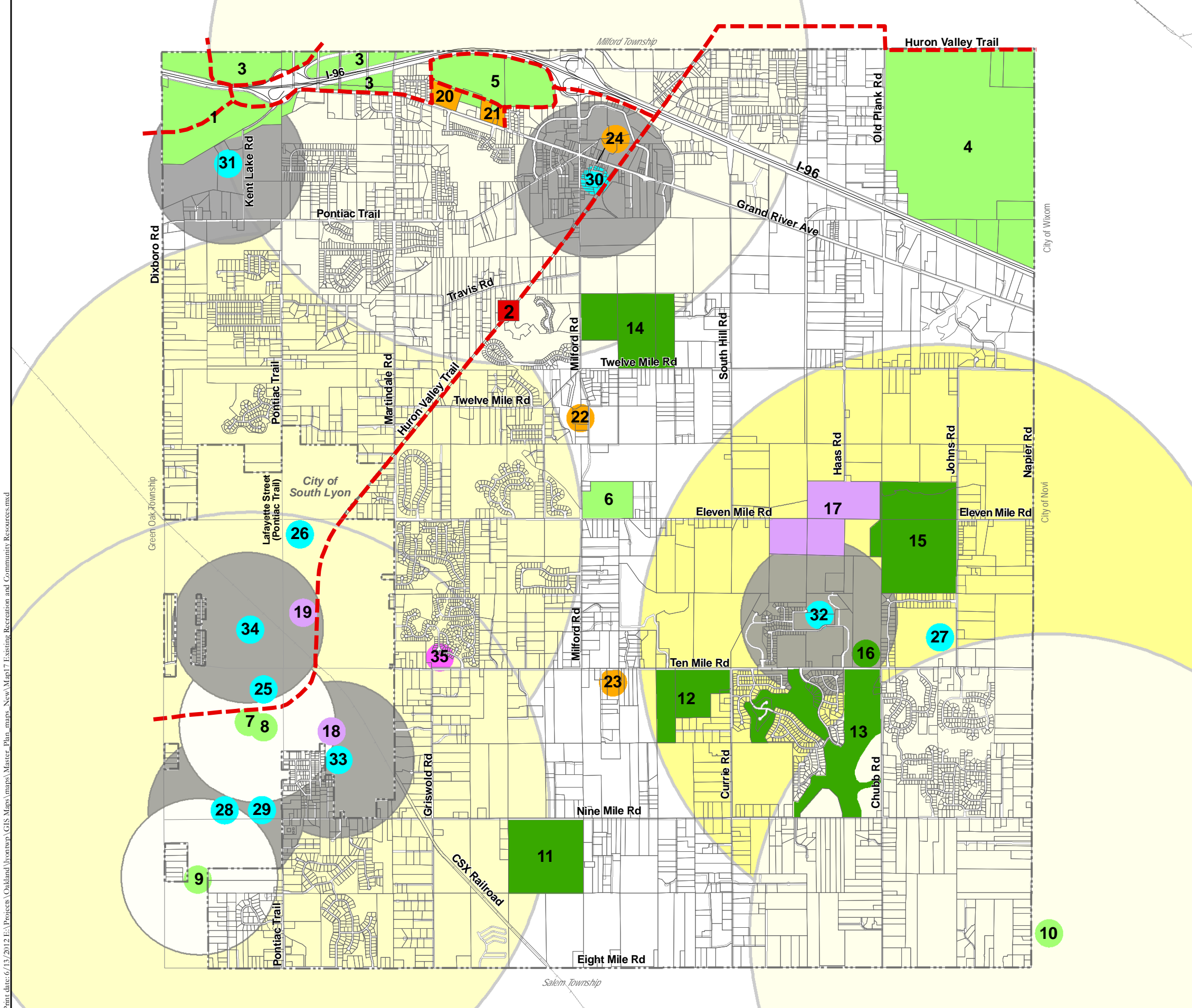
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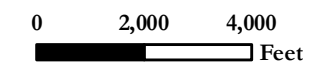
Map 17 Existing Recreation and Community Resources

Charter Township of Lyon,
Oakland County, Michigan



- State of Michigan Facilities
 1. Island Lake State Recreation Area
- Regional Facilities
 2. Huron Valley Trail (Developed by Western Oakland County Trailway Management Council)
- Huron-Clinton Metroparks
 3. Kensington Metropark
- Oakland County Parks
 4. Lyon Oaks County Park and Golf Course
- Lyon Township Parks
 5. James F. Atchison Memorial Park
 6. Future Park Site
- City of South Lyon Parks
 7. McHattie Park
 8. Witch's Hat Depot State Historic Site
 9. Volunteer Park
- City of Novi Parks
 10. ITC Community Sport Park
- Golf Courses and Driving Ranges
 11. Cattails Golf Course
 12. Riverbank Golf Course
 13. Tanglewood Golf Community
 14. Coyote Golf Course
 15. Walnut Creek County Club
 16. Mulligan's Golf Center
- Private Facilities Campground/Recreational Vehicle Parks
 17. Haas Lake Park
 18. South Lyon Woods
 19. Pinz Bowling Facility
- Municipal Facilities
 20. Fire Station No. 1
 21. Township Hall
 22. William K. Smith Community Center and Township Library
 23. Township Fire Station No. 2
 24. Post Office
- South Lyon Community Schools
 25. Schools Administrative Office and South Lyon City Hall
 26. South Lyon High School
 27. South Lyon East High School
 28. Centennial Middle School
 29. Millennium Middle School
 30. Dolsen Elementary School
 31. Kent Lake Elementary School
 32. Hardy Elementary School
 33. Sayre Elementary School
 34. Bartlett Elementary School
- Special Use Facility
 35. Peters Farm

- Huron Valley Trail
- Existing Neighborhood Park Service Area (1/2 Mile Radius)
- Proposed Partial Use Neighborhood Park Service Area (1/2 Mile Radius)
- Partial Use Neighborhood Park Service Area (1/2 Mile Radius)
- Existing Community Park Service Area (2 Mile Radius)
- Proposed Partial Community Park Service Area (2 Mile Radius)
- Partial Use Community Park Service Area (2 Mile Radius)



Base Map Source: Oakland County, GIS, 2006
Data Source: McKenna Associates, Inc.

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The Huron Valley Trail bike and pedestrian path (Lakelands Trail State Park), runs from the South Lyon boundary to the northern boundary of the Township, following the path of the former Grand Trunk Western Railroad. The Huron Valley Trail offers the opportunity to connect the more densely populated area of the Township and the City of South Lyon with recreational facilities to the north.

Evaluation and Analysis

For planning and management purposes, recreation professionals classify park and recreation facilities based on the type of facility and expected usage. Frequently, a six-tier classification system is used, as follows:

I. Mini-Parks

Recreation Standards. Mini-parks are small, specialized parks, usually less than an acre in size, that serve the needs of residents in the surrounding neighborhood. A mini-park may serve a limited population or specific group such as tots or senior citizens.

Characteristics of Lyon Township. There are no public mini-parks in Lyon Township at this time. However, the need for mini-parks is addressed partially by subdivision, condominium, and apartment, common areas, and some elementary school facilities.

Comments/Recommendations. *Specific areas should be designated within community parks and school facilities to address the needs of specialized groups such as tots and seniors. A playground for tots is located in the James F. Atchison Memorial Park. A senior center is currently located at the South Lyon High School, and meeting facilities for seniors are located in the same building as the Township Library.*

II. Neighborhood Parks

Recreation Standards. Neighborhood parks are typically multi-purpose facilities that provide areas for intensive recreational activities, such as field games, court games, crafts, playgrounds, skating, picnicing, etc. Neighborhood parks are generally 15 acres or more in size and serve a population up to 5,000 residents located within a quarter- to half-mile radius from the neighborhood they serve.

Characteristics of Lyon Township. McHattie Park, located in the City of South Lyon, is classified as a neighborhood park. In addition, schools (Dolsen, Sayre, Bartlett, Kent Lake, Brummer, Salem and Hardy Elementary Schools, Millennium and Centennial Middle Schools) provide many recreation opportunities normally found in neighborhood parks.

An opportunity exists to develop a neighborhood park in the center of the Township, on land acquired by the Township upon approval of the Elkow Farms Planned Development. The

parkland is 60 acres in area, but approximately 2/3 of the land is occupied by wooded wetlands. The parkland was conveyed with certain conditions that are described in the following excerpt from the Planned Development Agreement:

“Proposed Park. The Zapf Property and a portion of the Smith Property, consisting of in excess of 60 acres, is proposed to be preserved for future park, open space recreation and/or natural area. Upon the Township’s execution of this Agreement, and as a condition to this Agreement taking affect, developer shall have recorded a conservation easement with respect to the Zapf Property and a portion of the Smith Property in the form attached hereto as Exhibit 6. To the extent an alternative conservation easement in a form mutually agreed upon by Developer, the Township and the Oakland Land Conservancy is worked out, the Developer agrees to substitute said alternative conservation easement for the one attached hereto as Exhibit 6 and to execute and record same as provided for herein. The conservation easement shall provide, among other things, that: the park area shall not be developed or improved for residential or other uses except as set forth in the easement, notwithstanding the residential zoning classification; if requested in the future by the Township Board, the park area shall be dedicated to the Township for use as a public park, recreation area or natural area, or any combination thereof; and that such conservation easement may not be amended, revised or removed without the written consent of the Township Board.

- a. **Farming.** A portion of the Zapf Property is currently being farmed. The current farming operations may continue until the Property is transferred to the Township or land conservancy as provided above and the Township or land conservancy requests that the farming operations be terminated. If the land is still being farmed, Developer shall be given at least six (6) months prior written notice of the request for transfer of the Zapf Property. Hitech shall be responsible for acceptable restoration of the agricultural fields.
- b. **Oil Well.** There is currently one operating oil well on the Zapf Property, which operates pursuant to an oil and gas lease agreement (“Oil Lease”) originally recorded in Liber 8779, Page 369, Oakland County Register of Deeds, as thereafter modified and amended. The operation of the oil well is governed by the Oil Lease and other applicable law. Income from the oil well shall continue to be paid to Ruth Zapf for the remainder of her life or until she assigns or relinquishes that right. Thereafter, the oil well income shall belong to the owner of the Zapf Property, whether that be the Township, a land conservancy or homeowner’s association. This oil well is excluded from the Conservation Easement.”

Table 9-1

REGIONAL PARKS AND RECREATION FACILITIES

	Kensington Metropark	Island Lake State Recreation Area	Huron Valley Trail	Lyon Oaks County Park	Maybury State Park
Acres	4,481	4,000	13 miles	1,041	944
Picnicking	x	x		x	x
Drinking Water	x	x		x	x
Toilets	x	x		x	x
Shelters	x	x		x	x
Play Areas	x	x		x	x
Tot Lot					
Swimming Beach	x	x			
Bathhouse-Food Services	x	x			
Boat Launch	x	x			
Boat or Canoe Rental	x	x			
Boat Launch	x	x			
Excursion Boat	x				
Canoeing	x	x			
Group Rental Facility				x	
Farm Learning Center	x				
Fishing	x	x			x
Golf (Regulation) or Driving Range	x			x	
Bike Trail	x	x	x		x
Hiking or Fitness Trail	x	x		x	x
Scenic Views	x			x	
Nature Trails	x	x		x	
Nature Center	x			x	
Interpretive Program	x			x	
X-Country Skiing	x	x			x
X-Country Ski Rental-Food	x				
Ice Skating	x				
Sledding	x				
Group Camp/Camping	x	x			
Hunting		x		x	
Snowmobiling		x			
Equestrian Trail	x				x
Shooting/Archery Range		x			
Riding Stable					x
Dog Park				x	
Disk Golf	x				
Mountain Biking		x			x

Sources: Michigan Department of Natural Resources, Oakland County Parks, Huron-Clinton Metroparks

Table 9-2

COMMUNITY RECREATION FACILITIES INVENTORY

	Lyon Twp. ¹	South Lyon School District ²											City of S. Lyon ³	City of Novi ¹	Total	
	Lyon Township Community Park	School	South Lyon Community High School	South Lyon East High School	Millennium Middle School	Centennial Middle School	Bartlett Elementary	Hardy Elementary	Kent Lake Elementary	Salem Elem.	Brummer Elem.	Sayre Elem.	Dolsen Elem.	MChattie Park		Volunteer Park
Basketball Courts	1						1	1	1	1	1	1	1		2	10
Tennis Courts		8	8												2	18
Volleyball Courts																0
Ball Fields	4	2	2			2	1	1	1	1	2	1	1		8	26
Softball	0	3	2	2	1									2		10
Multi-purpose field		5	2				1				1					9
Football Fields		1	1	1							1					4
Soccer Fields		1		3	1	3		2	1	1	3	1		2	6	24
Golf Courses - 9 hole																0
- 18 hole	6															6
Driving Range																0
Swimming Pool - Indoor		1	1													2
- Outdoor																0
Handball Courts																0
Ice Rinks - Indoor																0
- Outdoor																0
Archery Range																0
Running Track (1/4 mile)		1	1	1			1		1							5
Playgrounds	1					2	1	1		1	1	1	1			9
Field Hockey																0
Disc Golf																0
Picnic Areas	3												1			4
Cross-Country Ski Trails																0
Nature Trails									1							1
Sledding Hills												1				1
Tot Lots	1						1			1						3
Metal Play Structures	2															2
Swings	12														8	20
Jungle Gyms	1														1	2
Spring Riders	16															16
Bike Paths	1														1	2
Pavilions	3												1			4
Shuffleboard													1			1
Gymnasium		2		2	2	1	1	1	1	1	1	1				13

Sources: ¹Lyon Township Inventory, ²South Lyon Schools, ³City of South Lyon

Comments/Recommendations. *The NRPA recommends 1.0 to 2.0 acres of neighborhood park acreage per 1,000 residents. 2009 Population Estimate for Lyon Township is 13,907 residents. Based on this population estimate, between 12 and 14 acres of neighborhood parks are required. McHattie Park, measuring approximately 15 acres, surpasses this standard alone. However, comparison to national standards can be misleading. The geographic distribution of neighborhood parks (including elementary schools), is uneven with most of them located in the City of South Lyon with the exception of Dolsen Elementary School in New Hudson, Kent Lake Elementary School, and Hardy Elementary School. The northwest and southeast portions of the Township are under-served by neighborhood parks.*

III. Community Parks

Recreation Standards. Community parks typically contain a wide variety of recreation facilities to meet the diverse needs of residents from several neighborhoods. Community parks may include areas suited for intense recreational facilities, such as athletic complexes and swimming pools. These parks usually contain other facilities not commonly found in neighborhood parks such as nature areas, picnic pavilions, lighted ball fields, and concession facilities.

