

master plan for future land use



Charter Township of East China

Master Plan for Future Land Use

East China Township

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Introduction

This document is built on a long standing tradition in East China Township of comprehensive planning. Rather than design an entirely new plan, this plan is essentially an update of the adopted 1979 Master Plan for Future Land Use, which itself carried on planning principals originally considered as early as 1965. This approach to planning has allowed the community to continue its development in a consistent manner, while allowing for adaptation to changing development techniques and Township needs.

Purpose

This Master Plan is intended to serve as a blue print for the ultimate development of the Township and to serve as a guide for land use decisions. Having such a document allows the Township to predict the ultimate size or capacity of public improvements, such as utility infrastructure, park land and public services. In addition, it provides the public with an understanding of desired future land use relationships and gives direction to the Township in making zoning decisions.

Scope

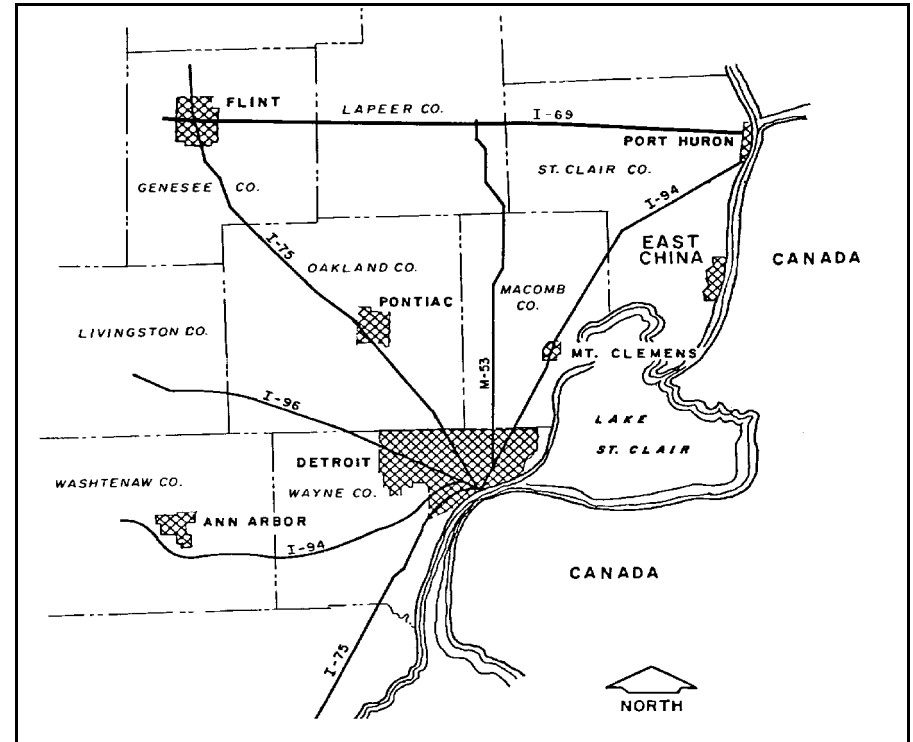
This Master Plan was conceived with careful review of and regard for land use in adjacent areas. However, in terms of area, this plan is limited to the Township boundaries out of practical ability to affect land use decisions outside of the municipality. In terms of time frame, there is no predictable time at which this document will require a wholesale re-evaluation. However, the document and map may be amended from time to time out of a need to reflect new influences or changing ideals.

Background Information

Regional Setting

East China Township is located in Michigan's southeastern lower peninsula in the extreme eastern portion of St. Clair County. Areas immediately adjacent to the Township include the City of St. Clair to the north, China Township to the west and Marine City to the south. The St. Clair River is the eastern boundary of the Township and is also a Canadian border. The center of East China Township is approximately 33 miles directly northeast of the City of Detroit and 14 miles south of Port Huron.

The accompanying Regional Location Map illustrates the geographical location of the Township in relation to the southeast Michigan region. M-29, which runs north-south through the eastern section of the Township, serves as a major access route to Marine City, St. Clair and Port Huron. M-29 also connects with Fred C. Moore Highway to the north of the Township and Marine City Highway to the south, providing residents with access to Interstate 94, a major traffic artery between the Detroit Metropolitan Area and the City of Port Huron.



Regional Location

Natural Land Features

Examination of the natural land characteristics such as topography, soils, water resources and resulting flood plain areas helps to identify physical restrictions which influence the Township' s pattern of development. In some cases these resources can provide opportunities for recreation or for prime development. In other cases, especially with floodplain areas, the natural features of the land can severely restrict the planning and placement of buildings and structures.

Topography

The land surface in East China Township is generally flat to rolling. Topographic maps of the area indicate most of the land lies between 580 to 600 feet above sea level. The highest natural point is located north of Hathaway Street in the extreme northern portion of the Township at 605 feet above sea level, with the lowest area located along the shoreline of the St. Clair River.

Soils

The Township soils were surveyed by the U.S. Department of Agriculture Soil Conservation Service as part of the St. Clair County Soil Survey in 1969. The survey classified the majority of soils within the Township as poorly to very poorly drained clays and loamy sand over clay. Due to a seasonally high water table, these soils have severe limitations for the use of septic tank disposal fields because use of septic tanks in poorly drained soils can force waste effluent to the surface and into surface water sources or ground water aquifers, thus causing contamination. Adequate storm drainage and centralized sewer systems are essential where these soils are evident.

Water Resources

Three major water resources exist within the Township; the St. Clair, Belle and Pine Rivers. These rivers are some of the most well defined physical features of the Township. The St. Clair River is a major commercial shipping channel which runs between Lake Huron and Lake St. Clair. Thus, communities fronting on the St. Clair River have access to all of the ports along the great lakes. Aside from its use for private recreation, the river, as a transportation resource, also provides the Township with a major generator of industrial activity. The Pine and Belle Rivers are both tributaries of the St. Clair River that weave through the Township.

Flood Plains

Flood plain information for this Master Plan is based on the January 1978 Flood Insurance Study by the Federal Insurance Administration (Department of Housing and Urban Development). From a planning standpoint, this information is intended to promote flood plain management through implementation of "sound land use" within flood plain areas. As illustrated on the Flood Boundary and Floodway Map, extensive areas along the Belle River are designated within it's "floodway". Similar information is also indicated for the Pine River, St. Clair River and Jorden Creek. The "floodway" is defined in the Flood Insurance Study as "the channel of a stream, plus any adjacent flood plain areas that must be kept free of encroachment in order that the 100 year flood be carried without substantial increase in flood heights".¹ Efforts should be made to maintain these areas in their natural state to assure preservation of natural features and to limit damage to personal property.

¹ *Flood Insurance Study East China Township, U. S. Department of Housing and Urban Development, Federal Insurance Administration, January, 1978, Page 12.*

Existing Land Use

An inventory of existing land use is one of the most basic of all planning studies. It establishes a baseline of existing conditions against which various future land use scenarios can be weighed. In January of 1994, a windshield survey of existing land use within East China Township was performed and recorded on a Township base map. This base map had been updated with input from the Township administration prior to the field work. Land use information was mapped on a full size Township base, with various colors representing different land use categories. A reduced copy of this map is included at the end of this section. The following text discusses the various land use categories which were utilized for the inventory.

Land Use Categories

Single-family residential: All residential buildings containing one dwelling unit, except for mobile homes in mobile home parks were included within this category. If a parcel greater than five acres was used for a single-family residence, the area associated with that use is counted as only 0.5 acre with the remaining balance counted as vacant.

Multiple-family residential: Any residential building or zoning lot containing more than one dwelling unit, including mobile homes.

Office: Buildings and their related parking space which have a principal use for executive, administrative, professional, accounting, writing, clerical, stenographic, drafting and sales purposes. Medical offices, not including veterinarians are also counted within this category.

Commercial: All establishments engaged in the sale of goods, including related parking space, are counted as commercial

uses. Day care centers, veterinarians, banks and other financial institutions are also included.

Industrial: Manufacturing industries, indoor or outdoor storage facilities, lumber yards, warehousing and heavy automobile repair shops are included within this category.

Detroit Edison: All land owned by Detroit Edison is included in this category.

Parks: All land used for parks or open space and owned by the Township.

Public School: School buildings, playgrounds and related facilities owned by the school district are included in the school category. Vacant land owned by the school district is also included.

Public: This classification includes all Township owned land buildings and facilities except as otherwise specified in other categories.

Quasi Public: Churches, cemeteries, private schools and other institutional uses are categorized as quasi public.

Marina: Includes privately owned land used specifically for the docking and/or launching of a number of boats.

Road right-of-way: Private and public road rights-of-way as platted or shown on the base map.

Rivers and canals: Rivers and canals as shown on the base map.

Railroad right-of-way: All railroad right-of-way still within active use or retained by the railroad.

Analysis of Existing Land Use

Detroit Edison is the single largest land use in East China Township. As shown in Table 1, the amount of land owned by Detroit Edison in the Township has increased consistently since 1965. Currently their holdings cover 1,110 acres of land in the Township. This is about two square miles of area and roughly one fourth of all land in the Township. In addition, as shown by the land use map, Detroit Edison has considerable land area along the Township boundary to the west in adjacent China Township. Detroit Edison land spans more than two lineal miles of Range Road frontage.

Single family residential land is the next most extensive land use category . The 1994 land use inventory recorded 1,072 acres in single family residential use; roughly 25% of all land in the Township and 35% of all developed land. The amount of land used for single family homes tripled from 1965 to 1977. This coincides with demographic trends for the period which showed dramatic increases in population and housing. Housing growth slowed considerably during the late 1970s and 1980s. Consequently, there was little change in the amount of land devoted to single family use from 1977 to 1994.

**Table 1
Existing Land Use (1994)**

Land Use Category	Area (acres)		Percent of Developed	Percent of all Land
<i>Residential</i>	1,101.4	--	35.3%	25.4%
<i>Single Family</i>	--	1,072.4	--	--
<i>Multiple Family</i> ¹	--	28.7	--	--
<i>Business</i>	31.4	--	1.0%	0.7%
<i>Commercial</i>	--	16.1	--	--
<i>Office</i>	--	15.3	--	--
<i>Industrial</i>	244.5	--	7.8%	5.6%
<i>Detroit Edison</i> ²	1,110.2	--	35.6%	25.6%
<i>Parks</i>	98.2	--	3.2%	2.3%
<i>Public School</i> ³	89.7	--	2.9%	2.1%
<i>Public</i>	42.3	--	1.4%	1.0%
<i>Quasi Public</i> ⁴	80.2	--	2.6%	1.8%
<i>Marina</i>	4.0	--	0.1%	0.1%
<i>Other</i>	315.5	--	10.1%	7.3%
<i>Road R.O.W.</i>	--	214.1	--	--
<i>Rivers & Canals</i>	--	71.1	--	--
<i>Railroad R.O.W.</i>	--	30.3	--	--
Developed	3,117.4	-	100.0%	71.9%
Undeveloped ⁵	1,218.9	-	--	28.1%
Total Land	4,336.2	-	--	100.0%

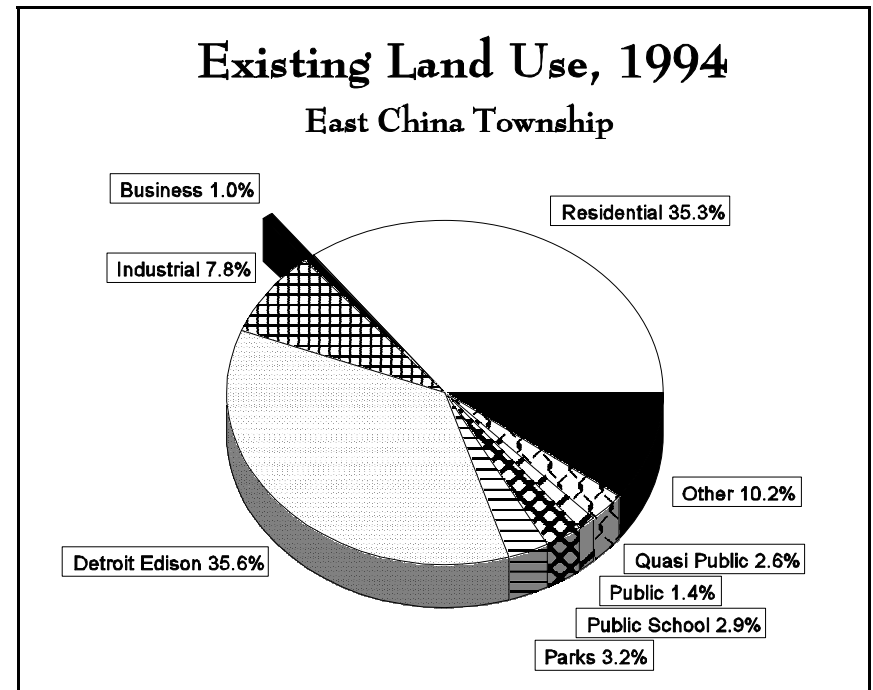
1 Includes 3.0 acres of land used for a mobile home park.

2 Includes all Detroit Edison owned property, vacant and developed.

3 Includes all school owned property regardless of use.

4 Includes cemeteries, churches, private utilities and private clubs.

It should be noted that some of the residential parcels shown on the land use map contain a small dot. This dot signifies that a parcel of land is five acres or greater in area. In such cases, 4.5 acres of the land are recorded as vacant and only 0.5 acre is recorded in the single family residential category. A similar methodology has been used in previous Township land use inventories. However, areas less than 5 acres are simply recorded in the single family residential category. Division of these parcels may have provided additional building sites without affecting the land area devoted to single family use as shown in the land use summary tables.



Multiple family residential housing constitutes a very small proportion of the Township's land use. Presently there are only about 29 acres of land devoted to multiple family use. As a proportion, this is a noticeable increase since 1977 when there were only 2.1 acres.

Generally, business uses occupy from two to four percent of all developed land in a typical township. However, East China Township is not typical. The large amount of land owned by Detroit Edison makes a straight comparison to other areas impossible. When the total acreage figure is adjusted to account for the Detroit Edison land, business uses occupy about 1.5 percent of all developed land. This is still a lower amount than typically expected. It can be surmised that this may be attributed to the significant commercial areas in nearby St. Clair and Marine City.

While there has been some growth in the industrial category, a change in the methodology accounts for much of the increase. If a parcel of land is occupied by an industrial use, the entire parcel is added to the industrial category regardless of the fact that some portions may be vacant. Past studies have attempted to estimate the amount of land occupied by buildings and facilities. Based on field analysis alone it was not practical to make such estimates.

The amount of Township park land has increased significantly over time. In 1965 there were no public parks in the Township. By 1977 nearly 76 acres of park were created and by 1994 there was a total of 98 acres. The majority of this park land is concentrated in the large Township parks located near the Township Hall. The remaining balance is made up of land occupied by two waterfront areas; one at the south and one at the north end of the Township and by a neighborhood park located at the intersection of Elmwood and Riverside.

**Table 2
Land Use Trends (1965 to 1994)**

Land Use Categories	Year of Land Use Inventory			Change	
	1965	1977	1994	1965-77	1977-94
<i>Residential</i>	--	--	--	--	--
<i>Single Family</i>	388.4	506.3	1,072.7	30.4%	111.9%
<i>Multiple Family</i> ¹	0.1	2.1	28.7	2000.0%	1266.7%
<i>Business</i>	--	--	--	--	--
<i>Commercial</i>	13.3	12.1	16.1	-9.0%	33.1%
<i>Office</i>	--	--	15.3	--	--
<i>Industrial</i>	124.1	114.7	244.5	-7.6%	113.2%
<i>Detroit Edison</i> ²	306.7	1,040.8	1,110.2	239.4%	6.7%
<i>Parks</i>	--	75.7	98.2	--	29.7%
<i>Public School</i> ³	55.5	55.5	89.7	0.0%	61.6%
<i>Public</i>	16.9	35.1	42.3	107.7%	20.5%
<i>Quasi Public</i> ⁴	9.2	32.4	80.2	252.2%	147.5%
<i>Marina</i>	1.7	1.3	4.0	-23.5%	207.7%
<i>Other</i>	--	--	--	--	--
<i>Road R.O.W.</i>	224.2	207.3	214.1	-7.5%	3.3%
<i>Rivers & Canals</i>	71.1	71.1	71.1	0.0%	0.0%
<i>Railroad R.O.W.</i>	37.5	37.5	30.3	0.0%	-19.5%
<i>Developed</i>	1,248.7	2,191.9	3,117.4	75.5%	42.2%
<i>Undeveloped</i> ⁵	3,087.5	2,144.3	1,218.9	-30.6%	-43.2%
<i>Total of All Land</i>	4,336.2	4,336.2	4,336.2	--	--

1 Includes 3.0 acres of land used for a mobile home park.

2 Includes all Detroit Edison owned property, vacant and developed.

3 Includes all school owned property regardless of use.

4 Includes cemeteries, churches, private utilities and private clubs or conservation areas.

5 Includes single family lots used as yard but not containing a structure

A small parcel of land which contained a historic one room school house is now used as a public historical museum, causing a slight decrease in school land. However, this reduction of land was offset by the purchase of land for an athletic complex on Meisner Road. There has been a net increase of about 35 acres of school land since 1977 due to acquisition of land for the athletic complex.

The amount of public land has also increased over time. In 1965 there were 16.9 acres of land owned by the Township. This increased to 35.1 acres by 1977. In addition to the creation of the historical museum mentioned above, the Township has constructed a treatment plant and water tower since the 1977 inventory, increasing the amount of public land considerably to 42.3 acres. Still, public land uses (other than public parks) account for only 1.4 percent of all developed land.

A total of 2.6 percent of all developed land falls within the quasi public land use category. The amount of land within the quasi public category has increased in recent years mainly due to the expansion of the hospital complex and construction of a church adjacent to the Township hall. Marina space decreased slightly from 1965 to 1977 but increased significantly by 1994. This is due to the development of a residential condominium subdivision which includes single family homes and a private marina for residents.

The "other" category includes street right-of-way, rivers and canals and railroad right-of-way. With the exception of land used for bike path, the amount of land devoted to rivers and canals and railroad right-of-way has remained relatively constant since 1965. A number of rail lines or spurs in East China are no longer in use. However, it appears that much of the right-of-way is still owned by railroad companies. Road right-of-way on the other hand decreased from 1965 to 1977, and increased from 1977 to 1994. The increase in recent years is related to the development of subdivisions and the expansion of some road right-of-way widths since 1977. At present 214 acres of land are in use as road right-of-way. This

is about seven percent of all developed land.

Demographics

Housing

Households: East China Township has experienced significant growth in the number of households since 1960. The largest increase, by number and proportion was from 1970 to 1980, when 394 units were constructed. Housing growth in East China Township has generally been much higher than growth in adjacent areas and has been well above growth rates for the County as a whole. Table 3 at the right, provides a summary of East China's housing growth and a comparison to trends in other areas based on U.S. Census data.