Characteristics of Lyon Township. The James F. Atchison Memorial Park, located atop and adjoining a former landfill overlooking I-96, is an example of a typical community park. It contains major sports facilities, a segment of the Huron Valley Trail, picnic facilities, tot lots and playgrounds, sports fields, and restrooms.

Comments/Recommendations. *The 140-acre James F. Atchison Memorial Park far exceeds the NRPA's standard acreage requirements (69.5) for community parks based on Lyon Township population. Community parks typically serve neighborhoods within a 1 to 2-mile radius. Even if the existing high school and middle school are included in the service boundary evaluation, the northeast and southeast portions of the Township are underserved. The ITC Community Sports Park in Novi, located adjacent to the southeast portion of the Township, does serve this area, as does the South Lyon East High School on Ten Mile. However, the ITC Sports Park does not provide passive recreational activities and access to the school facilities may be limited. Therefore, the southeastern section of the Township may be underserved. In summary, the Township is adequately served based on acreage standards, but there are geographic deficiencies, and some of the community parks lack critical elements that would make them full service parks.*

IV. Regional/Metropolitan Parks

Recreation Standards. Regional parks are typically located on sites with unique natural features which are particularly suited for outdoor recreation, such as viewing and studying nature, wildlife habitats, conservation, swimming, picnicking, hiking, fishing, boating, camping and trail use. Many also include active play areas.

Characteristics of Lyon Township. The Township is served by several regional parks located nearby, including: Island Lake State Recreation Area, Kensington Metropark, and Lyon Oaks County Park.

Comments/Recommendations. *Regional parks typically serve several communities within a one hour drive. There are an abundance of regional park facilities in proximity to residents of Lyon Township.*

V. Linear Parks

Recreation Standards. Linear parks are areas developed for one or more modes of recreational travel, such as hiking, biking, snowmobiling, horseback riding, cross-country skiing, canoeing and/or pleasure driving. Some linear parks include active play areas. Linear parks are often built along utility rights-of-way, abandoned railroad lines, bluff lines, vegetation patterns, and roads. The Huron Valley Trail, for example, was developed on a former GTW railroad right. Linear parks often link other parks or components of the recreation system, community facilities, commercial areas, and other focal points.

Characteristics of Lyon Township. The 13-mile Huron Valley Trail is the backbone of the linear park system in Lyon Township, providing non-motorized access to Island Lake Recreation Area, Kensington Metropark, Lyon Township Community Park, Lyon Oaks County Park, and other points of interest.

Comments/Recommendations. *Although the Township has sufficient acreage allocated to linear parks based on accepted standards, all of the parks are located in the north end of the Township or in South Lyon. The lack of park facilities in other portions of the Township can be addressed partially by improving non-motorized access on existing roads, pursuant to the Complete Streets legislation.*

VI. Private and Special Use Facilities

Recreation Standards. Special use recreation facilities are typically single-purpose recreation facilities, such as golf courses, nature centers, outdoor theaters, interpretative centers, or facilities for the preservation or maintenance of the natural or cultural environment.

Characteristics of Lyon Township. Several special use recreation facilities are located in or near Lyon Township including Witch's Hat Depot State Historic Site, six golf courses, a driving range, and one bowling establishment.

Comments/Recommendations. *Lyon Township is in the early stages of developing a recreation program, focusing primarily on facilities in the James F. Atchison Memorial Park. Recreation programming could be expanded in the future by forming public-private partnerships, such as with the golf courses, thereby providing residents with a greater variety of opportunities.*

As Table 9-3 illustrates, Lyon Township exceeds national park standards for most of the park categories. The proximity of recreation facilities is cited by many residents as one of the most attractive features of the community.

The one category in which the Township does not meet national standards is the provision of mini-parks. Although there are no municipal mini-parks, park and open space areas within residential developments, as well as school playgrounds, provide the same function as mini-parks. Proposed residential developments that do not have ready access to existing parks and recreation facilities should be encouraged to create their own park areas.

Tables 9-3 and 9-4 evaluate how the Township meets the need for specific recreation facilities. In most instances, the Township exceeds the recommended number of facilities for a community of its size.

With such an abundance of recreation facilities, one of the critical challenges for the Township will be the continual maintenance and upgrading of existing facilities.

The difficulties of this challenge can be mitigated by developing an Operations Plan for Parks and Recreation, which should include development goals, a maintenance program and annual budget. It should also contain periodic inventory of recreational equipment with an evaluation of the condition and need for replacement of the equipment.

Although the Township exceeds the recommended area standards for parkland, the distribution of the parks presents a problem of accessibility (see Map 17). It would be desirable to provide pathways for non-motorized travel between parks and residential areas to improve accessibility and to give residents another way to enjoy the Township's natural features.

Goals and Objectives

The following goals and objectives have been developed as a result of thorough analysis of the Township's physical and population characteristics and evaluation of existing recreation facilities, including municipal, school, and privately owned facilities. For the purposes of this analysis, the City of South Lyon and Lyon Township were considered as a single recreation service area, so facilities in the City were also inventoried and evaluated.

**Table 9-3
RECREATION FACILITIES EVALUATION**

Type of Facility	Standard ¹	Total Existing Public Facilities ⁹	Current Need ⁵	Current Surplus/ (Deficiency)	Projected Build-Out Need ⁸	Projected Surplus/ (Deficiency)
Basketball Courts ^{3,6}	1/5,000	10	3	7	4	6
Tennis Courts	1/2,000	15	7	11	10	8
Volleyball Courts	1/5,000	3	3	0	4	(1)
Ball Fields	1/5,000	27	3	24	4	23
Softball	1/5,000	13	3	10	4	9
Football Fields	1/20,000	4	1	3	1	3
Soccer Fields	1/10,000	25	1	24	2	23
Golf Courses ⁴ - 9 hole	1/25,000		1	(1)	1	(1)
-18 hole	1/50,000	6	<1	5	<1	5
Driving Range	1/50,000	1	<1	0	<1	0
Swimming Pool - Indoor	1/20,000	2	1	1	1	1
- Outdoor	1/40,000	0	<1	(1)	1	(1)
Handball Courts	1/20,000	0	1	(1)	1	(1)
Ice Rinks - Indoor	1/50,000	0	<1	(1)	<1	(1)
- Outdoor	1/20,000	0	1	(1)	1	(1)
Archery Range	1/50,000	0	<1	(1)	<1	(1)
Running Track (1/4 mile)	1/20,000	4	1	3	1	1
Playgrounds	1/3,000	9	5	4	7	2
Field Hockey	1/20,000	0	1	(1)	1	(1)
Disc Golf	None Published	0	a	a	a	a
Picnic Areas	None Published	4	a	a	a	a
Cross-County Ski Trails (miles)	1/10,000	a	a	a	a	a
Nature Trails (miles)	1/20,000	a	a	a	a	a
Sledding Hills	1/40,000	1	a	a	a	a

Footnotes: ¹ Number of facilities per population (National Recreation and Park Association).
² Based on 2009 SEMCOG Population estimate (13,907)
³ Two backboards were considered to be equal to 1 court for this analysis.
⁴ Includes public and private courses.
⁵ Rounded to the nearest whole number.
⁶ Not regulation courts - located at elementary schools.
⁷ May be satisfied by regional facility.
⁸ SEMCOG 2035 Forecast: 20,162
⁹ Does not include ITC Community Sports Park Facilities
* Not determined

Table 9-4

PARK ACREAGE EVALUATION

Type of Recreation Facility	Recommended Minimum Acreage per 1,000 Residents ¹	Existing Acreage ²	Acreage Need for Existing Population ³	Projected Acreage Need for 2035 Population ⁴	Surplus (Deficiency) Based on Existing Population	Surplus (Deficiency) Based on Projected Build-Out Population
Mini-Parks ⁶	0.25	0	3.4	5.0	(3.4)	(5.0)
Neighborhood Parks	1.0	15	13.9	20.2	1.1	(5.2) ⁹
Community Parks	5.0	170	69.5	100.8	100.5	69.5
Regional Parks	5.0	9,361 ⁵	69.5	100.8	Not Applicable ⁷	Not Applicable ⁷
Special Use Facilities	Variable	448 ⁸	Not Applicable	Not Applicable	Not Applicable	Not Applicable
Linear Park	Variable	13 miles	Not Applicable	Not Applicable	Not Applicable	Not Applicable

Footnotes:

- 1 Based on National Recreation and Parks Association recommendations.
- 2 Includes all existing public acreage in Lyon Township and City of South Lyon, excluding school acreage.
- 3 Based on SEMCOG Estimate (2009): 13,907.
- 4 SEMCOG 2035 Forecast: 20,162
- 5 Includes acreage for Island Lake State Recreation Area (4,000 acres); Kensington Metropark (4,337 acres); and Lyon Oaks County Park (1,024 acres).
- 6 The need for mini-parks is addressed partially by subdivision common areas, apartment and condominium recreation areas, and school recreation facilities.
- 7 It would be misleading to assess the adequacy of regional park resources based on recommended acreage for Lyon Township's population, since the regional resource must serve a much broader segment of the metropolitan area.
- 8 Includes Witch's Hat Depot State Historic Site (3 acres); Cattails Golf Course (180 acres); Pebble Creek Golf Course (95 acres); Tanglewood Golf Community (150 acres); Walnut Creek Country Club (240 acres); Coyote Golf Course (170 acres); and Mulligan's Driving Range (20 acres).
- 9 Neighborhood park deficiency will be addressed when Elkow Farms park is developed.

Needs were assessed based on the following measures:

- Comparison of existing park acreage with accepted state and national standards.
- Analysis of the geographic distribution of recreation facilities within the Township.
- Comparison of existing facilities with accepted state and national standards.
- The opinions and observations of residents and community leaders, the Planning Commission and Township planners.

Goals should be broad and address general needs and establish the basis for setting specific programmed objectives. Objectives are measurable results that the community works toward accomplishing.

LONG-RANGE GOALS

1. Expand Recreation Opportunities. Increase recreation opportunities, particularly outdoor park facilities, that meet the needs of all segments of the population including persons with disabilities.
2. Address Residents' Preferences. Provide parks and recreation facilities and programs based on the preferences of residents in the community.
3. Maintain Fiscal Responsibility. Develop parks and recreation facilities and programs based on a sound fiscal policy. Consider the use of volunteers, state and federal funding programs, and other funding sources.
4. Natural and Aesthetic Qualities of Parks. Provide parks and recreation facilities that not only satisfy recreation needs, but also complement the topography and natural terrain and contribute to the aesthetic quality of the community.
5. Cooperation with the South Lyon Area Recreation Authority. Promote cooperation with the South Lyon Area Recreation Authority in recreation planning and programming.
6. Cooperation with County and State Park Agencies. Continue cooperation in the planning and programming of County- and State-owned park and recreation facilities.
7. Avoid Duplication of Services. Township parks and recreation planning should avoid duplication of facilities and programs offered by adjacent municipalities and other agencies, except where additional facilities and programs are needed to serve Township residents.
8. Consider Maintenance Needs. Consider the cost of maintenance and operations in designing new recreation facilities. Projections of cost should be compared to future revenue projections for the life of the facility.
9. Upgrade Existing Facilities. Maximize the use of parks and recreation facilities by upgrading existing facilities to make them safer and more accessible.
10. Improve Accessibility. Improve accessibility to parks, recreation facilities and programs by residents of the community.

11. Continue the Planning Process. Maintain the ongoing parks and recreation planning process. The Parks and Recreation Master Plan should be reviewed and updated every five years.
12. Promotion. Promote activities and special events sponsored by Lyon Township and other recreation organizations in the area.
13. Plan for Parkland Acquisition. Engage in a planning process to identify appropriate areas in the Township for future parks. Develop realistic, dependable financing mechanisms ranging from purchase to planned development to partnerships with other agencies.

OBJECTIVES

1. Improve Accessibility to All Parks

Maximum utilization of the parks depends on adequate accessibility. Although the Township has sufficient acreage allocated to parks based on accepted standards, all of the existing parks are located north of Grand River Avenue or in South Lyon. The following improvements are recommended.

- a. A priority should be the continuous development of the trail system. The Huron Valley Trail, in combination with the City's trail system, provides Township residents with access to recreation facilities and other points of interest in several counties. This trail was developed by a consortium of four entities: Lyon Township, South Lyon, Milford Township, and the Huron-Clinton Metropolitan Authority.
- b. Development of a complete bicycle path system should be pursued to provide residents with safe access to Lyon Township Community Park, Lyon Oaks County Park, Kensington Metropark, Island Lake Recreation Area, and schools. This effort should be coordinated with the West Oakland County Road and Bike Path Development Committee to achieve linkages to the regional bike path network. Also, the Road Commission should be encouraged to construct five-foot paved shoulders to accommodate bicyclists in conjunction with all road improvement programs, consistent with the Complete Streets legislation.
- c. All parks and playgrounds should comply with the requirements of the Americans with Disabilities Act (ADA). In addition, all public programs, services and activities should be readily accessible to and usable by people with disabilities. A survey of existing facilities should be conducted to see how accessible they are and then a transition plan should be developed, which lists physical barriers and establishes a time line for removing them.

2. Preserve Rural Open Space

Preservation of rural open space is one of the key goals of the Township identified in the Master Plan. This goal can be accomplished in conjunction with the plan to address parks and recreation deficiencies. The following measures are recommended:

- a. Promote rural open space preservation through residential development review. Amendments to the subdivision regulations have been adopted to accomplish this purpose and to provide for proper maintenance of such open space.
- b. Seek funding for the acquisition of open space. Options include grants, land trusts, and millage-backed land acquisition funds.

3. Develop Partnerships

Partnerships should be explored to maximize funding opportunities and capital resources. The following options should be explored:

- a. Develop a Township-wide recreation program in partnership with the South Lyon Area Recreation Authority.
- b. Recreation programming could be expanded in the future by forming public-private partnerships, such as with the golf courses and planned developments.
- c. Organize a task force consisting of subdivision association leaders to explore ways of improving recreation facilities or common areas within subdivisions.
- d. Explore partnerships with surrounding municipalities to make efficient use of parks and recreation resources.

4. Improve the Operations Plan for the Parks and Recreation Program

A five-year operations plan that was in the previous parks and recreation master plan ought to be updated. The operations program included year-to-year development goals, a maintenance program, and an annual budget. The budget addressed day-to-day operations, capital improvements, and maintenance. New funding mechanisms must be sought to continue free use by township residents.

5. Continue to Develop the James F. Atchison Memorial Park

Development of the Lyon Township Community Park should be viewed as a continuing development project, rather than as a short-term effort that will cease in another 2 to 4 years. Replacement, repair and rejuvenation are required to keep pace with current

design and regulatory standards, and to keep pace with the recreation needs of the community.

Equally important, future planning must look at the park as the center of community activity in Lyon Township. Facilities and activities, such as the kite festival, are needed that establish or reinforce the Township's identity and give residents a sense of pride to be a part of the community. A volunteer program should be established to give residents an opportunity to help plan, develop, and maintain the park; volunteer activities give residents a sense of ownership, which is an important part of park security.

6. Use of the Township-Owned Property at Lake Angela

Land adjacent to the Lyon Township Library and Community Center fronting on Lake Angela should be made available for use by all residents of the Township. A passive neighborhood-type park with recreation facilities for tots could be developed on the site, providing families with a place to picnic and enjoy the view over the water. A park of this nature would enhance the library and community center setting, benefitting patrons and employees.

Many communities have found that intergenerational leisure programs are successful, particularly when they involve young children and the elderly. An opportunity exists to develop such a program at the Lake Angela site because the adjacent apartments house many retired residents.

7. Use of Lakes on the East Side of Township

For decades, the Township has supported businesses that mined gravel on the east side of the Township. Farmlands have been replaced by lakes, which have been reclaimed. As the gravel mining ceases, the opportunity exists to make use of at least a portion of the land for a lakefront community park to serve the existing and future residents on the east side of the Township. This goal should be placed on the table in future negotiations with the gravel mining company regarding their special use permit.

8. Develop the Elkow Farms Park Site

Community support should be solicited for development of the active use portion of the Elkow Farms Park Site. Although plans have not been prepared, the active use portion could accommodate ball fields, a playground, and picnic facilities.

FUTURE LAND USE

Introduction

The Future Land Use Map (Map 18), which is presented in this chapter, is the culmination of the comprehensive planning process. This map is based on consideration of the analyses, goals, policies and strategies set forth in the plan.

The Introduction laid the foundation for the plan, emphasizing *Quality of residential life* as a primary goal. Public meetings and hearings reveal that residents equate a high quality living environment with preservation of natural features and rural characteristics. Responding to residents' opinions, the plan set forth preservation of natural features as a prevailing objective in all future development.

The plan addresses the issue of natural features preservation, setting forth a vision of continued development of a variety of land uses, including commercial, office, industrial, open space, and recreational uses in locations that will enhance the quality of the residential environment.

Even though development will alter the natural features of a site, through careful design practices significant features can be preserved. Development can be achieved that reflects the community's appreciation of the natural environment.

Existing Patterns of Development

The Existing Land Use chapter noted that the basic patterns of development have been influenced by the predominance of agriculture, major roads and railroads, proximity to the Detroit metropolitan area, soils limitations, and natural features and resources.

For most of its history, agriculture was the predominant land use in the Township. New Hudson and South Lyon existed primarily to serve the surrounding agricultural community. New Hudson was settled at the crossroads of Pontiac Trail, a state territorial road, and Grand River Avenue, the primary east-west route that connected Detroit and Lansing. New Hudson became a rail stop on the Pere Marquette line from Detroit to Grand Rapids, further elevating its importance in the late 1800's and early 1900's.

South Lyon developed around the junction of Pontiac Trail and two rail lines. It was a rail stop for the Pere Marquette, Grand Trunk Western, and Chesapeake & Ohio railroads, making it a center of commerce in southwest Oakland County.

Construction of I-96 provided access to relatively low cost land as the westward push of development in the metropolitan area reached the Township's door step. Lyon Township became the new frontier for people seeking a rural-like environment, and for industries looking for land with nearby freeway access.

Growth has been sustained for the past three decades. Where it has occurred within the Township has depended chiefly on the availability of sanitary sewer service, and where sewer service is not available, the capability of soils to support septic systems. Historically, most of the Township's residential subdivisions located in the northwest quadrant because of reasonably well-drained land and soils that perc. More recently, the availability of sanitary sewer service has made residential development feasible in other locations, such as along Ten Mile and Milford Roads, in the center of the Township. Along Grand River Avenue, the pace of industrial growth has accelerated in recent years as a result of the extension of sanitary sewers.

Future Land Use Concept

The 2010 Future Land Use Map expands on the pattern that has been created incrementally over a period of several decades. Intensive development is concentrated in two locations, between Grand River Avenue and I-96 in the north and around South Lyon in the southwest. Most commercial development is planned in two compact districts, in New Hudson and on Pontiac Trail south of South Lyon. A smaller, neighborhood oriented commercial facility is located at Ten Mile and Milford Road, and one is planned at Ten Mile at Johns Road. The Township's prime industrial district is located along Grand River Avenue, extending from New Hudson to Napier Road.

The remainder of the Township is dedicated to residential development, with single family residential being the predominant land use. Six residential classifications of varying density are illustrated on the Future Land Use Map.

Almost all vacant residential land is planned at a density of no greater than one unit per acre. This density is consistent with the density limitations imposed by County health officials for land not served by sanitary sewers. It is also consistent with the density of most recent residential development and with the residents' opinions about preserving open space and rural character.

Table 10-1

Acreeage and Percent by Land Use Category		
Future Land Use Categories	Acreeage	Percent
The Hamlet	19.3	0.1%
Rural Residential	10,554.1	51.6%
Single Family	2,571.0	12.6%
Low Density Multiple Family	52.7	0.3%
Moderate Density Multiple Family	72.4	0.4%
High Density Residential	92.1	0.5%
Mobile Home Park	148.4	0.7%
Retail/ Service/ Office	251.5	1.2%
Highway Commercial	102.8	0.5%
Light Industrial/ Research/ Office	1418.7	6.9%
Research/ Office	156.7	0.8%
Office	36.5	0.2%
Mixed Use	76.8	0.4%
General Industrial	42.6	0.2%
Airport	63.3	0.3%
Public Land and Quasi-Public	1,605.8	7.9%
Open Space	38.4	0.2%
Commercial Recreation	863.3	4.2%
Lakes	1,087.8	5.3%
Gateway Corridor	31.8	0.2%
Right-of-Way	1,152.1	5.6%
TOTAL	20,624.4	100.0%

Source: McKenna Associates, Inc., October 2012

Rural Open Space Zoning

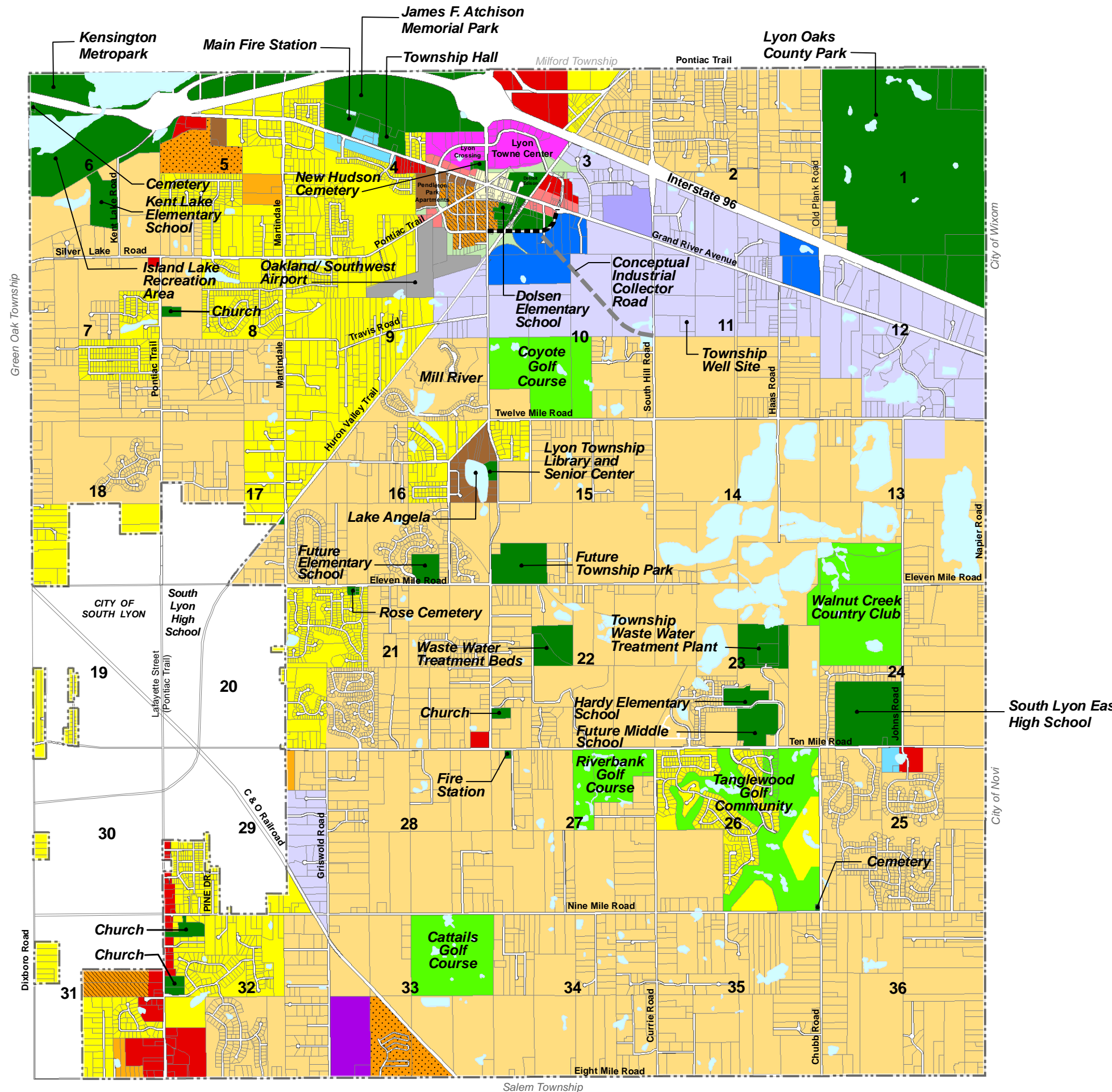
Lyon Township has been at the forefront among “semi-rural” communities that have sought improved residential design to preserve open space and rural character and achieve more appealing subdivision and condominium developments. The Township has encouraged developers to incorporate rural open space zoning concepts as an alternative to conventional zoning. Rural open space zoning provides for grouping of new homes onto part of the parcel so that the remainder can be preserved as open space.

Implementation of rural open space zoning typically begins with identification of significant natural and rural features, such as woodlands, meadows, scenic vistas, farmlands, and wetlands. After these features are identified, the development is designed to preserve the natural features in perpetuity. If properly implemented, rural open space zoning provides for preservation of a maximum amount of open space, with residential development concentrated on a smaller portion of the land area than usual.

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Map 18 Future Land Use

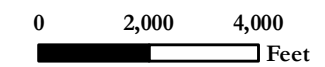
Charter Township of Lyon, Oakland County, Michigan



FUTURE LAND USE

- THE HAMLET
- RURAL RESIDENTIAL (1 acre lots)
- SINGLE FAMILY (up to 1/2 acre lots)
- LOW DENSITY MULTIPLE FAMILY (approx. 4 two-bedroom units per acre)
- MODERATE DENSITY MULTIPLE FAMILY (approx. 8 two-bedroom units per acre)
- HIGH DENSITY RESIDENTIAL
- MOBILE HOME PARK
- RETAIL/ SERVICE/ OFFICE
- GATEWAY CORRIDOR
- HIGHWAY COMMERCIAL
- LIGHT INDUSTRIAL/ RESEARCH/ OFFICE
- RESEARCH/ OFFICE
- OFFICE
- MIXED USE
- GENERAL INDUSTRIAL
- AIRPORT
- PUBLIC AND QUASI-PUBLIC LAND
- OPEN SPACE
- COMMERCIAL RECREATION
- CONCEPTUAL RING ROAD LOCATION

Base Map Source: Oakland County, GIS Utility, 2003
 Data Source: McKenna Associates, Inc., 5/01
 Last Revised by Planning Commission: 3/23/06



McKenna
ASSOCIATES



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The four chief benefits of rural open space zoning are:

- Rural open space zoning enables units to be concentrated on the most buildable portion of the site, preserving natural drainage systems, open space, farmlands, rural character, and environmentally sensitive areas.
- Development is more economical since only the portion of the site being developed needs to be cleared, and streets and utility lines are shorter.
- Public maintenance costs are reduced because infrastructure is more compact.
- Grouping the dwelling units reduces impervious surfaces, thereby promoting aquifer recharge.

Rural open space zoning is not intended to be a means of increasing the density of development.

New Hudson Master Plan

Recognizing New Hudson's potential as a vibrant mixed use district, the Downtown Development Authority completed a special master planning process for the district in late 2009. The heart of the planning process was a two-day charrette, which included visioning exercises, preference surveys, and live-time drawings by graphic artists and architects to capture the vision of participants. A Development Vision Map was prepared, which is like a Future Land Use Map, showing various planned land uses for the New Hudson district. The findings from this planning process are set forth in the "Lyon Center Vision Plan," which is discussed in more detail in the next chapter.

Future Land Use Summary

Upon implementation of the Future Land Use Map, approximately 66 percent of the land in the Township will be used for residential uses. Single family uses are planned to occupy 64.2 percent of the total land area. Public and semi-public uses, which includes parks, municipal sites, schools and churches, will occupy 7.9 percent of the land. Commercial, office, research/office, and industrial uses, will occupy about 9.8 percent of the total land area. Golf courses are a special type of commercial use that occupy 4.2 percent of the land area on the Future Land Use Map. New uses not identified on the previous Future Land Use Map are the Hamlet (0.09) and Mixed Use (0.4%) categories.

Thus, the Future Land Use map establishes the framework for a predominantly single family residential community within a rural setting, but the plan provides for expansion of non-residential uses to satisfy projected community and economic development needs. A more detailed review of each land use category follows.

Residential Land Use

Upon implementation of the Future Land Use Map, single family uses will occupy about 13,217 acres and multiple family and mobile home park uses will occupy about 273.5 acres.