Table 3
Comparison of Household Growth

Community	1960	1970	1980	1990	1960 to 1970	1970 to 1980	1980 to 1990
<i>East China Twp.</i>	449	667	1,061	1,236	48.6%	59.1%	16.5%
<i>China Twp.</i>	437	552	706	817	26.3%	27.9%	15.7%
<i>Cottrellville Twp.</i>	513	662	1,054	1,171	29.0%	59.2%	11.1%
<i>Marine City</i>	1,276	1,417	1,575	1,693	11.1%	11.2%	7.5%
<i>City of St Clair</i>	1,380	1,518	1,764	2,015	10.0%	16.2%	14.2%
<i>St Clair County</i>	31,268	36,416	47,308	52,882	16.5%	29.9%	11.8%

It should be noted that consistent increases in the number of households does not necessary imply commensurate increases in the Township's population. Although housing growth has been significant, population growth has been relatively flat. In many ways, housing growth can be a more accurate indicator of growth than population. For example, an increase in housing can dramatically affect demand for Township water, sewer, police and fire services. A similar increase in population without an increase in the number of housing units would not have the same impact.

Age of Housing: East China Township's housing stock is relatively new. The majority (50.8%) of all housing has been constructed since 1970. This is far greater than the proportion of the County's housing built since 1970 (37%) or the State's (34%). A fair number (219) of the housing units were built prior to 1939. Some of these may be of historic note and others display good architectural characteristics which may be worth preserving. While the proportion of units in the Township built prior to 1939 is far below the proportions for the County or the State, their relative scarcity may make them more valuable as historic resources.

Table 4
Age of Housing, East China Township

Year Structure Built	East China Township		St. Clair County	Michigan
	number	percent		
1980 to 1990	283	20.5 %	16.0	13.6 %
1970 to 1979	419	30.3 %	21.2 %	20.4 %
1960 to 1969	195	14.1 %	12.6 %	16.2 %
1950 to 1959	153	11.1 %	13.6 %	17.9 %
1940 to 1949	114	8.2 %	10.9 %	11.1%
1939 or earlier	219	15.8%	25.8 %	20. 8%
Total	1,383	100.0%	100.0%	100.0%

The table at the right shows median household income and median home values for East China Township and its neighbors. Typically, income and home value would be directly related; as income increases, home value increases. That is not the case in East China. The Township ranked fourth in the income list and yet, has the highest median home value in the area. Evidently, as home values increased in the Township, a number of people who purchased their homes many

Table 5
Median Income and Median Home Value

Community	Median Household Income	Median Home Value
East China Township	\$31,359	\$82,500
China Township	\$47,585	\$77,100
Cottrellville Township	\$34,651	\$74,500
Marine City	\$27,088	\$48,600
City of St. Clair	\$32,676	\$69,600
St. Clair County	\$30,692	\$59,400
State of Michigan	\$31,020	\$60,600

years ago have remained. Newer homes, which are more expensive than existing homes have played a large part in increasing the median home value. At the same time, there has been a tremendous increase in the demand for waterfront property in recent years and East China Township has a considerable amount of frontage along the St. Clair River. Thus, homes which have existed for years are now more highly valued.

Population

Past Population Growth From 1960 to 1970 and again from 1970 to 1980, East China Township experienced very rapid growth. However, population growth slowed significantly from 1980 to 1990. Population growth for the decade was 3.0 percent, the lowest rate for the area. Although population growth was higher than the State's increases, growth in the Township was well below that of the County. Trends in Southeast Michigan indicate that most areas which experienced growth from 1980 to 1990 did so due to population shifts rather than sizable increases in the number of live births. This is probably true for the Township and St. Clair County as a whole and thus, its population increases are most likely related to migration. From 1960 to 1980, Detroit and other large cities experienced tremendous drops in population as residents moved to the suburbs. The present State population is about nine million. From 1960 to 1980 Detroit's population decreased by about one million. This shift from Detroit and its nearby suburbs to more rural areas fueled the Township's growth from 1960 to 1980. As noted earlier, more recent growth is probably related to the popularity of areas with water access. Even though population growth slowed from 1980 to 1990, the number of households in East China increased by 16.5 percent, the highest rate for the area. This inconsistency is quite remarkable and it illustrates the significant impact that age distributions can have on population. Remember that East China's median age is, by far, the highest in the area and the household size is the lowest. Should this trend change to any significant degree, population will increase very rapidly even without sizeable increases in the housing stock.

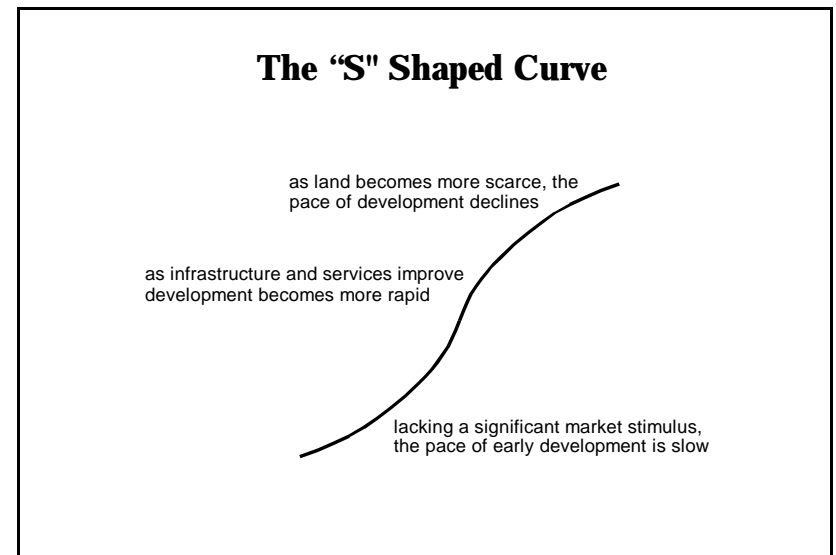
Population Projections:

Population growth is different for each municipality depending upon societal and economic factors. Many demographers believe that growth in most municipalities, when plotted on a graph, has a shape that approximates an "S". This curve is only applicable over an extended time period due to constant fluctuation and, of course, there are always exceptions. However, the curve can be useful for population projection. In other words, where on the curve, is East China Township?

The graph of East China Township's past growth, shown on the following page, approximates an S shaped curve. This would imply that the Township's population growth will continue, but at a slower pace than in the past. It should be noted that the decreasing rate of growth shown in the head of this graph is exaggerated. Small family sizes and inordinately small household sizes have caused population growth to slow, even though the number of households has increased significantly. Thus, it can be projected that population growth in the Township

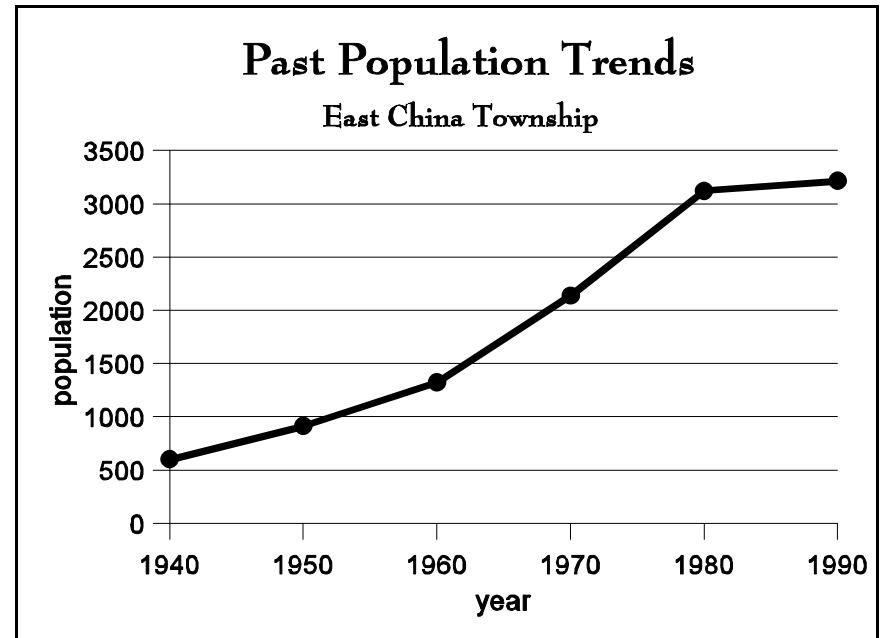
**Table 6
Comparison of Population Trends**

Community	1960	1970	1980	1990	1960 to 1970	1970 to 1980	1980 to 1990
East China Township	1,374	2,139	3,122	3,216	55.7%	46.0%	3.0%
China Township	1,836	2,160	2,466	2,644	17.6%	14.2%	7.2%
Cottrellville Township	1,834	2,194	3,075	3,301	19.6%	40.2%	7.3%
Marine City	4,404	4,567	4,414	4,556	3.7%	-3.4%	3.2%
City of St. Clair	4,538	4,770	4,780	5,116	5.1%	0.2%	7.0%
St. Clair County	107,201	120,175	138,802	145,607	12.1%	15.5%	4.9%
State of Michigan	7,823,194	8,875,083	9,262,078	9,295,297	13.4%	4.4%	0.4%



will generally continue but at a declining pace. Keeping this in mind, we can attempt several mathematic projection techniques to obtain an estimate of the Township's population at some future date. Forecasting population is very speculative. By design, one must rely on basic assumptions related to past events or conditions. However, these things often change. Thus, although some guesses are better than others, any forecast must be viewed as only speculation.

Summary of Population Forecasts: In earlier planning studies, a range of forecasting methods were used to forecast future populations in the Township. These have been summarized by the table at the right and averaged to produce very general predictions. While some of the individual forecasts may appear to be unlikely, changes in society could mean radical changes in population growth characteristics for the area. For example, at present, household sizes are extremely small due to the Township's high median age. It has been our experience that some communities go through age cycles; from young to old to young again. Should this occur in East China, an influx of young families could mean an explosion in population growth as these young families begin to have children. In addition,



**Table 7
Population Forecast Summary**

Technique	Year 2000	Year 2010
Linear	3,940	4,525
Logarithmic	3,222	3,430
Exponential	5,557	7,942
Average Rate	4,338	5,851
Average Numeric	3,667	4,137
SEMCOG	3,333	3,454
Average	4,010	4,890

technological innovations and restructuring of corporate America have led to a surge in home offices. This frees people from the restriction of living within proximity to economic centers and could mean further growth for East China. In sum, forecasts are only as good as the assumptions they are based upon.

Age Group Trends: From 1980 to 1990, the Township's age characteristics changed dramatically. There has been a tremendous increase in the median age. An increase in median age would be expected corresponding to the aging of baby boomers and in fact, the number of people in the 25 to 44 age group has increased. However, preschool and school age groups have unexpectedly declined. Table 8 at the right, shows age group proportions for East China Township and its neighbors. It illustrates that East China Township is extremely unique compared to surrounding communities. Its median age is much higher than any of the other communities and it has the lowest proportion of people in every age group below 45 and the highest proportion of almost every age group above 45.

**Table 8
Comparison of Age Distributions**

Age Group	East China Township	China Township	Cottrellville Township	Marine City	St. Clair
<i>under 5</i>	5.4%	5.9%	8.0%	7.5%	7.1%
<i>5 to 17</i>	16.5%	24.9%	19.8%	20.7%	18.8%
<i>18 to 24</i>	8.4%	9.0%	8.7%	9.4%	9.3%
<i>25 to 44</i>	28.0%	32.2%	31.0%	30.5%	30.2%
<i>45 to 54</i>	12.8%	12.3%	11.1%	8.3%	9.1%
<i>55 to 64</i>	10.7%	7.9%	9.0%	8.4%	9.8%
<i>65 to 74</i>	8.7%	5.1%	7.6%	8.9%	8.6%
<i>75 to 84</i>	6.3%	2.3%	4.0%	4.9%	5.4%
<i>85 +</i>	3.3%	0.4%	0.8%	1.4%	1.7%
Total	100.0%	100.0%	100.0%	100.0%	100.0%
Median Age	39.3	32.9	33.8	32.2	34.4

Economic Characteristics

Employment by Industry: A total of 19.4 percent of East China residents are employed in the retail trade industry. While retail trade is commonly one of the top three employment industries it is somewhat unusual for it to be the top industry. This can generally be attributed to two things. First, East China has a slightly higher proportion of people employed in retail trades when compared to the State and St. Clair County. This is probably related to tourist oriented businesses in the City of St. Clair and Marine City. Second, the manufacturing industry, though one of the top three, is fairly low. This is probably related to a scarcity of industrial uses in the Township and a high number of people employed by Detroit Edison or related industries. This is apparent by the high proportion of residents employed in the utility industries. Furthermore, the construction industry, which is in some ways related to the utilities industries, employs a high proportion of East China residents. East China has twice the proportion of residents employed in the construction industry than does St. Clair County and nearly three times the proportion for the State.

Employment by Occupation: Nearly 20 percent of all of East China's residents are employed in administrative support positions. Compared to the County and the State, this is a very high proportion. This is probably related to the high number of people in executive, professional, and technical occupations. This would seem to contradict the high number of people employed in the construction industry, shown in the previous table. However, it must be noted that the construction industry employs people from many occupations and it appears that many of the people employed in the white collar occupations live in East China. This is especially notable when analyzing the "blue collar" occupations. East China has a low proportion of residents employed in the census designated fields of "precision production, craft and repair, machine operators, assemblers and inspectors."

Educational Attainment: A high proportion (17.7 percent) of East China residents who are at least 25 years old are college educated. This parallels the County figure which is about 17.5 percent. However, both East China and the County fall below the State in this category; about 24 percent of residents 25 years and older are college educated. A very high proportion of Township residents who are at least 25 years old, have some college education, 24 percent. This is well above State and County figures of 20.4 and 20.1 respectively and is a significant increase since 1980 when only 16 percent had some college education. Compared to its neighbors, East China Township has a high proportion of people who are at least 25 years old, that are college educated, 17.7 percent. This is roughly the same as China Township where 18.2 percent of the residents are college educated but it is far below St. Clair City's figure of 27.4 percent. East China has a high proportion of people with Graduate or Professional degrees, 4.71 percent, but this is still less than St. Clair's figure of 19.0 percent. East China exceeds its neighbors, including St. Clair, in the proportion of residents with some college but no degree.

Table 9
Educational Attainment, East China and Neighboring Communities

Education attainment (People 25 Years and Over)	East China Township	China Township	Cottrellville Township	Marine City	St Clair City
<i>Less than 9th grade</i>	9.9%	7.4%	8.1%	9.1%	5.3%
<i>9th to 12th (no diploma)</i>	13.7%	16.9%	21.1%	20.5%	12.0%
<i>High school graduate</i>	34.3%	36.8%	37.4%	43.4%	36.0%
<i>Some College (no degree)</i>	24.4%	20.8%	19.8%	16.5%	19.2%
<i>Associates Degree</i>	6.6%	8.0%	5.1%	3.9%	8.4%
<i>Bachelor Degree</i>	6.4%	8.2%	4.5%	4.5%	10.0%
<i>Graduate or Professional Degree</i>	4.7%	1.9%	4.1%	2.1%	9.0%
TOTAL	100.0%	100.0%	100.00%	100.00%	100.00%

Demographic Summary

Housing: Most of East China Township's housing was constructed since 1960. The decade from 1970 to 1980 showed the most intensive growth when 394 units were constructed. Growth from 1980 to 1990 was strong, but slower than previous decades. About 80 percent of the Township's housing is owner occupied, a greater proportion than the State but less than common for the area. This does not mean that single family homes are being rented but rather that the Township has more apartment buildings than some local communities. Rental vacancies at about 17 percent, are high. East China has the highest median home value in the area, \$82,500. It also has the lowest number of people per household, 2.7 for owner occupied units and 1.7 for renter occupied units.

Population: Population in the Township has been climbing at an increasing rate since 1940. The greatest increase was experienced from 1970 to 1980 when population jumped by 983 people over the decade. Growth from 1980 to 1990 slowed considerably. The 1990 population was 3,216. A population of about 3,700 is forecasted for the year 2000 and about 4,200 for the year 2010. The township has a low proportion of preschool and school age children and a high proportion of people above the age of 45, especially seniors. This results in a median age for the Township which is far above its neighbors.

Economics: A high proportion of East China residents are employed in industries related to retail trade, the manufacture of non durable goods, and construction. A high proportion of people have executive, professional and administrative support jobs. These are typically considered "white collar jobs." Even though Township residents have a high proportion of white collar jobs and fairly high educational attainment, the Township as a whole has a median income below that of its neighbors.

Single Family Residential

Residential land use is the second most extensive use in the Township, covering slightly less area than Detroit Edison. Of the residential land uses, single family homes cover the most area. In fact, existing and planned single family districts account for approximately 97 percent of all residential area. Areas designated as “single family residential” on the Future Land Use Map are intended primarily for use by single housing units, each located on their own lot or land area. Within this category, other related uses should be encouraged such as parks, golf courses or libraries which serve the residents of the area without hampering the single family environment. Other uses of a more intense nature should be strictly prohibited from intruding into the single family areas and should, where practical, be separated by a transitional use. In such instances where a transitional use cannot or does not exist, buffers between the uses should be created with walls, berms and landscaping.

Single family housing and lot sizes within Township vary significantly. A significant number of homes that were built along the waterfront as cottages have been converted in recent years for permanent occupancy. These areas have a unique character and require special zoning standards to assure that change is not prohibited but does occur in a manner that has a positive impact on the area as a whole. At the opposite end of the lot size spectrum is large acreage parcels. A number of homes in the Township are on large parcels that are not within a typical subdivision. In some cases these large areas will probably be further split to allow additional home sites or will be subdivided. However, due to environmental conditions, lot shapes and the setting of the homes on the lots, many of these lots will never have more than one home.

Aside from the river front lots and acreage parcels there are only a handful of conventional subdivisions in the Township. These have been developed under the guidance of and in conformity with the Township's land use regulations. Generally, the lot sizes within the Township have been well established for many years. The zoning ordinance currently includes two minimum single family residential lot sizes; one of 7,800 square feet and the other with a lot size of 10,200 square feet. This equates to densities of 4.1 and 3.2 respectively when space necessary for road construction is considered. The present residential densities seem to be appropriate for East China. If anything, the market is demanding somewhat larger lot sizes to accommodate larger homes. Of course, the present standards do not set a maximum lot size and thus, the current lot sizes do not limit developers from providing larger lot sizes.

Multiple Family Residential

Multiple family residential development has greatly increased over the past few decades with an especially significant increase of housing units for the elderly. However, the amount of planned multiple family area is still very low in relation to residential land use as a whole. It should be noted that the existing mobile home park, which covers about three acres of land, is included within the multiple family category for the purposes of the existing land use study and density. However, the multiple family residential category of the Future Land Use map is not intended to imply that mobile home parks would be permitted within any area shown for multiple family use. Mobile home parks are unique developments with use characteristics unlike a typical multiple family development. Certainly the architecture of the units is different. In addition, the layout and infrastructure demands of mobile home parks is significantly different than a multiple family unit and the uses allowed by the State within mobile home parks are far more extensive than those which would be permitted within one of the Township's multiple family districts.

Multiple family areas are intended primarily for a range of residential uses such as apartments and attached site condominiums. The key distinction is that areas designated as multiple family will allow two or more housing units to be located on a single land area. The uses would typically be developed at a higher density than single family areas thus allowing them to serve as transitional uses from areas of non-residential use or major thoroughfares. Related accessory uses such as child care centers or recreation facilities could also be situated in multiple family developments.