Six residential classifications of varying density are illustrated on the Future Land Use Map. (The densities shown on the map apply to the developable portions of parcel, not the overall density). The principal residential classification is Rural Residential, which calls for a maximum density of one dwelling unit per acre (du/ac), consistent with the density of most recent development, the policies of the Township concerning preservation of open space and rural areas, and County health standards for areas served by septic systems. Agriculture is a permitted use in the Rural Residential areas.

Higher density residential areas are planned to meet the needs of all market segments that can be reasonably accommodated in the Township. The highest density single family designation calls for development at a density of two du/ac is planned in the northwest quadrant in proximity to existing subdivisions that were developed at a comparable density, and around the City of South Lyon. The Single Family designation around the City of South Lyon provides for a transition in density and minimizes the possibility of conflict between adjoining land uses. Higher density single family development, up to three du/ac, would be suitable in the New Hudson area. A resident population is essential for creating a walkable environment.

The multiple family classification includes all types of housing where more than one dwelling unit is contained within a single building. Garden apartments are typically two or two and one-half stories in height, with 10 or more units in a single building. Garden apartments are typically built at a density of at least 10 units per acre. Townhouses typically are distinct units that are attached to each other with common walls; each unit typically has its own entrance, outdoor space, and garage. Townhouses are typically built at a density of less than 10 units per acre. Most types of housing for the elderly would be considered multiple family.

Multiple family locations on the Future Land Use Map are generally on or near arterial roads that can handle the traffic generated by high density housing, near other multiple family housing so as to achieve compatibility between adjoining uses, near commercial and public services needed by residents (recognizing that a greater proportion of the residents in multiple family housing typically have mobility constraints), and closer to utility systems that such developments may need.

Multiple family residential classifications are generally reserved for areas where some multiple family development has already occurred, in the northwest corner of the Township (south side of Grand River Avenue, east of Kent Lake Road), east of South Lyon (south side of Ten Mile Road, west of Griswold Road), and around Lake Angela. The map identifies three additional locations for multiple family development, in New Hudson and in the southwest corner of the Township (north side of Eight Mile Road, west of Pontiac Trail).

Two areas occupied by existing mobile home parks are designated Mobile Home Park on the Future Land Use Map, on the north side of Eight Mile Road east of Griswold Road, and on the south side of Grand River Avenue, east of Kent Lake Road. As a result of the recent construction of an 800-unit mobile home park on the south side of Eight Mile Road in Salem Township it will be several years before a demonstrated need exists for additional mobile home park development in the area.

If the need for additional mobile home park acreage eventually becomes apparent, the following criteria should be used to identify appropriate mobile home park locations:

- Mobile home parks should have direct access to and should front on paved arterial or collector roads.
- Mobile home parks should have access to a public sanitary sewer system and wastewater treatment system with adequate capacity.
- Mobile home parks should be located within approximately two miles of the businesses and services in South Lyon or New Hudson.
- Mobile homes should be screened from adjacent conventional single family development. This screening may consist of landscaping or a natural wooded buffer.

Commercial Land Use

The Future Land Use map designates 390.8 acres, about 1.9 percent of the total land area, for Retail/Service/Office or Highway Commercial use. Most commercial development is planned in two compact districts, in New Hudson and on Pontiac Trail south of South Lyon. In essence, the plan is calling for expansion of these existing commercial districts, while controlling haphazard strip development. Within the two districts, the amount of land designated for commercial development addresses the projected needs of the Township population (see Retail and Office Analysis). The commercial boundaries designated on the Future Land Use Map are reasonable based on sound land use planning criteria, taking into consideration the relationship to surrounding uses, traffic patterns, and similar issues.

A commercial center has been developed on the northwest corner of Milford Road and Ten Mile Road, and the plan provides for additional commercial on Ten Mile, opposite the intersection with Johns Road. If a need can be demonstrated, expansion of these commercial areas would be reasonable, provided that impacts on nearby residential areas are mitigated. These commercial areas are intended to accommodate neighborhood commercial centers to serve residents in the center of the Township. An objective of the Plan is to confine commercial uses to these centers, rather than allow strip development along Ten Mile Road.

The Future Land Use Map designates approximately 156.7 acres (0.8 percent of the total) as Research/Office. This designation is intended to accommodate a broad spectrum of office-type uses, including technical staff for manufacturers, product development and testing facilities, administrative offices for corporations, training facilities, and similar uses. A small portion of the areas designated Research/Office could accommodate doctors, dentists, attorneys, insurance agents, real estate sales, and other professionals and firms that provide services directly to the residents.

Research/Office development would be appropriate on the north side of Grand River Avenue, west of Old Plank Road (in the vicinity of the Blue Cross-Blue Shield facility). In addition, the Future Land Use Map designates the westerly portion of the Walbridge property, on the south side of Grand River Avenue, east of Milford Road, as Research/Office.

The Future Land Use Map has a special designation, Commercial Recreation, for privately-owned golf courses in the Township. There are six courses, Walnut Creek (members only), Lyon Oaks (County owned), Riverbank, Tanglewood, Cattails, and Coyote, covering 863.3 acres (4.2 percent of the total). The Tanglewood Golf Course is part of a residential planned development of the same name. Lyon Oaks is also within a planned development. If the golf course function at Tanglewood or Lyon Oaks should ever cease for any reason, the land shall remain as open space in accordance with the recorded deed restrictions and planned development agreements. The other four courses have no such restrictions and are not part of any associated residential development. If golf or other commercial recreation use is no longer a viable land use for these privately-owned sites, the future land use would be Rural Residential single family residential, developed conventionally or as a planned development based on the underlying zoning designation for the site. Open space and cluster designs are strongly encouraged. Integrating residential uses within the golf course function is also encouraged if at all feasible.

Industrial Land Use

Lyon Township's prime industrial land is located along Grand River Avenue, between New Hudson and the Township's east boundary. This corridor has many attributes sought by modern industry: good freeway access, visibility from the freeway, separation from dense residential development, adequate energy-related utilities, access to public water and sanitary sewer utilities, and abundant vacant land. The Grand River corridor also is recognized in the region as a prime industrial corridor, in part because of industrial development in Novi and Wixom. Lyon Township's industrial corridor can be viewed as a logical extension of the neighboring industrial districts.

Consistent with findings and recommendations in the Industrial Analysis, the Future Land Use Map proposes 1,461.3 acres of industrial land (7.1 percent of the total), of which 1,418.7 acres are designated Light Industrial/Research/Office. Most of the industrial land is proposed along the Grand River corridor.

The Industrial Analysis presented earlier in this plan identified concerns about the type of industrial development that would be considered appropriate in the Township. The analysis identified concerns about the impacts of some types of Aheavy@ industrial uses. Emphasis is placed on seeking clean Alight@ industrial uses, including research/testing, prototype development, and similar quasi-industrial uses, even in areas that are zoned for general industrial use.

The Future Land Use Map proposes construction of a new industrial collector road to serve the Grand River industrial district. This road is planned to extend from South Hill Road, approximately one half mile south of Grand River Avenue, northwest to a point of intersection with the New Hudson ring road.

A small industrial district exists along Griswold Road, generally between Nine and Ten Mile Roads. Some existing development in this district generates negative off-site impacts because it is unsightly, it is sometimes noisy, and it generates a lot of truck traffic. There is some concern that certain uses have caused environmental degradation, particularly soil and groundwater pollution. Certain industrial uses are not compatible with the surrounding residential development. Consequently, the boundaries of the Griswold Road industrial district do not extend farther than the limits of existing industrial operations on the Future Land Use Map. A long term goal is to seek a transition to more compatible Alight@ industrial uses in the Griswold Road industrial district.

Public Uses

Public uses include the Township municipal center, fire stations, Township-owned cemeteries, parks, schools, the Township library, and the New Hudson post office. Public uses occupy 1,605.8 acres, or about 7.9 percent of the land.

The need for additional public lands is addressed in detail in the **Community Facilities and Recreation** chapters of this plan. Within the next 10 years library expansion must be addressed. The recommended library size for a community the size of Lyon Township is almost 20,000 square feet. Regardless of the standards, it is clear that expansion will be needed to accommodate the increased demand for information and technological services.

Expansion or replacement of the New Hudson post office is a short-term need, perhaps within the next 5 years. It is of utmost importance that Lyon Township make every effort to retain the post office in New Hudson. It is a vital component in the Lyon Center Vision Plan.

Sufficient land for new schools has been acquired to satisfy needs within the next 10 to 20 years. Land has been set aside for a new middle school adjacent to Hardy Elementary School on the north side of Ten Mile Road in the Woodwind Planned Development. South Lyon East High School was recently built on a 40-acre site located at the northwest corner of the Johns Road/Ten Mile Road intersection. Land has been acquired for a new elementary school in the Elkow Farms Planned Development, at the northwest corner of the Eleven Mile Road/Spaulding Road intersection.

The **Recreation** chapter of this plan emphasized continued development of the main Community Park and use of Township-owned property at Lake Angela, but it also identifies opportunities to acquire lakefront park land at a reclaimed gravel mine on the east side of the Township and to acquire rural open space in an effort to preserve the Township's rural character.

Two additional recreation opportunities exist in areas shown as Public on the Future Land Use Map:

1. On land acquired at the corner of 11 Mile and Milford Roads, as part of the Elkow Farms Planned Development. As noted in the Recreation Chapter, this would be an ideal location for a neighborhood park.
2. On a small triangular parcel of land located at the intersection of Milford Road with the Huron Valley Trail. This parcel, which measures under an acre, could be developed into a trailside park.

Transportation

Transportation corridors, including roads, highways and railroads, occupy 1,152.1 acres, or 5.6 percent of the total land area. The New Hudson Airport occupies another 78 acres. The **Transportation Analysis** describes needed transportation improvements in detail. Specific road improvements outlined in the **Transportation Analysis** include:

- Continually seek improvements to the roads that are the backbone of the Township's road network: Pontiac Trail, Milford Road, Grand River Avenue, and Ten Mile Road.
- Upgrade the Kent Lake Road/Grand River Avenue/I-96 intersection.
- Upgrade high accident intersections as noted in the Transportation chapter.
- Complete the ring road around New Hudson, consistent with the New Hudson master plan.
- Improve the gravel road maintenance program.
- Pave key road segments, such as Martindale Road, between Grand River Avenue and Pontiac Trail; Old Plank Road, between Grand River and Pontiac Trail; and, Napier Road, from Nine Mile Road to Twelve Mile Road.

Additional Land Use Categories

Four additional land use categories are shown on the Future Land Use Map:

1. The **Hamlet** is located at the center of New Hudson, encompassing the intersection of Grand River Avenue/Milford Road/Pontiac Trail and the non-residential district to the east of the intersection. Although small in size at approximately 20 acres, the development of the Hamlet is vitally important for the image of the Township. As described in detail in the next chapter, the intent of the Hamlet is to encourage mixed use compact development on individual lots, following the historical pattern of development for New Hudson.
2. The **Mixed Use** category encompasses 76.8 acres (0.4% of total) of land at the northeast corner of Griswold and Eight Mile Roads. The Mixed Use classification is consistent with the preliminary Planned Development approval that has been granted on this property. It is intended the Mixed Use designation accommodate either a variety of densities or a mixture of residential and commercial.
3. **Open Space** is located in New Hudson, between the parcels on Grand River Avenue and the parcels on which Lowe's and Walmart are located. The objective of providing open space in this location is to provide an alternate pedestrian connection through New Hudson, thereby achieving the walkability of the Hamlet.
4. **Lakes** occupy 1,087.8 acres (5.3% of total), consisting primarily of lakes on the east side of the Township that were created as a result of sand and gravel excavation. Lake Angela, a naturally-formed lake in the center of the Township is also included in this category.

THE PLAN FOR NEW HUDSON

People's first impression of a community is often their most lasting one. For many, their first impression of Lyon Township is New Hudson, consisting of two components, the regional commercial component in Lyon Towne Center and Lyon Crossing, and the local mixed use component along Grand River Avenue.

In 2009, a major planning effort was completed for New Hudson, resulting in the publication of the Lyon Center Vision Plan. The Vision Plan and charrette process enjoyed widespread participation and support from Township leaders and citizens, and resulted in a land use plan that calls for creation of a compact, walkable downtown, with a hamlet at its center, and high density residential adjacent to the hamlet to the south. The hamlet, consisting of individual buildings on individual lots, mimics the way New Hudson historically developed and provides a way to seamlessly integrate new and old structures.

The Lyon Center Vision Plan is discussed in detail later in this chapter. A goal of this chapter of the Master Plan is to incorporate the findings and recommendation of the Vision Plan into the Master Plan. The chapter begins by providing a historical perspective and discussion of assets and deficiencies.

History and Existing Conditions

The New Hudson area was settled in about 1831, when Russell Alvord and Daniel Richards platted the village on a 40-acre tract of land obtained from the government during President Andrew Jackson's administration. The village prospered because of its location at the crossroads of Pontiac Trail, a state territorial road that was constructed in the 1830s, and Grand River Avenue, a stagecoach trail that was identified on the 1872 plat map as the Detroit-Howell Plank Road. When the Pere Marquette rail line from Detroit to Grand Rapids was constructed in 1871 New Hudson became a rail stop.

One of the first structures to be built was a tavern constructed in about 1831 out of hand-cut lumber to serve residents and travelers. Known as the New Hudson Inn, the structure is believed to be the oldest continually operated commercial structure in Oakland County. The inn served as a recruiting center during the Civil War, and its ballroom served as a popular gathering place for residents.

Other remaining structures dating from the early years of settlement include:

- The Norman Spencer house, which was built in the mid-1880s, and which is now occupied by a catering business.
- The Methodist Episcopal Church of New Hudson, a wood-sided Gothic style church building, which was built in 1884, and is now used as a consignment shop.
- The tollgate keepers house, which was built in the 1850s when the Detroit and Howell Turnpike Company was organized and the Detroit-Howell Plank Road was constructed through the Township. Offices now occupy the two-story structure.

Through the 1950s New Hudson served three primary purposes: service center for the surrounding agricultural community, a convenient rest stop for travelers, and a business center for residents. The construction of I-96 in the early 1950s had a major impact on the Grand River corridor and New Hudson, replacing it as the main link between Lansing and Detroit, while simultaneously making the Township more easily accessible and attractive to developers. By removing traffic from Grand River Avenue, however, I-96 reduced the market for New Hudson businesses, contributing to its decline. Abandonment of the rail line and loss of the rail stop may also have contributed to the decline of New Hudson.