Neighborhood Units

A neighborhood unit is an area containing residential land uses that have an easily identifiable cohesiveness due to lot sizes, development forms, housing styles, physical characteristics or natural boundaries. The physical boundaries include natural and man made features such as major thoroughfares, railroads, rivers, and other existing or planned uses that are of a greater intensity than residential uses. From a planning standpoint it is important to reinforce the cohesiveness of a neighborhood unit and limit land uses contained within the neighborhood to those serving the residential function such as open space park land, elementary schools, and of course housing. The neighborhood unit should remain free from intrusion by non-residential uses.

In recent years communities have been experiencing increases in the number of home occupations. However, the uses are unlike the typical home occupations of the past. Modern home occupations are a result of improvements in computer technology, corporate downsizing and increasing competitiveness associated with the global economy. With a small office and few or no support staff, a small business owner can operate out of the home with little or no impact to the neighborhood. In other cases fairly innocuous businesses can cause major problems. It will be essential to build appropriate zoning controls to assure that these new forms of home occupation exist without disrupting the integrity of the neighborhoods.

Open Space

The provision of open space within a neighborhood is desirable and should be strongly encouraged. In the past, elementary schools formed the nucleus of the neighborhood unit providing community space, play areas and open land. Most elementary schools built today are constructed along the edge of a neighborhood unit with direct access to a major thoroughfare. These new schools often serve not one, but several neighborhood units. Without the benefit of this public space being provided by the schools communities have attempted to provide the space in other means, either by creating public parks or working with developers to provide private open space for a neighborhood's residents. Such space may be in the form of an active recreation space for unorganized sports or simply as passive open space provided to preserve sensitive natural areas such as a flood plain, wetland or a forest.

Aside from outright purchase of space, single family clustering and open space subdivisions are valuable tools which can be used to encourage the provision of open space. The one family residential cluster housing option allows the development of sites in an alternative manner where the normal subdivision approach would be too restrictive due to the parcel's shape, environmental characteristics, or location in relation to other land uses. Under the cluster option homes can be placed close to one another or attached in a concentrated portion of the site. The remaining area is left preserved or used for park space maintaining the overall density of the site.

Under the open space option lot area and width is reduced to a set amount below that which would normally be permitted. In exchange, the area that would have been used within the lot is used instead within a common open space. When using the open space option there should be a focus on achieving open space in a form that promotes a goal of the Township. This could include providing recreation land, preservation of natural features, or providing open space linkages to other neighborhoods. Such a mechanism can be accomplished either through a planned development approach or as an open

space option. In either case, the density should remain the same as it would through conventional development.

Bicycle Path Network

The Township is planning the development of paths for pedestrian and bicycle circulation. St. Clair County also has plans for a bike path that will run through East China along M-29. By linking these paths, the Township could create a bicycle path network. The bicycle path network that is planned for the Township should be incorporated into the design and planning for new residential developments. Thus, revisions to the Township's subdivisions regulations would be appropriate. Physical connections to the path should lay within dedicated rights-of-way or easements. Local streets may need to intersect the path to connect to other residential areas, however, they should be kept to a minimum in order to limit the likelihood of pedestrian/vehicle accidents. Where possible the Township should encourage the creation of open space adjacent to the path to decrease intrusion into lots and to enhance the path system as a recreation amenity.

Holding Capacity

The planned residential areas in the Township were divided into neighborhood units based on their physical boundaries and their allowable densities. To determine the dwelling unit holding capacity the acreage and number of existing homes (of both single family and multiple family) were summarized for the individual neighborhood units. Parcels greater than five acres that contain a single home were considered likely to be divided. For these parcels, five acres of land were dedicated to the existing dwelling unit and the remaining acreage was added to the undeveloped residential acreage. Once the number of existing dwelling units and their applicable acreage were established the remaining undeveloped planned residential area was measured. Land area within the Belle River flood plain was extracted because it is unsuitable for residential development. Area was then divided into categories of single family and multiple family undeveloped "usable" land.

**Table 10
Usable Undeveloped Residential Area**

Residential Neighborhood	Total Acres	Residential		Undeveloped Residential		Usable Undeveloped Residential	
		Existing	Undeveloped	In Flood Plain	Net Usable	Single Family	Multiple Family
A	139.8	121.7	18.1	0	18.1	10.2	7.9
B1	131.7	91.4	40.3	37.9	2.4	2.4	N/A
B2	269.7	160.5	109.2	85.5	23.7	23.7	N/A
C1	90.1	39	51.1	51.1	0.0	0.0	N/A
C2	353.7	25.4	328.3	48.6	279.7	279.7	N/A
C3	359.3	21.2	338.1	79	259.1	259.1	N/A
D	188.1	69	119.1	95	24.1	24.1	N/A
E	143.4	135.3	8.1	0	8.1	8.1	0.0
F1	237.3	66	171.3	0	171.3	153.7	17.6
F2	120.1	106.5	13.6	0	13.6	7.7	5.9
F3	43.9	13.8	30.1	0	30.1	0.0	30.1
Total	2,077	849.8	1,227.2	397.1	830.1	768.7	61.4

The total area (in acres) was multiplied by the number of dwelling units per acre possible with regards to the zoning standards that would apply for each area. This was then multiplied by household size to achieve a population projection. Table 13, which follows, shows the ultimate dwelling unit capacity and the ultimate population capacity for all of the neighborhoods.

R-2 Zoning District:	3.2 dwelling units per acre allowed
R-1 Zoning District:	4.1 dwelling units per acre allowed
RM-1 Zoning District:	9.68 dwelling units per acre allowed

**Table 11
Population Capacity of Single Family Areas**

Residential Neighborhood	(Usable undeveloped areas)			Existing Single Family Dwelling Units	Single Family Population Capacity ²
	Acres	Density Allowed	Total Dwelling Units Possible		
A	10.2	3.2	32	321	957
B1	2.4	3.2	7	140	397
B2	23.7	4.1	97	300	1,085
C1	0.0	4.1	0	8	21
C2	279.7	4.1	1,146	7	3,273
C3	259.1	4.1	1,062	13	3,051
D	24.1	4.1	98	55	426
E	8.1	3.2	25	98	335
F1	153.7	3.2	491	123	1,726
F2	7.7	4.1	31	279	841
F3	0.0	4.1	0	20	54

²The East China Township average owner occupied household size of 2.70 persons is used for the existing dwelling units. The St. Clair County average owner occupied household size of 2.84 persons is used for the total new dwelling units possible.

Total	768.7	3.2/4.1	2,989	1,364	12,166
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**Table 12
Population Capacity of Multiple Family Areas**

Residential Neighborhood	Multiple Family (Usable Undeveloped Areas)			Existing Multiple Family Dwelling Units	Total Population Capacity ³
	Acres	Density Allowed	New Dwelling Units Possible		
A	7.8	9.68	75	44	257
B1	--	--	--	--	N/A
B2	--	--	--	--	N/A
C1	--	--	--	--	N/A
C2	--	--	--	--	N/A
C3	--	--	--	--	N/A
D	--	--	--	--	N/A
E	0.0	9.68	0	71	122
F1	17.6	9.68	170	48	488
F2	5.9	9.68	56	103	311
F3	30.1	9.68	291	0	695
Total	61.3	9.68	592	266	1,873

³ The East China Township average renter occupied household size of 1.72 persons is used for the existing dwelling units. The St. Clair County average renter occupied household size of 2.39 persons is used for the total new dwelling units possible. Multiple family areas include an additional 180 persons in the Total Population Capacity column to accommodate for the 180 beds in the Faith Medical Care convalescent facility located at the Medical Campus.

**Table 13
Holding Capacity of the Township**

Neighborhood	Total Dwelling Unit Capacity		Ultimate DWELLING UNITS Capacity (A+B)	Total Population Capacity		Ultimate Population Capacity (C+D)
	Single Family (A)	Multiple Family (B)		Single Family (C)	Multiple Family (D)	
A	353	119	472	957	257	1,214
B1	147	0	147	397	0	397
B2	397	0	397	1,085	0	1,085
C1	8	0	8	21	0	21
C2	1,153	0	1,153	3,273	0	3,273
C3	1,075	0	1,075	3,051	0	3,051
D	153	0	153	426	0	426
E	123	71	194	335	122	457
F1	614	218	832	1,726	488	2,214
F2	310	159	469	841	311	1,152
F3	20	291	311	54	695	749
Total	4,353	858	5,211	12,166	1,873	14,039

Commercial Land Use

Generally, as a community grows and population increases, businesses locate within the community to serve the residents. However, the residential population of East China is concentrated primarily in two areas: the southern and northern portions of the Township. The shopping needs of residents in these areas are served by existing commercial districts within Marine City to the south and the City of St. Clair to the north. Thus, growth in population for East China may not result in a corresponding growth in commercial uses if commercial uses in adjacent cities meet the needs of new residents.

Classification of Commercial Uses

Commercial land uses can be broken down into several categories related to the type of use and intensity. There are many factors involved in the location and type of commercial business that an area can support. Therefore, they are divided into separate categories, with separate land use restrictions.

Local Business: Uses included in this category serve the convenience needs of the Township's residents. It is important that they be located in close proximity to residential uses and therefore, the uses allowed in these areas are limited to assure that they do not negatively impact nearby residences. Uses such as small grocery stores and beauty salons are typical local businesses.

Community Business: This includes a wider range of uses than would be included in the neighborhood business category. The uses are intended to be clustered in shopping centers and serve a broad population base of consumers. The centers

should be isolated, where practical, from single family residences because of their intensity. Heavy landscaping and screening should be used to buffer a business when an abutting single family development does exist. These areas will cater to the convenience and comparison needs of the Township's residents. Uses such as sit down restaurants, theaters and large grocery stores are typical community businesses.