The construction of I-96 accelerated a transition that is still in progress in Lyon Township. Agricultural uses are being replaced by residential development. Responding to the growth in population, Lyon Towne Center was built. Businesses in New Hudson continue to adapt to the needs and desires of residents, as well as the current methods of doing business.

Assets and Deficiencies

New Hudson has several features that make it an appropriate location for development as a major Township activity center. Foremost among New Hudson's assets is its location near I-96, at a major crossroads in the Township, near the Township's growing industrial sector, near the James F. Atchison Community Park and the Huron Valley Trail, and at the main entrance to the Township. Geographically, New Hudson is the most prominent location in the Township.

As a center of retail activity, New Hudson benefits from several features, including:

- Proximity to I-96 and location on Grand River Avenue. Both routes bring traffic by and/or into New Hudson.
- Continued residential development in Lyon and Milford Townships, which increases the size of the market.
- Construction of Lyon Towne Center, which draws substantial amounts of traffic into the area.
- Proximity of the Township Hall and Post Office.

- The presence of a few historic buildings, which can form the base for new development in the older part of New Hudson.
- A compact development pattern, which is conducive for development of a village center.

New Hudson's assets are balanced out by its deficiencies, foremost of which is poor maintenance of many buildings and sites. Certain buildings that should be landmarks because of their age and history are instead eyesores because of inappropriate façade improvements, inappropriate signage, unpaved parking, and lack of or poorly maintained landscaping.

Unightly conditions are not confined to private property. Along Grand River, the road surface and shoulder are deteriorated, there is inadequate drainage, substantial grade differences between adjoining sites, and an incomplete sidewalk system.

Although a compact development pattern is an asset in one sense, it is a liability from another perspective: commercial building sites are too small to accommodate required parking and loading operations of modern business. Furthermore, there is a lack of space on each parcel for storm water detention.

Uncoordinated development is also a problem, stemming from the era when development occurred without zoning. As a consequence, incompatible residential and intensive commercial uses are located side by side and there has been no attempt to cluster similar uses to achieve a synergistic effect.

Solutions to these deficiencies are presented in the Lyon Center Vision Plan, a master plan for New Hudson that was completed in 2009. This Plan will be discussed further later in this chapter.

The stage was set for substantial change to the New Hudson profile on May 23, 2002, when the Township Board approved the Lyon Crossing and Lyon Towne Center Planned Developments. Lyon Crossing, located on the west side of Milford Road, north of Grand River Avenue, contains 48.8 acres, with a potential for approximately 160,000 sq. ft. of commercial development. Lyon Towne Center, located on the east side of Milford Road, south of I-96, contains 78.3 acres, with a potential for 560,000 sq. ft. of commercial development.

Lyon Towne Center breathed new life into the retail sector of New Hudson. It raised the bar in terms of quality building design, landscaping, and maintenance. Together with Lyon Crossing, the Towne Center made it feasible to extend the ring road (Lyon Center Drive) across the north part of New Hudson. Lyon Towne Center brought needed goods and services to residents of the Township.

The development of Lyon Towne Center had consequences. Businesses along Grand River Avenue found themselves outside the main business district, while facing intense competition. The older part of New Hudson finds itself in a struggle to maintain a viable small town character, with a regional marketplace at its doorstep.

One of the goals of the Lyon Center Vision Plan is to integrate the regional marketplace with the local New Hudson marketplace in a manner that they both thrive.

Land Use Planning Considerations

Village (Hamlet) Character. The policies related to planning innovation, commercial revitalization, and preservation of historic resources focus attention on the opportunity for a more traditional development pattern in New Hudson. This concept is best described by Peter Calthorpe in *The Next American Metropolis* (1993):

“The alternative to sprawl is simple and timely: neighborhoods of housing, parks, and schools placed within walking distance of shops, civic services, jobs, and transit – a model version of the traditional town. The convenience of the car and the opportunity to walk or use transit can be blended in an environment with local access for all the daily needs of a diverse community.”

Perhaps the most important aspect of a traditional village development is that it is a walkable environment. Research has shown that a comfortable walking distance – the ideal radius for a village environment – is a quarter of a mile to 2,000 feet, or a 5 to 10-minute walking distance. Coincidentally, most development within the ring road in New Hudson will be no farther than approximately 2,000 feet from the crossroads of Grand River Avenue and Milford Road.

Traditional Design Principles. Implementation of the traditional village concept requires adherence to certain design principles to achieve diverse concentrated development without sacrificing land use compatibility. Key design principles include:

- Commercial areas should be configured to allow standard parking quantities, access, and visibility for the car, but must include convenient sidewalks for pedestrians.
- Ideally, off-street parking should be located in the rear of the building. On-street parking should be encouraged on all streets. On-street parking helps to “civilize” the street for pedestrians by creating a buffer between moving cars and the sidewalk
- Building setbacks from the street should be minimized. Minimal setbacks bring buildings closer to the street, and enlivens commercial areas by encouraging window shopping and street activity.
- Building facades should be varied to provide visual interest to pedestrians. Building designs should provide as much visual stimulus as possible, without creating chaos.
- The ground floor entrance to commercial buildings should be oriented to the street. The pedestrian life of a building is at its entrance. If the primary entrance is oriented to the parking lot, it steals the activity and life away from the street and distracts from the pedestrian environment.

- Public parks and plazas are fundamental features of livable, higher-density, traditional communities.
- Parks and plaza should reinforce retail areas by providing places suitable for informal gatherings and public events. These areas should not simply be created out of residual land as an afterthought.
- The width, design speed, and number of travel lanes on Grand River Avenue should be minimized without compromising safety, on-street parking, or bicycle access. Streets should be designed to slow traffic, reduce accidents, and provide a more intimate scale.
- The size of any single surface parking lot should be limited to three acres. All parking lots should be planted with sufficient trees so that within ten years 70 percent of the surface area is shaded.

Goals and Policies

Several general Master Plan goals and policies affect the nature of development in New Hudson. With respect to commercial design, the Planning Commission agreed that commercial uses should reflect thorough and careful analysis of the site and a sincere effort to improve aesthetics. The policies call for pedestrian access, and placement of loading, parking and storage areas behind buildings. The Planning Commission noted the need for close monitoring and stringent enforcement of building and maintenance codes in commercial areas, and called for transition uses or screening to buffer commercial uses from adjoining residential uses.

The Planning Commission also agreed that revitalization of aging residential areas should be a Master Plan goal. In this respect, the Township should work toward improving roads, streetlights, and other residential amenities as an incentive to undertake revitalization.

Focusing more directly on New Hudson, there are five key goals:

1. Promote a pedestrian-friendly town center area.
2. Reorganize the traffic hierarchy to promote safety, accommodate the completion of the ring road, and incorporate pedestrian and bicycle facilities.
3. Enrich commercial and office uses to support local needs.
4. Incorporate the history of New Hudson into the design to enhance its unique character.
5. Incorporate natural resources to support the uses and character of the hamlet.

In addition to the five goals, the Lyon Center Vision Plan sets forth seven guiding principles, which are summarized below:¹

1. The Hamlet Concept. The hamlet model will allow Lyon Township to build upon the existing freestanding architecture of historic New Hudson, create infill and expansion opportunity, and revive a historic development model that characterized early development.
2. Balanced Development. Provide a place for all types of businesses: big box, mid box, convenience commercial, outlots, small office and downtown businesses.
3. Image and Identity. The Township needs to brand itself within Oakland County, Southeast Michigan, and globally. Equally important, the physical image of the Township needs to be clarified. The appearance of New Hudson is important to both the livability and the community's physical and economic development.
4. Quality Architecture. New Hudson stakeholders place emphasis on quality architecture and good design. Good design is sustainable, accessible, functional, well made, emotionally resonant, enduring, socially beneficial, and beautiful.
5. Public Spaces and Places. Stakeholders agree that one aspect of developing a lively downtown is development of public spaces and places, such as multipurpose streets; parks, plazas and squares; and, libraries, civic centers and other public buildings.
6. Walkability. One of the top objectives of the Lyon Center Vision Plan is to create a compact, walkable community. People love walkable neighborhoods because of their human energy – they create the opportunity for fun, lively, memorable activity.
7. Sustainability. Spurring the sustainability ethic are demographic shifts, a strong environmental ethic, increased fiscal concerns, and more nuanced views of growth. The result is a new demand and a new opportunity for smart growth.

Retail Analysis

A plan should be visionary, but it should be realistic in terms of what is feasible. Retail feasibility can be determined by identifying the trade area, identifying the competing facilities within the trade area, and computing the retail market potential. A retail trade analysis was completed in the Lyon Center Vision Plan, finding that there will likely be little demand for additional large-scale retail floor space within a 15-minute drive time area. The well-established Brighton and Novi clusters enjoy regional prominence and will be difficult to compete against, and the existing WalMart store in Lyon Towne Center will meet the area's demand for big box goods and services now and in the foreseeable future.²

¹ See page 21 of the Lyon Vision Plan for further explanation of these principles.

² See page 7 of the Lyon Center Vision Plan for additional detail.

The retail analysis draws four conclusions:

1. The best chance of success will be where there is an undersupply in both the local and regional trade areas.
2. It will be difficult for new businesses to compete against WalMart on convenience and price.
3. There may be a need for a gas station, although it would have to be located at the outer edges of the ring road to be compatible with the vision for Lyon Center.
4. Most important, there are opportunities for niche businesses. To be successful, such businesses must differentiate themselves from big box stores in the market area. The differentiation can be on the basis of quality, service, uniqueness, or another characteristic that the big box stores cannot match. A local business will not be able to compete with a big box store on the basis of convenience or price alone.

Design Charrette

The principles outlined above were some of the considerations that planners and urban designers took into account at the charrette that was held on February 6 and 7, 2009, at the Lyon Township Municipal Center in the preparation of the Lyon Center Vision Plan. A charrette is an intense period of design activity, when planners, designers, and community stakeholders come together to relatively quickly generate a solution to a design problem. The two-day charrette in 2009 included visioning exercises, preference surveys, and live-time drawings by graphic artists and architects to capture the vision of participants of New Hudson's future. At the culmination of the charrette, a conceptual plan for New Hudson had been prepared, showing locations and amounts of various land uses, the desired transportation pattern, streetscape plans that include road cross-sections, and perspective sketches showing how New Hudson might look in the future.

The Design Plan

As briefly described in the introduction to this chapter, the Lyon Center Vision Plan calls for creation of a compact, walkable downtown, with a hamlet at its center, and high density residential adjacent to the hamlet on the south (see Lyon Center Development Vision). The hamlet, consisting of individual buildings on individual lots, mimics the way New Hudson historically developed. The hamlet is intended to be a mixed use district, with commercial, entertainment, and restaurants on the first floor, and residential and office on the upper floors.

Some redevelopment will be required to implement the hamlet plan. For example, in the southwest segment bounded by Pontiac Trail and Milford Road, the plan anticipates that in the long-term the New Hudson Corporation will relocate, providing the opportunity for more mixed use development at the intersection. Redevelopment of this site would provide the opportunity to develop a highly visible, landmark use.

Looking beyond the hamlet, to the southwest of downtown but within the ring road, the plan calls for high density single-family residential at 7 to 8 units per acre and moderate density multiple-family at 12-14 units per acre. The presence of high density housing in the downtown promotes pedestrian activity and provides a market for businesses in the hamlet.

High density single family may consist of detached housing, semidetached dwellings (i.e. duplexes), or attached townhouses. Moderate density multiple family is intended to be high quality 2-3 story units, preferably owner occupied.

On the east side of downtown a substantial amount of land is set aside for civic uses on the land use plan. This land is intended to accommodate the existing Dolsen Elementary School, an expanded Post Office, a new Township library, and perhaps a community center. The northeast segment of the ring road (Lyon Center Drive-East), as well as the Huron Valley Trail, would provide access to the civic uses on the north side of Grand River Avenue.

At the entrances to the downtown, the plan proposes Gateway corridor uses, which are intended to be low impact multiple-family residential, commercial and office uses, perhaps in redeveloped single family homes.

One of the unique features of the plan is the way in which highway commercial uses (i.e., Lyon Towne Center and Lyon Crossing Planned Developments) are juxtaposed adjacent to the hamlet. Visually, because of the location of the highway commercial uses, they do not overpower the smaller downtown uses. Consequently, residents realize the benefits of a small town atmosphere in the hamlet and large scale shopping opportunities to the north.

With the ring road as the thread, the hamlet plan ties nicely into the large research/office district in the southeast quadrant of the planning area. The category of land use encompasses a part of the Walbridge holdings and some adjacent parcels along Grand River Avenue.

A small office district is proposed outside of the ring road on the east side, north of Grand River Avenue. If the demand for a distinct office district does not materialize, then this district could be converted to commercial, to accommodate uses that are not appropriate in the hamlet.














Other uses identified on the plan include:

- The existing Oakland/Southwest Airport.
- Open space areas, which include natural features, open land that cannot be built upon, and storm water management facilities.
- Recreation uses, such as parkland and trailhead uses.
- The plan is intended to accommodate a new Township Library, but the location has yet to be determined.

Map 19 Lyon Center Development Vision

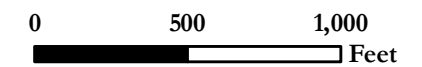
Charter Township of Lyon,
Oakland County, Michigan

Legend

-  Greenways
-  Conceptual Ring Road Location
-  Lyon Center Boundary
-  The Hamlet
-  Moderate Multiple Family (12-14 DU/A)
-  High Density Single Family Residential (7-8 DU/A)
-  Highway Commercial
-  General Commercial
-  Gateway Corridor
-  Research/Office
-  Airport
-  Open Space
-  Public and Quasi-Public Land

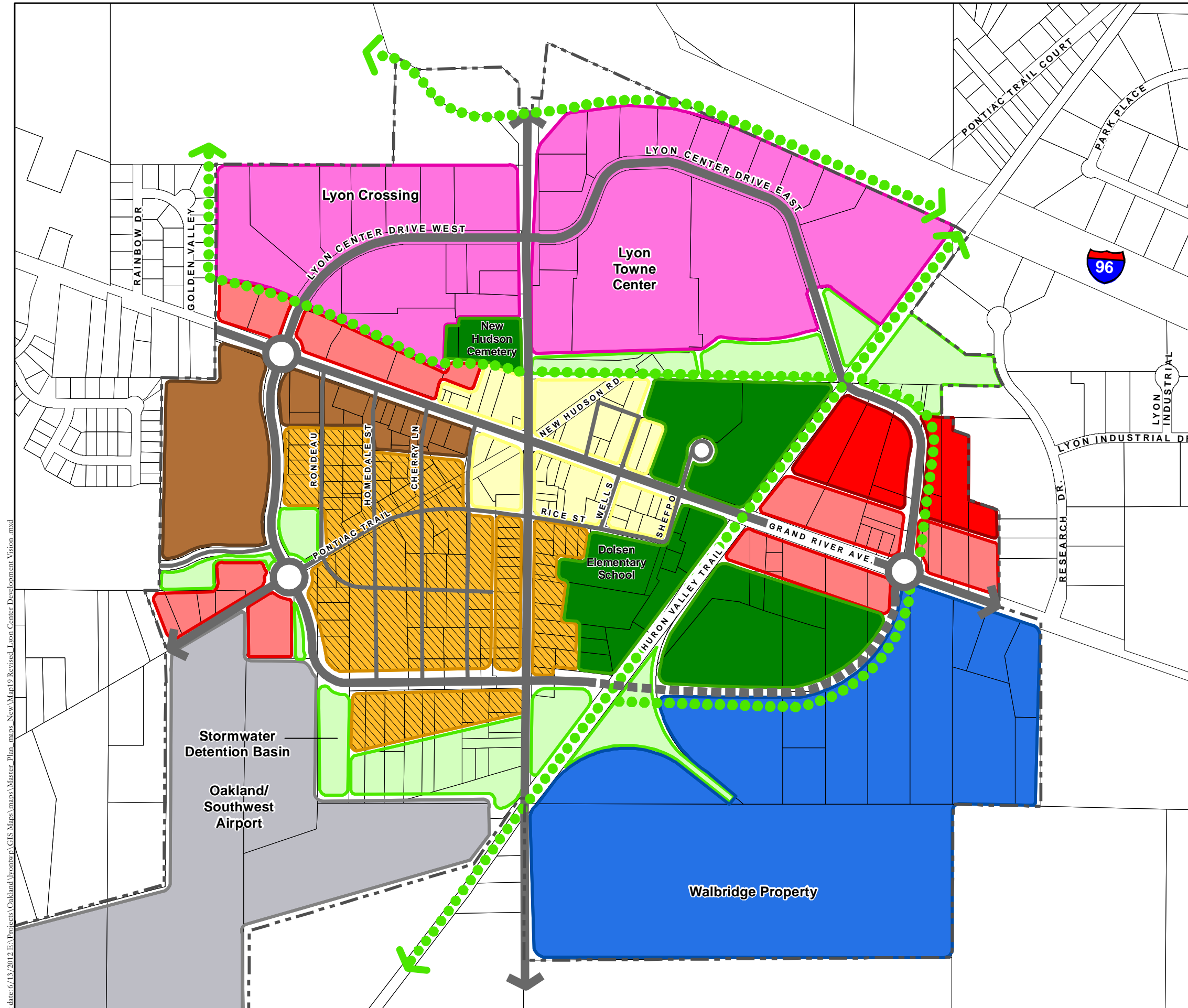
Note: Lyon Center is intended to accommodate a new Township Library but its location has not been determined

Source: Lyon Center Vision Plan
Parcel Data Source: Oakland County GIS, December 2006.



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The following table summarizes features of the character areas and land uses described above:³

Land Use or Character Area	Building Location	Building Height	Building Design	Parking
The Hamlet (retail, restaurant, entertainment on first floor; office, residential above)	5-10 feet from front property line	Ideally 2-3 stories, but 1 is acceptable	Pitched or flat roof acceptable	In the rear or on the side. On-street is acceptable.
Moderate Density Multiple Family (attached multiple family)	10-15 feet from the front property line	2-3 stories	Pitched roof townhouse or garden apartment, preferably owner occupied.	In the rear or on the side. Garage doors should not face front.
High Density Single Family (detached, semidetached, or townhouse)	15-25 feet from the front property line	2 stories	Buildings should have single family character. Attached units should have at least one entrance facing the street.	In the rear or on the side. Garage doors should be set back 15 feet behind the front door of the building.
Highway Commercial (large scale automobile oriented commercial)	Setbacks are based on the Planned Development plans.	Typically one story, but height of big box stores may be as great as 30 feet.	Building design and materials are governed by the Planned Development plans.	Accommodated on-site.
Gateway Corridor (multi-family, commercial, office uses – low traffic generators)	15-25 feet from the front property line, with landscaping between property and the building	1-3 stories	Converted homes should retain residential character. New construction should respect the scale of adjacent buildings.	In the rear or on the side. On-street is acceptable.
Office (professional and service office uses with complementary retail)	15-25 feet from the front property line	1-2 stories	None recommended	Set back 50 feet from Grand River r.o.w. May be located in front yard on ring road. On-street is acceptable.
Research/Office	40 feet from the front property line	1-3 stories	Buildings along the ring road should include design detailing and high quality building materials.	In the rear or on the side.
Oakland/Southwest Airport	75 ft. – match current setback for the R-1.0 district	Can be 2 stories by ordinance	An upgrade in appearance is desired, but specific design criteria have not been established	On the interior of the airport or on the side of the administration building.
Civic Uses (may include a Post Office, library, community center, band shell, etc.)	Building locations, heights, design characteristics, parking, etc., will differ for each use. Civic buildings should be distinctively designed so that they are prominent, instilling a sense of pride in residents, and establish the desired image for the downtown.			
Open Space, recreation	Criteria do not apply to these uses.			

³ See page 29 of the Lyon Vision Plan for a more detailed description of character areas and land uses.

Circulation System

The existing road pattern in New Hudson provides the framework for development of the hamlet village center. The radial pattern formed by Grand River Avenue, Pontiac Trail, and Milford Road divides New Hudson into five planning segments. The local road network consisting of Rondeau, Homedale, and Cherry Streets provides a reasonable pattern for additional local roads, in a modified grid, to serve future development.

One of the most significant aspects of the road network is the ring road, which is proposed to completely encircle New Hudson, and serve as a bypass around the Grand River/Milford Road/Pontiac Trail intersection. The ring road, which is complete except for the southeast segment, will be a major carrier of traffic, diverting truck and other through-traffic from the pedestrian-oriented core. The ring road is located a quarter to a third of a mile from the center of New Hudson, encompassing the planned compact village with ideal walkable distances. The ring road will provide access to key properties in the Downtown Development Authority (DDA), Oakland/Southwest Airport and the Walbridge property.

Substantial future improvements to the road framework are proposed to make it possible to implement the proposed land use plan. These include:

1. **Completion of the ring road** by completing the southeast segment, creating opportunities to provide access to the Walbridge property, to develop trailhead for the Huron Valley Trail, and to provide access to civic and recreational lands.
2. **Completion of intersection improvements** at Grand River/Milford Road/Pontiac Trail. A roundabout is land intensive and not as pedestrian friendly as desired (because of the continuous flow of vehicular traffic). Thus, rather than build a roundabout at this location, upgrading the existing conventional intersection is proposed. Key elements of the intersection improvement are closure of New Hudson Road and termination of the Pontiac Trail southwest of Grand River Avenue, making the intersection a 4-point intersection.
3. **Development of a local street network** in the southwest segment, South of Grand River Avenue and west of Milford Road, to create a framework for residential development.
4. **Implementation of a “complete streets” policy.** Complete streets legislation became effective in the State of Michigan on August 2, 2010 (Public Act 135 of 2010). Act 135 defines “complete streets” as roadways planned, designed, and constructed to provide appropriate access to all legal users in a manner that promotes safe and efficient movement of people and goods whether by car, truck, transit, assistive device, foot, or bicycle. It is the goal of the Lyon Center Vision Plan that Grand River Avenue, between the two roundabouts, the ring road, and Milford Road be designed as complete streets, subject to Road Commission approval.

The graphics that follow illustrate the design for the Grand River Avenue streetscape, based on input from the Road Commission for Oakland County.

Trails and Greenways

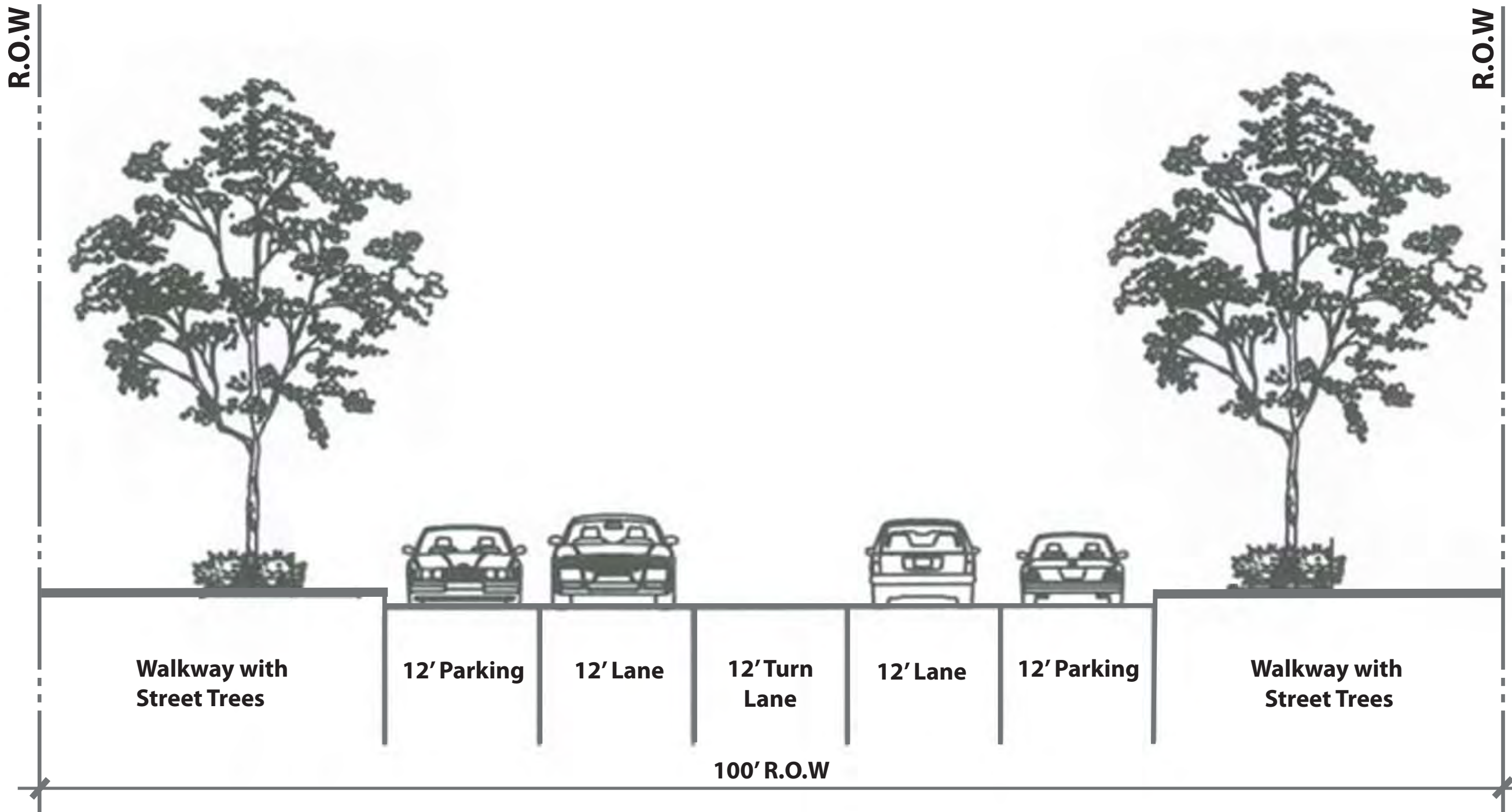
Building on the success of the Huron Valley Trail, this plan calls for expansion of the trail system throughout New Hudson. The goal of this expansion is to provide pedestrian and bicycle access to civic properties, recreation lands, and the hamlet.

The primary new trail will begin at the intersection of Lyon Center Drive-East and the Huron Valley Trail. It will proceed west along the south side of the detention ponds serving Lowe's and WalMart. After crossing Milford Road, the trail will proceed along the south side of the New Hudson Cemetery into Lyon Crossing Planned Development. Upon reaching Golden Valley Subdivision, the trail will proceed north into the James F. Atchison Memorial Park.

Implementation of a Safe Routes to School (SRTS) program for Dolsen Elementary is a worthwhile endeavor proposed by this plan. The SRTS program is a federal program enacted with passage of the federal Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (SAFETY-LU) in August, 2005. The purpose of the program is to enable and encourage all children to walk or bike to school; to make walking and bicycling to school safer and more appealing alternative modes of transportation; and, to develop projects and encourage activities that will improve student health and safety while reducing traffic, fuel consumption, and air pollution in the vicinity of the school. For example, an opportunity exists to provide a safe route from Pendleton Park Apartments to Dolsen Elementary School.

Dolsen Elementary School is a good candidate for the SRTS program because of the proximity of the Huron Valley Trail. As close as it is, students do not have direct access to the trail. Such access could be provided in the rear through acquisition of one or two parcels of land or acquisition of easements over the parcels. Because SRTS is a federally-funded transportation program, the Township would have to partner with the Road Commission for Oakland County to implement the program.

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Grand River Avenue Streetscape Plan View

Charter Township of Lyon,
Oakland County, Michigan



Source: Giffels-Webster Engineers, Inc.

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IMPLEMENTATION

Introduction

This chapter of the Plan presents tools and techniques that citizens, community leaders, and Township staff can use to implement the land use plan. These implementation measures are workable if there are people in the community with vision and tenacity who are willing to invest the time and effort required to make them work. Community improvement requires a compelling vision; persistence; the flexibility needed to respond to changing needs, opportunities, and circumstances; and an ability to achieve consensus. The tools and techniques identified in this chapter are capable of being implemented under current enabling legislation.

Public Policy and Administrative Actions

Cooperation between Units of Government

Maximum impact will be achieved if the Township is able to achieve cooperation from other units of government. The benefits of governmental cooperation are readily apparent in the Fire Department, which has entered into cooperative ventures with the City of South Lyon. Road improvements require regional cooperation because decisions regarding Township roads are made by the Road Commission for Oakland County, Michigan Department of Transportation, and SEMCOG. These other agencies must be aware of the Township's land use planning objectives.