General Business: These uses do not rely on a synergistic relationship to one another and are often located so as to serve passer-by traffic. Thus, they may offer products and services to consumers both in and outside of the community. Because these uses tend to have a high rate of vehicle turn-over, it is necessary that they be located only along a high capacity roadway. Uses such as automobile service stations and fast food restaurants are typical general businesses.

Office Service Business: This land use category is intended to accommodate space for sales, services, and other general uses in an office environment. These uses usually have a lower intensity than commercial uses because they have a relatively low volume of traffic, do not require extensive delivery of goods or other trucking activity and have shorter hours of operation. These uses may be included within transition zones between high and low intensity districts. They may also sometimes be part of a shopping center or a specialized district such as the Medical Campus. Uses such as accounting, banking, and real estate office are typical office service businesses.

Planned Commercial Areas

East China is positioned between the two cities of St. Clair and Marine City, which have both traditionally served as shopping outlets for Township residents. Port Huron to the north and shopping areas within the Detroit area also provide residents with commercial retail and services. Therefore, the demand for commercial space within the Township has been low.

Office uses are not as heavily influenced by the surrounding population. Their market base may not necessarily aim to attract residents of a community or passer-by traffic. In fact, their market influence may only be a small concentrated group of consumers. Also, the amount of vehicular and pedestrian movements as well as customer turn-over is low. The factors that create a demand for large office uses are usually more regional than local in scope. Existing office service land use is very low in East China. Only a small area at the north edge of the Township and part of the medical campus contain office uses. The largest area planned for office use is within the medical campus district. It offers the opportunity for related businesses such as medical supply shops, pharmacies, and fitness centers.

The major center for commercial activity in the Township is planned at the northwest corner of Puttygut Road and M-29. This is seen as the primary location for commercial land use because it is situated at the corner of important major thoroughfares and its relationship to existing and proposed land use. It is also centrally located relative to the northern residential areas and could serve the shopping needs of the Medical Campus area.

The northern portion of the Township includes a relatively small district planned for commercial activity located on M-29 just south of the Township Boundary. The surrounding area is mainly residential. This district is planned to primarily accommodate the convenience shopping needs of that area's residents.

The previous Master Plan sited an area to be planned for commercial activity at the corner of Recor Road and M-29, next to the Township Hall. Because of its small size, poor visibility and access, and potential negative impacts on surrounding land uses, a commercial district would no longer be suitable. This area is now planned for industrial research office space. This is a relatively new land use category within the Township, and is discussed to a greater extent in the industrial component of this plan.

Access Management

Access management focuses on the control of vehicle movements in and out of a development as a means of improving the efficiency and safety of adjacent roads. Because business uses tend to generate high volumes of traffic, it is necessary to give special attention to the design of access. Access management can result in a reduction in the number, and spacing of driveways and thus, reduce the potential for accidents. The following guidelines should be applied:

- P Whenever possible, adjacent developments should be encouraged or required to provide parking lot links in order to decrease the number of turning movements and increase the space between driveways.

- P All driveways from Major or Secondary Thorofares should include acceleration, deceleration and passing lanes.

- P Driveways should be placed as far as practical from street intersections.

- P Developers should be encouraged to work with the Township in the early stages of a development to determine the best driveway locations to minimize accidents and congestion, and to improve vehicle access.

Industrial Land Use

Industrial uses, generally, represent a positive addition to a community's tax base and promote the welfare of an area by providing an employment base. East China currently has about 43 percent of its total developed land area in industrial use - about 31 percent of all land in the Township. The total amount of land planned for industry is approximately 1,335 acres. Detroit Edison property accounts for most of the existing and future planned industry - 78 percent, or 1,035 acres.

Few changes have been made in the shape and location of industrial districts. For the most part changes focus on eliminating land use conflicts between different districts. With the sizeable amount of industry existing and the extensive amount of industrial land available for the future, there is no apparent need for any new planned industrial areas to be added. The “Planned Industrial Areas” section which follows, highlights some of the changes made.

Classification of Industrial Uses

Industrial Research Office (IRO): IRO areas are intended to accommodate and attract new, high technology industrial uses which are of a low intensity. These uses often have extensive portions of their buildings devoted to offices and tend to be located within industrial parks, isolated from heavy industrial areas.

Light Industrial: The Light Industrial category is intended to provide space for industrial uses whether in or outside of an industrial park environment whose external physical impacts are restricted to the district. Such areas should be well separated from residential areas by transitional uses or intensive screening techniques as shown in the previous section, “Commercial Land Use.”

Heavy Industrial: This category accommodates industrial uses of a high intensity that typically exhibit external characteristics that may have an impact on surrounding areas. Such uses should not be located near single family homes. Ordinances and review of plans by the city should attempt to focus negative impacts to the rear of each site while providing a pleasant image from adjacent roads.

Planned Industrial Areas

Industry has played a substantial part of East China’s history. The Township has devoted a significant portion of its land to

various industrial uses. The Detroit Edison Utility Company holds the majority of it, most of which is in the central part of the Township. Because of the high amount of industry already existing and planned for the future, East China is focusing most of its future planning on other various types of land uses such as Industrial/Research/Office parks, the Medical Campus and Single Family residential housing.

All of the planned industrial areas are located approximately in the central and northern portions of the Township. Of these areas there is one Heavy Industrial land use district which is located on the Detroit Edison property. This area is approximately 452 acres in size. The new category, Industrial Research Office, has one district that is located between the Township Hall and a Multiple Family Residential district. It is approximately 31 acres. The remaining 852 acres of land falls into the Light Industrial category.

Community Facilities

Public Facilities

The amount of land devoted to Township facilities has increased since the 1977 land use inventory. The water treatment plant on Recor Road and a water tower on Springborn Road account for the bulk of the increase. The Township property that was planned to hold the Civic Center is currently occupied by two tennis courts. Current land devoted to Township offices and existing and planned facilities appear to contain adequate space for the current and future needs.

The Township has, for many years, operated its own water system and treatment plant. East China also sells water to China Township, which abuts East China's west border. The original water plan was constructed in the early 1950s, with expansion to increase capacity in the mid 1960s. The Township plans to construct a new water plan in the next few years which will meet new stricter federal Safe Drinking Water Act requirements and provide capacity to adequately serve the customer base for the next 20 years. A water tower is located at Margaret Street in the north of the Township, along with a 500,000 gallon storage tank constructed in early 1990s on Springborn Road.

A wastewater treatment plant was constructed on Recor Road in the early 1980s. With the construction of this plant, the St. Clair Township Sewer Authority was formed to serve the Townships of China and East China. The Sewer Authority operates the treatment plant, while the sewer transmission systems are operated by the respective Townships. Maps are included on the following pages which graphically represents where sewer and water are currently available.

Recreation Facilities

The most notable progress made in expanding the Township’s recreation facilities has been in the development of Township Park and the construction of the proposed bicycle path network. Township Park is 80 acres in area and is located across from the Township Hall on the west side of M-29. It has been developed differently from its original plan and layout. Instead of a nine-hole golf course, the park caters to many different sporting activities including soccer, basketball, baseball, ice skating and sledding. It also has picnic areas, a playground area, and nature trails. The park is used by residents of the Township as well as residents from other nearby communities. In recent years, the Township has begun to create a bicycle path network. The network utilizes a portion of the abandoned Port Huron & Detroit Railroad rights-of-way to provide a circulation system for non-motorized vehicles. The path built within the abandoned railroad rights-of-way could serve as the spine of a system that can be linked to other paths throughout the Township. In this way a complete system can be created to link all areas of the Township.

Table 14
Current Recreation Facilities (1997)

Name	Type	Size (acres)	Description
<i>Township Park</i>	<i>Public, Regional</i>	<i>80.0</i>	<i>Field sports, nature trails, picnic area</i>
<i>River Park</i>	<i>Public, Neighborhood</i>	<i>0.2</i>	<i>picnic tables, playground equipment</i>
<i>Township Offices</i>	<i>Public, Local</i>	<i>1.0</i>	<i>soccer field</i>
<i>No name (east of Township offices)</i>	<i>Public, Local</i>	<i>1.0</i>	<i>tennis courts</i>
<i>East China Stadium</i>	<i>Public, Regional</i>	<i>11.0</i>	<i>high school football stadium</i>
<i>Hathaway Park</i>	<i>Public, Neighborhood</i>	<i>1.6</i>	<i>basketball court, playground equipment</i>
<i>Belle River Access (Springborn & Belle River Rd.)</i>	<i>Local</i>	<i>0.4</i>	<i>River access</i>
<i>Rivera Park (end of Rivera Road R.O.W.)</i>	<i>Public, Local</i>	<i>0.3</i>	<i>waterfront viewing, picnic tables</i>
<i>Southeastern Michigan Conservation Club</i>	<i>Private</i>	<i>7.0</i>	<i>picnic shelter and tables</i>
<i>Bike Path</i>	<i>Linear Park</i>	<i>7.3</i>	<i>Bike path on abandoned rail corridor</i>

A large tract of land located between the Belle River and Recor Road, west of Township Park, has changed from its master plan designation of Open Space Recreation to Park. However, the land use intent of this area has not changed. The area is mostly wetland with a few historic structures that may be worthy of preservation. It is also within the 100 Year Flood Plain of the Belle River. The northern portion of the Township contains one neighborhood park, Hathaway Park which has recently been expanded with the acquisition of 0.7 acres of land.

School Facilities

Past Master Plans showed approximate locations of new school buildings based on family sizes and projected population growth. Even though the planning and construction of educational facilities are the domain and responsibility of the School Board, coordination sometimes allows land to be reserved where necessary. An area between the bike path along the abandoned railroad rights-of-way and the existing public school property is planned for future school expansion. The land also provides a direct connection between the bike path and the existing public school property, thus allowing pedestrian access to the school site while minimizing road crossings.