Development Impact Analysis

Impact analysis is a policy tool that is intended to describe the probable outcome of a proposed development project. Typically, an impact analysis involves the identification, quantification, and evaluation of environmental, economic, social, physical, and other impacts resulting from the development. An impact analysis often will also identify measures that can be taken to alleviate the impacts. For example, a traffic impact analysis would typically identify new signalization, changes in road geometrics, and other measures that might be necessary to accommodate the traffic generated by a proposed development.

An impact analysis is most effective if the Township establishes explicit guidelines and then participates with developers in completing the impact analyses. The guidelines should identify appropriate sources of information, formulae to be used in calculating impact, and reasonable assumptions to be used in the analysis. The Township can assist by creating and maintaining data bases deemed necessary to complete the impact analysis.

The benefit of impact analysis is not just in identifying mitigation measures that would profit from developer participation. Impact analysis also benefits the Township by identifying future public service capacity problems, by identifying the types of development or features that generate the least impact, and by providing information to the Township that can be used to study and evaluate development over time.

Prior to making impact analysis a requirement, the Township must first identify the types of impacts it wishes to evaluate, and it must establish appropriate guidelines for analyzing each impact. Then, the Township must determine when an impact analysis is warranted. The need for an impact analysis might be based on the size of the development (proposed number of dwelling units, floor area of non-residential uses), its location (in or near an environmentally sensitive area, on a high-traveled road), or the type of development. One approach might be to conceptually define a "development of township-wide impact" for which development impact analysis would be required. For example, the Zoning Ordinance requires a Traffic Impact Statement for residential projects containing 100 or more dwelling units and commercial, office and industrial developments involving 100,000 sq. ft. or more of floor space.

Fiscal Impact Analysis

Fiscal impact analysis is a special type of impact analysis that involves the projection of direct, current, public costs and revenues associated with a proposed development. It involves a description and quantification of the public costs (police, fire, public works, transportation, and educational facilities) that come about as a result of development, as well as the revenues generated from property taxes, user charges, intergovernmental transfers, and other fees.

As with other types of impact analysis, an impact analysis is most effective if the Township establishes explicit guidelines and then participates with the developer in completing the impact analysis. The guidelines should identify the appropriate method (average-costing, marginal-costing, or econometric), sources of base data, and appropriate demographic multipliers.

Fiscal impact is one of several other types of analyses that the Township typically completes in the course of reviewing a proposed development proposal. The results of a fiscal impact analysis should be just one part of development review and should not be the sole basis for approval or disapproval of a particular land use.

It requires special expertise to analyze a fiscal impact analysis. Developers tend to inflate tax benefits and other revenue generators, and understate costs that the Township will incur.

Master Plan Updates

Community planning is a continuous process that does not terminate with the completion of Master Plan. Communities are in constant change and planning is an ongoing process of identifying and responding to change. In order to sustain the planning process and generate positive results, maintain momentum, and respond to change, the Master Plan should be reviewed and updated at least every five years. In fact, review every five years is now required by the Michigan Planning Enabling Act (Act 33 of 2008).

Establishing Priorities

The Master Plan contains a multitude of recommendations. There is insufficient staff or volunteer support to implement all of the recommendations in a carefully planned, deliberate manner. Consequently, priorities must be established as soon as the Master Plan is adopted. Participants involved in setting priorities should include Township staff, the Planning Commission, and other Township officials who should be involved in implementation of the Plan.

Information and Education

The success of the Master Plan depends to a great extent on efforts to inform citizens about the Plan and the possible need for regulatory measures to implement the Plan. Successful implementation requires the support and active participation of residents, property owners, and business owners. A thoughtfully prepared public education program is needed.

For example, citizens should be made aware of the need to protect groundwater recharge areas, endangered ecosystems, and unique or sensitive environmental areas. They must be informed about voluntary and regulatory methods of assuring protection of these areas. Efforts should be made to identify the benefits to be achieved from new regulations.

Similar educational programs are recommended as an integral part of other aspects the implementation plan. Educational programs should generally precede establishment of new regulations.

Design Standards Manual

One component in the Township's information/education program should be the preparation of a design standards manual. The purpose of the manual is to describe the type of development desired in the Township and the types of natural features and visual resources the Township would like to protect, even as development occurs. The benefit of a design standards manual is that it can be used to communicate concepts and ideas that are not appropriate for the zoning ordinance. Design issues typically included in such a manual include architecture, building orientation, parking and circulation, landscaping, utilities, lighting, signs, and access management. Some of the issues typically covered in a design manual will be addressed in the form-based code (see below).

Land Use Controls

Subdivision Regulations

The Subdivision Control Ordinance outlines the procedures and standards used by the Township in exercising its authority to review and approve proposed subdivisions, pursuant to the Subdivision Control Act (Michigan Public Act 288 of 1967, as amended). Subdivision control ordinances typically require the appropriate design of lots and blocks, subdivision access, and such necessary internal improvements as internal streets and drainage, and water and sewer facilities.

The Subdivision Control Act places restrictions on a municipality's power to approve or reject plats, indicating that a rejection may not be based on any requirement other than those included in Section 105 of the Act. Nevertheless, many legal experts believe that the Act gives municipalities much greater authority than they have typically exercised. Lyon Township's Subdivision Ordinance should be thoroughly reviewed and revised to exercise the Township's full scope of authority in regulating subdivision design, environmental impacts, relationship to adjacent uses, and impact on level of public services. The design standards in the Subdivision Ordinance apply to condominiums as well.

Zoning Regulations

Zoning is the primary regulatory tool used by the Township to implement the Master Plan. According to Section 208 of the Michigan Zoning Enabling Act (Michigan Public Act 110 of 2006, as amended), "the zoning ordinance *shall be based upon a plan* designed to promote the public health, safety, and general welfare ..." Two categories of revisions to the Zoning Ordinance are necessary to effect many of the recommendations set forth in the plan: 1) revisions dealing with conventional zoning procedures, and 2) innovative zoning techniques.

- **Conventional Zoning Procedures**

Rezoning to Implement the Master Plan. The land use classifications on the Future Land Use Map provide the basis for evaluating future rezoning requests. Zoning actions that are consistent with the Future Land Use Map usually receive deferential and favorable judicial review if challenged. The Master Plan should be the principal source of information in the investigation of all rezoning requests.

Planned Development. Planned development involves the use of special zoning requirements and review procedures that provide design and regulatory flexibility, so as to encourage innovation in land use planning and design. Properly implemented, planned developments should achieve a higher quality of development than might otherwise be possible. Planned development can be used as the regulatory tool to permit open space zoning or cluster development and to facilitate redevelopment.

Incentive Zoning. Incentive zoning allows a developer to exceed the dimensional limitations in the Zoning Ordinance if the developer agrees to fulfill conditions specified in the Ordinance. Incentive zoning should be considered to promote innovative land planning techniques identified in the Plan. For example, an increase in density has been used as an incentive for developments that place large amounts of open space into a conservation easement.

Setback and Other Standards. It is important to review the required setbacks and other dimensional standards to be certain that they promote the desired type of development. For example, it may be necessary to re-think minimum setback and lot size standards where condominium redevelopment is mutually desired by the Township and developer.

- **Innovative Zoning Techniques**

Form-Based Coding. Form-based coding is a means of regulating development to achieve a specific urban form. Form-based codes create a predictable public realm by controlling physical form primarily, with a lesser focus on land use. Form-based codes address the relationship between building facades and the public realm, the form and mass of buildings in relation to one another, and the scale and types of streets and blocks. This is in contrast to conventional zoning, which is primarily focused on land use. Form based coding is the ideal regulatory tool to achieve compact, walkable urbanism. For these reasons, it is the ideal regulatory approval for downtown New Hudson.

Overlay Zoning. Overlay zoning allows the Township to impose a new set of regulations on a special area within an existing zoning district. In an area where an overlay zone is established, the property is placed simultaneously in the two zones, and the property may be developed only under the applicable conditions and requirements of both zones. Thus, the overlay district regulations supplement the regulations of the underlying zoning district. Overlay zoning has been used in other communities to address special conditions and features, such as historic areas, wetlands, and other environmentally sensitive areas, without disrupting the underlying zoning plan.

Open Space Zoning. Open space zoning is an alternative to conventional zoning that is intended to promote preservation of rural character and open space. The search for an alternative to conventional zoning came with the realization that conventional zoning often results in residential sprawl, which consumes large amounts of land and divides open spaces into fragments that are not conducive to wildlife habitat or other rural open space uses.

Open space zoning provides for grouping of dwellings onto a part of the parcel so that the remainder can be preserved as open space. The goal is to devise better use of undeveloped property than what results from proceeding on a lot-to-lot basis.

Conditional Zoning

Section 405 of the Michigan Zoning Enabling Act provides for conditional zoning whereby the Township may accept conditions with a rezoning request. Whereas previously a rezoning proposal was reviewed under the “worse case scenario” for potential land uses and the proposed use of the site was often overlooked, now promises regarding the proposed use can be enforced. Rezoning applicants may voluntarily offer conditions to their rezoning request and the Township may consider the conditions in deciding upon the request. Conditions to restrict density, increase setbacks, provide additional buffers, preserve certain areas or features, and limit the use of property may benefit land owners, adjacent property owners and the Township as a whole.

Development Agreements

Although there is no explicit legislative authority for such agreements, many Michigan communities have used development agreements to achieve a mutual understanding between the developer and Township concerning the conditions under which development can occur. Development agreements are often negotiated as part of a planned development approval, allowing the community and developer to address complex issues that cannot be adequately addressed on a typical site plan.

Public Facility Improvements

Capital Improvements Program

Under Section 65 of the Michigan Planning Enabling Act (Act 33 of 2008, as amended), the Planning Commission is charged with the responsibility of annually preparing a capital improvements program of public structures and improvements. The program shall cover improvements anticipated within the ensuing 6-year period.

Capital programming influences land development decisions. By properly coordinating utility extensions and other capital improvements with its planning and growth management program, the Township can control the direction and pace of development. Capital programming should be viewed as more than just a ministerial act. Using the Master Plan to delineate the location and type of development desired and the Capital Improvements Program to schedule the provision of services, the Township can inform developers when development of a particular parcel will be encouraged and the type of development that will be allowed.

New Hudson Post Office

The Township must seek input in the selection of a new site for the New Hudson Post Office, which must remain in New Hudson. Assistance from the Township’s U.S. Representative must be sought to secure a major role for the Township in planning for a new Post Office.

Land Acquisition

Land acquisition is an important supplement to land use regulations as a means of managing growth and protecting natural resources. Land acquisition can be used to control the use of a specific acquired parcel, or it can be used to influence the general growth of the Township. In New Hudson, for example, key parcels can be acquired then sold to developers who agree to abide by the Township's design standards.

Local land acquisition programs can be funded by local property taxes (such as a dedicated millage or general fund revenues), by the DDA using tax increment revenues, or by grant programs. For example, the Township could use grant programs sponsored by the Michigan Department of Natural Resources to acquire park land and open space throughout the Township.

There are several approaches to acquiring interest in land to advance the goals of the Master Plan. Generally, the Township can take direct action to acquire property interest or it can rely on private voluntary land protection efforts.

Direct Action by the Township

If the Township takes direct action, it can acquire property in fee simple or it can acquire a partial interest through acquisition of easements. Fee simple acquisition provides the greatest level of control over the use of a parcel, but it also is the most expensive method of acquisition. In addition to the acquisition costs, fee simple acquisition removes property from the tax rolls, resulting in a decrease in property tax revenue.

Easements are distinct property rights that may be sold separately from other rights to the Township. Easements are effective for preserving sensitive lands, providing public access along drains or greenways, and allowing property owners to obtain income, estate, and property tax benefits for land stewardship while they continue to live on their land.

There are two Michigan statutes that address the issue of conservation easements. The Farmland and Open Space Preservation Act (Part 361 of Public Act 451 of 1994, commonly known as "Act 116") provides for dedication of an easement to a public entity, such as the Township or State. The Conservation and Historic Preservation Easement Act (Subpart II of Public Act 451 of 1994) gives a third party, such as a land trust, the right to enforce an easement. This act assumes that the easement will be perpetual.

Private Voluntary Land Protection Efforts

Instead of taking direct action, the Township can encourage and rely on private voluntary land protection efforts. The term "voluntary" has two meanings in this context:

- Property owners can voluntarily donate land or easements in the interest of conserving natural resources or natural features.

- To facilitate the natural resource protection program, private land trusts can be voluntarily established to make use of a variety of land acquisition and conservation techniques. Land trusts typically rely on fee simple acquisition and acquisition of easements.

Other than acquisition at full market value, private tools available to preserve land include:

- Donation of land or bargain sale (acquisition at below full market value),
- Options to buy (often used to secure a parcel of land while funding is being obtained),
- Rights-of-first-refusal (used to tie up a parcel without having to purchase it immediately),
- Leases (temporary control without the expense of acquisition),
- Pre-acquisition by a land trust (the land trust serves as the intermediary for the public agency, such as the Township), and
- Conservation investment (in essence, a real estate syndication for the purpose of resource protection).

Following are more detailed descriptions of the land preservation techniques described above.

Land Conservancy Activities

Most of the transactions between a landowner and the government can also occur between a landowner and a private land conservancy organization such as the Six Rivers Land Conservancy, The Nature Conservancy, the American Farmland Trust, and the Trust for Public Land. The conservancy organization would then either manage the land itself or convey it, at some future date, to a governmental agency when public funds become available.

Private donations of land to the Township or a conservancy organization. Landowners are sometimes willing simply to donate land to the Township or a conservancy for open space or natural area preservation purposes. The landowner has the satisfaction of seeing the parcel of land preserved, and also may obtain some benefits on income taxes, estate taxes, and property taxes. The Township obtains the benefit of preserving the land.

Private donations of conservation easements to the Township or a conservancy organization. Landowners are sometimes willing to donate a conservation easement on a parcel of land, which involves the transfer to the Township or a conservancy of a partial interest in a parcel of land for the purpose of preserving its natural amenities. The landowner might retain the right to continue to occupy the land, for example, but the right to use it for particular uses (e.g., to

build houses on it or change its scenic character) has been donated to the government. The landowner would have the satisfaction of seeing the parcel of land preserved, and may also obtain some benefits on income taxes, estate taxes, and property taxes. The Township obtains the benefit of preserving the land, and avoids some of the costs of maintaining the property.