Quasi Public Facilities

The amount of quasi public land has increased slightly since the previous master plan with the construction of a church near the Township Hall. Future quasi public additions will mainly consist of development relating to the River District Hospital. Growth in this area is projected to occur in a planned medical campus of related uses including medically related businesses, offices, elderly housing and, expansion of the hospital itself. All of these uses should develop in a manner that emphasizes the pedestrian environment and encourages non-motorized circulation. This not only allows mobility for the local elderly residents but a convenient system for those working in the area. In addition to projected expansion in the immediate vicinity of the hospital, future residential subdivisions may also contribute to the expansion of quasi public facilities

in the form of private open space for the use of a neighborhood's residents.

Thorofare-Land Use Relationships

Residential: Only minor, or local streets should be within residential neighborhoods. Through streets (preferably collector streets) should form the boundaries when an existing physical feature or a relative land use does not. The residential street layouts should serve to discourage through movements within the neighborhood. In the areas where residential neighborhoods border through streets, green space buffers, planting berms, and other various screening techniques should be applied. The main concern with residential areas near through streets is the safety and welfare of the residents.

Recreational: Recreation facilities that service the entire Township should be located on through streets, so that visitors can easily access the facility and not impact residential neighborhoods with heavy traffic. Neighborhood parks, including elementary schools, will most likely need to be located on a through street (preferably a collector street) so that it may be accessible by more than one neighborhood.

Commercial: Shopping centers are best located on through streets (preferably major thorofares) because of the intensity of their use. Commercial areas generate a large number of turning and parking movements which, if not properly planned for, can cause dangerous driving situations and disruption to a through route. Ingress and egress points for commercial properties should be installed so that the location of turning movements may be controlled. Access management techniques such as driveway spacing, property entrance distances from intersections, parking lot connections with adjacent properties, and marginal access lanes should all be considered when commercial development is proposed.

Industrial: Through streets can be located within an industrial area or, in some cases, might be better located as buffers between residences and industry. The interior streets of an industrial zone or park should be developed to standards that facilitate the movement of large vehicles. This may include wider road, gentler turning radii, and the ability to provide for sudden peak hour traffic loads. Street trees should be at least ten feet from internal drives to assure that branches are not damaged by trucks. Backing vehicles into the roadway should generally be prohibited and can best be controlled through the application of zoning standards and the review of site plans.

Hierarchical Street Classification System

Local Streets

Local streets consist of residential streets and industrial district service drives. They are to be used by people traveling to and from destinations within the neighborhood or district. Local streets should allow access to collector streets wherever possible, but in such a manner that through traffic is not encouraged to use the streets as a shortcut route. The Township's Subdivision Regulations and site plan review process should help assist in the development of local street networks by stubbing a street at the end of a site so it can be continued when the adjacent site is developed. A local street should be relatively short and narrow with a 60 foot right-of-way width, so as to divert high speed traffic to through streets.

Through Streets

These thorofares are normally wider and are intended to handle long-range traffic demands. The topography of the area, location and length of the street, and adjacent land uses to the street will assist in determining a through street's essential function and thus, its classification. For the purposes of this plan there are two classifications of through street, collector streets and major thorofares.

Collector Streets: These are streets that collect vehicles from local streets and distribute them to either local destinations or major thorofares. Collector streets carry a higher volume of traffic than local streets and thus require a greater width. An 86 foot right-of-way is adequate for this type of street.

Major Thorofares: This type of street serves some of the same purposes as a collector street, except that it usually extends over longer distances and therefore, handles a larger number of vehicles. Thus, a major thorofare will connect points of high traffic generation. The longer trips and wider rights-of-way on this type of facility accommodate higher speeds, which require design standards for safety such as minimum curve radiuses. Because of the high speeds desired and heavy traffic volumes, a 120 foot right-of-way width is sufficient for most major thorofares. If traffic volumes are predicted to be even greater, than a right-of-way width of 150 feet may be desired. Refer to the Cross Section Standards on the following page for a graphic description.

Future Road Rights-of-Way

As population in the Township and surrounding areas grow, roads will need to be widened in order to accommodate increases in traffic and to provide space for proper landscaping and pedestrian ways. The proposed rights-of-way widths for major thorofares and collector streets are listed at the right. The Thorofare Plan map at the end of this section provides a graphic depiction of the thorofare designations.

Major Thorofares	Future R.O.W.
King Road	150'
Puttygut Road	150'
Recor Road (bet. King Road & M-29)	120'
River Road (M-29)	120'
Collector Streets	Future R.O.W.
Recor Road (bet. M-29 & Point Dr.)	86'
Meisner Road	86'
St. Clair Highway	86'
Bree	86'
Springborn	86'
Range	86'
Belle River	86'

Major Thorofares

King Road: This is a major north-south connector between Marine City and St. Clair. Because of this, its use as a major thorofare is of great importance to East China Township. Major thorofare treatment and upkeep would relieve some of the through and truck traffic on M-29 and the residential portions of the Township. This would also provide sufficient access to the industrial areas in both China and East China Township.

Puttygut Road: Because of the existing and future planned development along Puttygut Road, it is categorized as a major thorofare. The Township's center for commercial activity, as well as the expansion of the Medical Campus will generate greater traffic volumes on this thorofare in the future. The road also serves as a connector from King Road to M-29.

Recor Road (between King Road & M-29): This east-west road is recommended as a major thorofare east of M-29. It is one of the few major links between King Road and M-29. The road will also provide access to Township Park and the planned industry adjacent to it.

M-29 (River Road): This road is planned as a major thorofare because of its convenience as a north-south traffic route through the Township. It connects the communities along the St. Clair River throughout the County. This makes it a State Road of regional importance to the Township. Because of the roads setting along the St. Clair River it has great potential as a scenic drive. Furthermore, the southern entrance from Marine City could be revamped to create a welcoming "gate way" into the community. For further details refer to the M-29 Entrance Way and Scenic Drive Treatment section of this Master Plan.

Collector Streets

Recor Road (between M-29 & Point Drive): This small stretch of the road provides access for residents of the area and traffic generated from the Township Hall.

Meisner Road: In the past Meisner Road has been recommended as a major thorofare, providing an additional east-west connector from King Road to M-29. The inability to acquire additional R.O.W. from adjacent properties, as well as the high residential density in the area, would make it difficult to upgrade the road to a major thorofare. Thus, the road is better suited as a collector to service residents and school traffic between King Road and M-29.

St. Clair Highway: Only a small portion of St. Clair Highway passes through East China Township. At this time there is no need for major thorofare treatment. However, if development progresses in the neighboring communities of China Township and St. Clair City, such a need may become apparent.

Bree Road: The primary function of this street is as a connector between St. Clair Highway and M-29. The road is only approximately one mile long and runs partially through a residential district.

Springborn Road: The primary function of this road is as a connector between Belle River Drive and King Road. The surrounding land is used and planned for single family residential development and thus, primarily carries residential traffic. Currently, Springborn stops at the Belle River. However, a bridge crossover and extension of Springborn is proposed to provide a continuous through street from King Road to M-29.

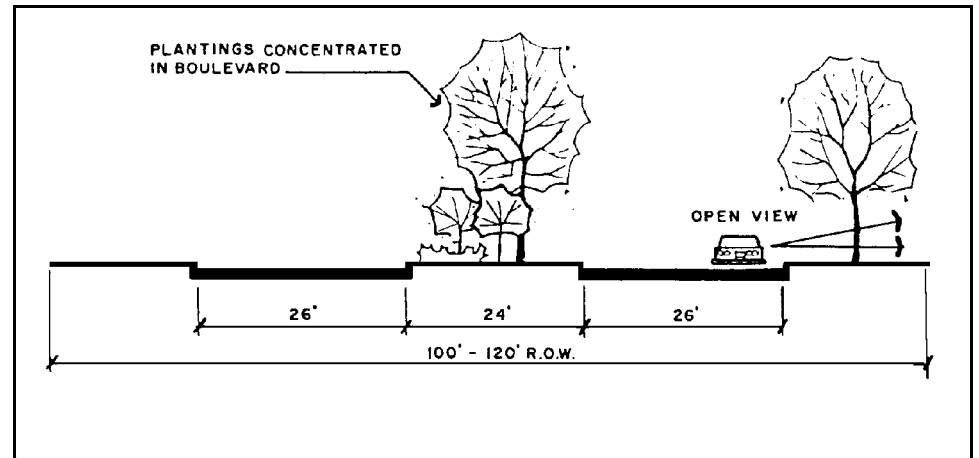
Range Road: This road will act primarily as an industrial collector and serve the proposed industrial corridor along the Port

Huron and Detroit Railroad.

Belle River Road: This road is a connector street from the Township boundary, to the south, to Meisner Road. It will accommodate new residential development in the area. The Belle River will act as a physical boundary to residential development so as to lessen the number of vehicles the street will hold.

M-29 Scenic Drive Treatment

A map is included on the following page which illustrates the proposed location of various types of landscaping treatment that can be used to enhance the character of M-29 as a scenic drive. Two types of road improvements are proposed, with related landscape treatment schemes.