Private donation of land to the Township or a conservancy organization, with the right to use the land until the donor's death. A landowner sometimes wants to retain full title to a parcel of land and be able to continue to use it, until his or her death, but wishes to have the land transferred to the Township or conservancy organization at that time (or some other specified time). The landowner can thereby gain some tax benefits, but continue to use the land until his or her death.

Township or conservancy purchase of conservation easements. A landowner may not be willing to donate a conservation easement, but may be willing to sell such an easement to the Township or conservancy. The landowner might retain the right to continue to occupy the land, for example, but the right to use it for particular uses (e.g., to build houses on it or change its scenic character) has been sold to the Township or conservancy. The landowner would receive some payment for the easement, and may obtain some benefits on estate taxes and property taxes. This alternative would cost the Township or conservancy some revenue, but the cost would be less than the purchase of all the rights to the land.

Leasing of land. A landowner may not wish to lose permanent title to a parcel of land, but may be willing to lease it to the Township or conservancy for public use for a specified period of time.

Placement of private land under the protection of the Farmland and Open Space Preservation Act or the Conservation and Historic Preservation Easement Act. These two state laws can be used by private citizens and local government to protect land for specified periods of time. The landowner can thereby reduce the property taxes on the land, and the government gains the benefit of maintaining the land as open space.

Recent Impact of Land Conservancy Activities

Since the late 1990's, several Planned Developments have been approved which have been designed as open space communities, with smaller lots clustered on the most buildable portions of the sites, leaving substantial amounts of open space. In some cases, a conservation easement over the open space has been dedicated to the Six Rivers Land Conservancy, which has assumed responsibility for monitoring the open space. In other instances, a homeowners association is responsible for monitoring the open space.

As more open space is added to the system, attention will be focused on connectivity of the open space, which is essential to preserving wildlife corridors and creating recognizable greenbelts through the community.

Special Purpose Districts

Certain recommendations in the Master Plan can be best accomplished using a targeted approach, through creation of special districts. Special purpose districts that may have applicability in Lyon Township include the following:

Downtown Development Authority

Michigan Public Act 197 of 1975, as amended, provides for the establishment of a downtown development authority (DDA) in the Township's business district, upon finding by the Township Board that the DDA is necessary "to halt property value deterioration and increase property tax valuation where possible in its business district, to eliminate the causes of deterioration, and to promote economic growth."

The creation of a DDA has the benefit of bringing business people and Township officials together in a cooperative setting to address problems in the business district. Act 197 provides a means of financing the DDA's activities, including a maximum two mill property tax within the district, tax increment financing, and issuance of bonds. DDAs have been used for streetscape and road improvements, utility replacement, acquisition and demolition of blighted buildings, parking lot construction, and other improvement activities. The Lyon Township DDA was created by the Township Board on December 7, 1998, with the objective of bringing these benefits to the New Hudson district. As of January 2011, the DDA has financed the following projects:

- Construction and landscaping of a roundabout at the intersection of Lyon Center Drive-West and Grand River Avenue.
- Extension of Lyon Center Drive – East to Grand River Avenue.
- Construction and landscaping of a roundabout at the intersection of Lyon Center Drive-East and Grand River Avenue.
- Extension of the southwest leg of the ring road from Grand River Avenue to Milford Rd., with a roundabout at the Pontiac Trail intersection.
- Preparation of the Lyon Center Vision Plan, a plan for the development of New Hudson.
- Acquisition and demolition of blighted buildings.

Technology Park Development Act

Michigan Public Act 385 of 1984 provides for the establishment of technology park districts and exemption from certain property taxes for qualified research and development and high technology uses. High technology service activity is defined in the act as a use that "has as its principal function the providing of services including computer, information transfer, communication, distribution, processing, administrative, laboratory, experimental, developmental, technical, or testing services." This act might be an effective inducement for development of the Walbridge property.

Local Development Financing Act

Michigan Public Act 281 of 1986 provides for the establishment of a local development finance authority (LDFA) to undertake economic development activities that promote manufacturing of goods or materials, agricultural processing, or high technology activity. A typical LDFA project might involve construction of roads and utilities deemed necessary for a specific manufacturing or high technology development project. LDFA activities are most frequently financed through tax increment financing or through issuance of revenue bonds that are retired using tax increment revenues.

Neighborhood Area Improvements Act

Michigan Public Act 208 of 1949 authorizes townships to designate neighborhood areas for the purpose of planning and carrying out local public improvements for the prevention of blight in such areas. The Act calls for preparation of neighborhood betterment plans by the Planning Commission. The Act also provides methods of financing improvements within the neighborhoods, including special assessment districts and issuance of neighborhood improvement bonds.

Financing Tools

Successful implementation of the Master Plan will depend on the ability of the Township to secure necessary financing. Besides the general fund, the following sources of revenue are available to the Township:

Dedicated Millage

Special millages can be used to generate revenues for a specific purpose. For example, one Michigan community has a special land acquisition fund that is supported by a one-quarter mill property tax. A land acquisition fund would be a useful tool to promote open space preservation in Lyon Township.

Special Assessments

Special assessments are compulsory contributions collected from the owners of property benefitted by specific public improvements (paving, drainage improvements, etc.) to defray the costs of such improvements. Special assessments are apportioned according to the benefits that accrue to the property. Special assessment funding has proven useful as the primary funding tool to implement utility improvements throughout the Township.

Bond Programs

Bonds are one of the principal sources of financing used by communities to pay for capital improvements. General obligation bonds are issued for specific community project and are paid off by the general public with property tax revenues. Revenue bonds are issued for construction of projects that generate revenues. The bonds are then retired using income generated by the project (for example, water and sewer service charges).

Tax Increment Financing

Tax increment financing is authorized by the Downtown Development Authority Act and the Local Development Finance Authority Act. When a tax increment finance district is established, the state equalized value of all properties in the district is recorded. Every year thereafter, the property tax revenue generated by an increase in the total state equalized value is "captured" by the DDA or LDFA to finance the improvements set forth in a development plan. Often, revenue bonds are issued to finance the improvements, and the tax increment revenues are used to repay the bonds.

MDNR Recreation Grant Programs

Michigan Natural Resources Trust Fund (MNRTF) grants are available for park development and land acquisition. The maximum grant for development is \$375,000.

The Township has effectively used this program in the past to finance park land acquisition and development. In the future, the Township may wish to seek MNRTF funding for acquisition of land principally for open space and natural resource preservation purposes.

Implementation of the Lyon Center Vision Plan

The Lyon Center Vision Plan, a plan for New Hudson, was completed in August, 2009. It contained four categories of implementation measures dealing with civic improvements, economic development, circulation improvements, and planning and zoning. Following is a summary of the goals and projects in each category.

Civic Improvements

Four sets of civic improvements are proposed for New Hudson: utility improvements, streetscape enhancements on Grand River Avenue and Milford Road, development of parking lots, and development of public/civic buildings and sites. Following is a detailed list of the proposed projects:

- Complete sanitary sewer connection along Grand River Avenue
- Implement streetscape improvements along Grand River Avenue (street trees, street lights, sidewalks, benches, etc.)
- Explore and implement storm water improvements to support development
- Acquire property necessary to construct DDA parking lots
- Acquire properties necessary for development of the civic campus
- Work with the Library Board to plan Hamlet area library site
- Identify opportunity areas within the Hamlet for small civic spaces (e.g., pocket parks, town square)
- Develop DDA parking lots within the Hamlet
- Explore feasibility of expanded post office within the civic campus with key leaders
- Develop consistent streetscape improvements along Milford Road

Economic Development

A variety of economic development activities are proposed, including encouraging infill and redevelopment, in part through business recruitment, retention, and relocation. Ancillary activities are also proposed. Following is a detailed list of the proposed projects:

- Create a façade program to fund building façade improvements to existing Hamlet buildings
- Encourage infill development and redevelopment in the Hamlet
- Create a parking plan to ensure appropriate quantity and location of parking in the Hamlet area
- Create a business recruitment, retention and relocation strategy to attract new businesses to locate within the Lyon Center area
- Develop and promote activities such as a Farmers' Market and festivals within the Hamlet area

Circulation Improvements

Circulation improvements focus on both motorized and non-motorized transportation. In the category of motorized transportation, the plan focuses on improvements to the Grand River/Milford Road/Pontiac Trail intersection and developing new street connections. Pedestrian improvements are proposed throughout New Hudson. Following is a detailed list of the proposed projects:

- Reconstruct Grand River Avenue and the Milford Road Intersection (curb, gutter, surfacing, etc.)
- Develop a community non-motorized pathway plan to connect all parts of Lyon Center
- Ensure that all road improvements projects are designed consistent with the recommendations of the Lyon Center Vision Plan
- Construct sidewalks on all streets
- Connect the Hamlet to the Oakland County Linked Path and Trail System
- Create new street connections in the southwest residential area of Lyon Center
- Create new street connections in the southwest residential area of Lyon Center
- Create new street connections in the Hamlet

Planning and Zoning

The Planning and Zoning category focuses on needed revisions to existing plans and ordinances, including the zoning ordinance, Township Master Plan, DDA Development and TIF Plans, and Parks and Recreation Plan. In addition, this category deals with ancillary issues such as architectural and green buildings standards and blight control. Following is a detailed list of the proposed projects:

- Revise the Zoning Ordinance to be consistent with this Plan and rezone properties according to the Vision Plan and updated Zoning Ordinance
- Update the Township Land Use Plan to reflect the Lyon Center Vision Plan
- Update the DDA and TIF Plan and obtain approval from the County
- Create architectural design standards for the Hamlet

- Create an ongoing blight enforcement strategy
- Create architectural design standards for the commercial area
- Update and adopt Parks and Recreation Plan that includes the parks and recreation facilities outlined in the Lyon Center Vision Plan
- Review this Vision Plan every 5 years
- Raise awareness of the benefits of green building standards
- Encourage LEED/Energy Star certification for new or renovated buildings

Zoning Plan

Section 33 of the Michigan Planning Enabling Act (Public Act 33 of 2008, as amended) calls for preparation of a zoning plan which “shall include an explanation of how the land use categories on the future land use map relate to districts on the zoning map.”

In Lyon Township, the Zoning Map and Future Land Use Map convey the same land use strategy. Most of the Township is zoned R-1.0, Residential Agricultural District, reflecting a desire to allow development at a relatively low density of one unit per acre. Residential Planned Developments south of Twelve Mile Road have been planned or developed at a net density of approximately one unit per acre. The corresponding designation for these areas on the Future Land Use Map is Rural Residential (1 acre lots). There is one exception to this relationship. Some of the R-1.0 zoned properties are designated Public and Quasi-Public or Commercial Recreation on the Future Land Use Map.

The Future Land Use Map calls for higher density single family development (up to ½ acre lots) in two general areas: in the northwest part of the Township, west of the Huron Valley Trail and around the City of South Lyon. The corresponding zoning designations for these areas are R-0.3, Single Family Residential, and R-0.5, Single Family Residential.

One area of conflict between the Zoning Map and Future Land Use Map exists in the southeast corner of the Township. Section 36 and portions of Sections 25 and 35 are zoned R-0.5, but the Future Land Use designation is Rural Residential. Environmental problems place development limits on properties in this area, so it might be wise to consider rezoning the land to R-1.0.

The Future Land Use Map and Zoning Map are generally consistent with each other regarding multiple family development. There are two multiple family land use classifications on the Future Land Use Map, Low Density Multiple Family (approx. 4 two-bedroom units per acre) and Moderate Density Multiple Family (approx. 8 two-bedroom units per acre). Corresponding zoning classifications are RM-1, Suburban Townhouse District and RM-2, Multiple Family Residential. Locations where these designations appear are along Grand River Avenue in the northwest part of the Township, around Lake Angela, at Griswold and Eight Mile Roads, and along Eight Mile Road, west of Pontiac Trail. Pendleton Park Apartments, south of Grand River and west of New Hudson Drive, is in a Planned Development.

The Future Land Use Map and Zoning Map identify two major commercial districts in the Township, in the New Hudson area (where a huge part of the commercial development is in a Planned Development), and along Pontiac Trail, south of the City of South Lyon. Two smaller neighborhood commercial districts are identified on the Future Land Use Map, at the intersection of Ten Mile Road and Milford Road and at the intersection of Ten Mile Road and Johns Road. The Zoning Map provides finer gradations of commercial districts than the Future Land Use Map. The Zoning Map zones property B-1, New Hudson Development District, B-2, Community Business District, and B-3, General Business District. In contrast, the Future Land Use Map has just one Retail/Office/Service classification, plus a Highway Commercial designation.

A substantial part of the Township, along Grand River Avenue, from the easterly roundabout to Napier Road, is intended to further developed for Light Industrial/Research/Office uses, as noted on the Future Land Use Map. The Future Land Use Map and Zoning Map are in agreement in principal on this development strategy. However, the Zoning Map calls for a combination of I-1, Light Industrial, and I-2, General Industrial. In contrast, the Future Land Use Map proposes that the Township move away from strictly “heavy” industrial land use, so a portion of the vacant land is designated Research/Office and the remainder is designated Light Industrial/Research/Office.

The following table summarizes the relationship between Future Land Use Map classifications and Zoning Map districts:

Future Land Use Classification	Corresponding Zoning District(s)
The Hamlet	None Yet – Will be subject of form-based code to be developed
Rural Residential	R-1.0, Residential-Agricultural District
Single Family	R-0.5 and R-0.3, Single Family Residential District
Low Density Multiple Family	RM-1, Suburban Townhouse District
Moderate Density Multiple Family	RM-2, Multiple Family Residential District
High Density Residential	None Yet – Will be subject of form-based code to be developed
Mobile Home Park	MHP, Mobile Home Park District
Retail/Service/Office	B-1, New Hudson Development District; B-2, Community Business District; B-3, General Business District
Highway Commercial	PD, Planned Development District
Light Industrial/Research/Office	I-1, Light Industrial District
Special Industrial Transitional Area	None – holding zone
Research Office	RO, Research Office District
Office	O-1, Office District
Mixed Use	None – holding zone until property is rezoned to PD
General Industrial	I-2, General Industrial District
Airport	R-1.0, Residential-Agricultural District
Public Land and Quasi Public	R-1.0, Residential-Agricultural District; R-0.3, Single Family Residential District
Commercial Recreation	R-1.0, Residential-Agricultural District



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