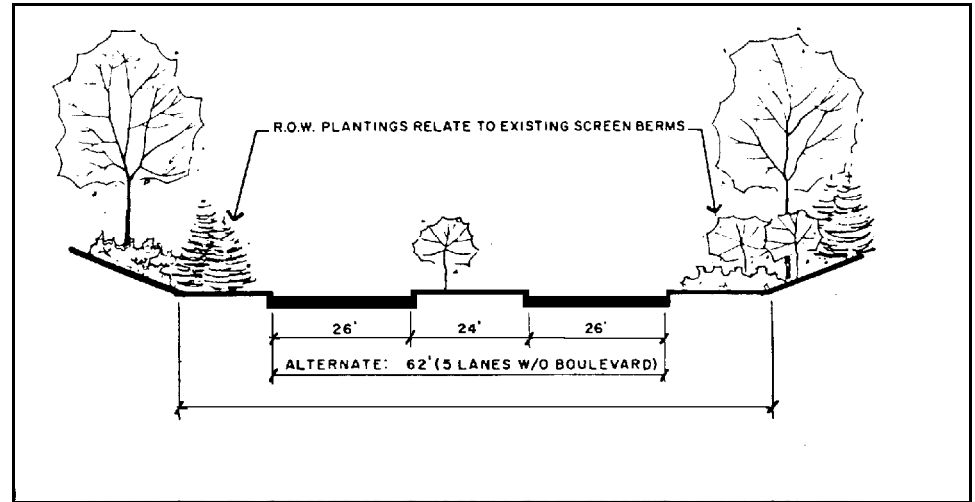


Scheme A

A four lane boulevard is proposed within a 100 foot to 120 foot right-of -way from the Township's northern boundary south to Meisner Road. A 24 foot landscaped boulevard would separate the two roadways, each being 26 feet wide. This would require expansion of the 86 foot right-of-way between Puttygut and Hawthorne Roads to a minimum of a 100 feet. The remaining right-of-way along this section of M-29 presently ranges from 100 feet to 120 feet. Three landscape planting schemes are proposed within this area to coincide with right-of-way restrictions and adjacent land use. In the northern section, from the Township boundary south to the Detroit Edison property, existing and proposed land use is predominately residential and commercial. Tree plantings along this section would be concentrated within the boulevard enabling traffic to

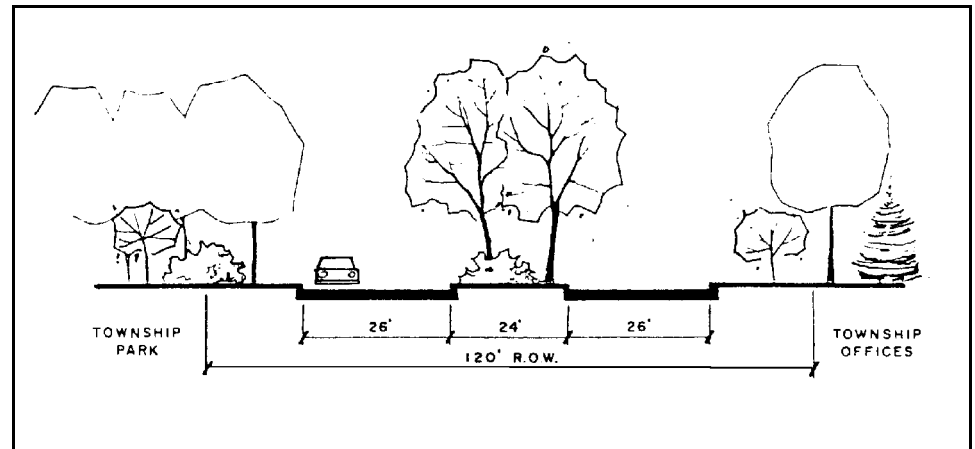
relate to residential and commercial areas to the west of M-29 and the St. Clair River to the east (Scheme A).

From the Detroit Edison property south to Recor Road the existing land use is predominately non-residential in character. Landscape treatment along this section would be primarily along the outer edges of the 120 foot right-of-way. (Scheme B). A heavy concentration of tree plantings along the Detroit Edison section would buffer the impact of the screening berms and the St. Clair Power Plant.



Scheme B

Informal groupings of trees within the boulevard and R. O. W. border are proposed between Recor and Meisner Roads (Scheme C). This park-like treatment would extend the natural character of Township Park across M-29 to include the Township Hall site. A desirable "greenbelt effect" would be created throughout this entire area.



Scheme C

From Meisner Road south to the Township boundary, M-29 would continue as a two lane road within the existing 66 foot wide right-of-way. Redevelopment would include the installation of curb and gutter and street tree plantings between the street and the edge of the right-of-way.

Pedestrian Path Network

A pedestrian path network is planned for the Township that will provide a system of dedicated walks throughout the Township. Current planning for the network includes two main north-south arteries; portions of the abandoned Port Huron & Detroit Railroad right-of-way, and the path located within the M-29 right-of-way. A County path (the County Bridge-to-Bay path) is planned to run through numerous communities, including East China and traverse the entire length of the County from north to south.

The Township path currently runs along the abandoned Port Huron & Detroit Railroad right-of-way from the south Township boundary to Recor Road where it connects with paths at the Township Park. The path the continues north from the park along the M-29 right-of-way to Bree Road. This part of the Township path is a key link in the proposed County Bridge-to-Bay path. The area surrounding the path is planned for a range of uses, and developments joining the path will be required to have some form of access to the path. This access should be in the form of a paved path located within a dedicated right-of-way, or easements to assure permanent pedestrians access.

Future Land Use

The Future Land Use Map is intended to give direction to the Township's land use decisions. However, the map is general in nature and the plan as a whole is based on information gathered at a specific time. If the circumstances which shaped this plan should change, the plan may need adjustment. It should be understood that the Future Land Use Map and the Master Plan, as a whole, are not rigid; they should be allowed to change to adjust to new trends and information and to allow for alternatives which may be desirable. The Future Land Use Map includes ten distinct categories which represent various planned land uses. In some cases, these categories are essentially self explanatory. In other instances, further description is necessary to assure that future land use objectives are properly pursued.

Single Family Residential: Areas designated as "single family residential" are intended primarily for use by single housing units, each located on their own lot or land area. Within this category other related and compatible uses should be encouraged which serve the residents of the area without hampering the single family environment.

Multiple Family Residential: Multiple family areas are intended primarily for a range of residential uses that would be allowed at a higher density than single family areas. In addition, areas designated as multiple family would allow two or more housing units to be located on a single land area. Related uses would also be situated in multiple family areas.

Medical Campus: The medical campus category is intended to allow for the flexible expansion of the hospital and its associated uses in a planned and coordinated manner. This is essential to allow existing and future uses to respond and adapt to changes in technology, the medical profession and society as a whole. Each use proposed within the boundary should be reviewed in the context of the entire area. Pedestrian and vehicular interconnection should be encouraged and

barrier free design of outdoor spaces should be encouraged. The primary use in the medical campus concept is a hospital or hospitals and related uses located within the hospital building itself. This might include, pharmacies, bookstores, florists, card shops, cafeterias and similar uses that serve the needs of those using the facilities, visiting or employed in the immediate area. In addition, related independent uses would be allowed which could include medical offices, residential facilities for the elderly, child and adult care facilities, buildings and facilities for emergency vehicles (including ambulances heliports and other vehicles), medical research and educational facilities, libraries, parks and other recreation facilities, banks, medical supply businesses and other uses.

Commercial: Areas designated for commercial use could include a wide range of business types. The portrayal of these areas on the Future Land Use map is intended to establish logical places for new commercial uses to be located and to provide an indication that certain existing business land use should continue. In addition there is an assumption that the areas shown for commercial use are, or will, be compatible with adjacent land uses. Much of this is dependent upon proper administration of the zoning ordinance including proper zoning of the land.

Industrial Research Office (IRO): The industrial research office category was not included on the 1979 Future Land Use Map. This new category is intended to accommodate and attract new, high technology industrial uses which are of a low intensity. These uses often have extensive portions of their buildings devoted to offices and tend to be located within industrial parks, isolated from heavy industrial uses.

Light Industrial: The light industrial category is intended to provide space for industrial uses whether in or outside of an industrial park environment whose external physical impacts are restricted to the district.

Heavy Industrial: This category accommodates industrial uses of a high intensity that typically will exhibit external

characteristics that may have an impact on surrounding areas.

Public & Quasi Public: This category includes public and private institutions and clubs. Portrayal on the map implies a willingness to continue a use. In addition, the map shows an expansion of the existing cemetery site on Puttygut Road.

Community Park: The community park category includes all land planned for active and passive public recreation use.

Public School: This category includes all land presently owned by the School District. No additional school land is shown.

The Zoning Ordinance and the Subdivision Regulations are the primary tools through which the Plan can be implemented. As development and redevelopment continues, these land use tools will help to provide compatible land use relationships between uses and encourage quality site design. This can be promoted through the site plan review process. However, for the plan to be truly effective the Planning Commission must actively pursue goals of the plan. This will require revisions to the zoning ordinance or other ordinances affecting land use decisions. Additionally, the Planning Commission may wish to actively pursue the implementation of recommended improvements noted on the Future Land Use Map and throughout the Master Plan document.

Adopting Resolution

WHEREAS: The East China Township Master Plan of Land Use adopted in April of 1979 no longer fully represents the goals and wishes of the Township and;

WHEREAS: The Planning Commission embarked upon a process to create a new master plan in accordance with the Michigan Township Planning Act, Act 168 of 1959, as amended;

WHEREAS: The Planning Commission has received input from interested residents, staff and members of the East China Township Board, as well as with the public in attendance at work sessions, and;

WHEREAS: On February 9, 1998 a public hearing duly advertised in accordance in accordance with the Michigan Township Planning Act, was held at which time a quorum of the East China Planning Commission was present, and at which hearing public comment pertaining to the proposed amended master plan map and text, was heard, now;

THEREFORE IT IS RESOLVED: That the contents of this document, together with all maps, tables and charts contained therein, are hereby adopted by the Planning Commission of the East China Township, St. Clair County, Michigan, and that this document shall be called the Master Plan for Future Land Use for the East China Township, Michigan.

ROLL CALL VOTE:

Yes	_____	Absent	_____
No	_____	Abstain	_____

Recording Secretary