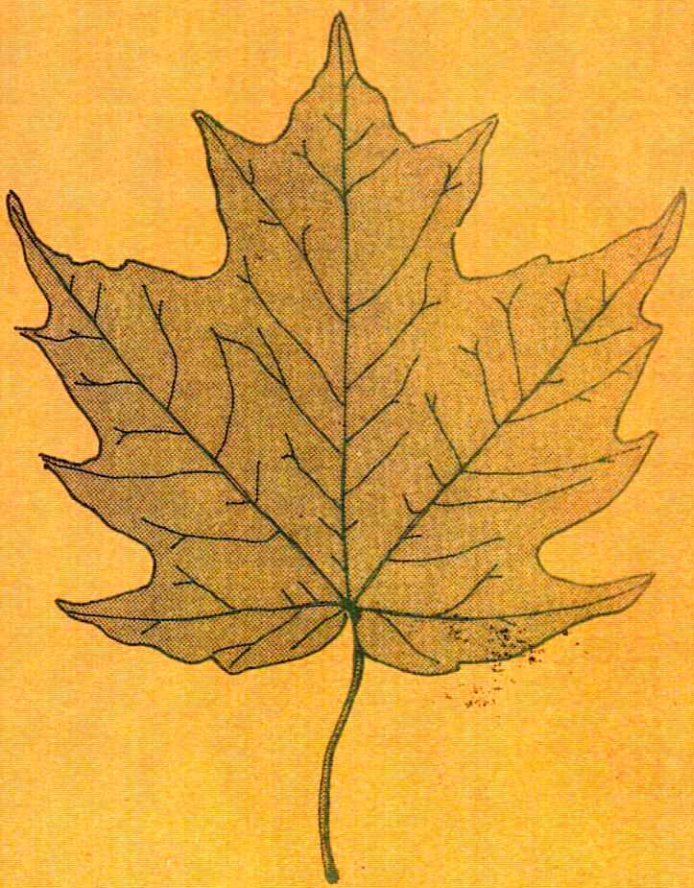
THE COMPREHENSIVE PLAN



CHARDON, OHIO

BURGESS & NIPLE, LIMITED
ENGINEERS AND PLANNERS
MENTOR , OHIO

EXTRACTED FROM COUNCIL MEETING MINUTES JJS.

RECORD OF PROCEEDINGS

Minutes of Regular Session *Meeting*

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Held December 4, 1980

The Council of the Village of Chardon met in Regular Session Thursday, December 4, 1980 at 8:00 P.M. in Council Chambers of the Village Hall.

Robert H. Eldridge, President of Council presiding.

Members of Council present: Larry Baptie, Beverly Carver, Keith Douglass, Robert Eldridge, Richard Gahr, Paul Kenyon, Earl Taylor.

Others present: Manager Dan Anslinger, Jr., Law Director A. M. Psenica, Police Chief Wm. Niehus, Joe Waters, Marilyn Whipkey, Bill Keach, Joe Svete

Following the pledge to the flag and roll call the minutes of the previous meeting were approved as submitted.

Dan Anslinger, Jr. gave the Manager's report.

The Park and Recreation Board will sponser three concert/dances, January 17, February 14 and March 7.

Council was given the first draft the proposed cable television ordinance.

Mr. Kenyon moved, Mr. Gahr seconded the Law Director be authorized to prepare an ordinance to excude the Village from the prevailing wage law. Results of the roll call vote were:

Yes: Baptie, Carver, Gahr, Kenyon, Taylor.

No : Douglass, Eldridge.

Motion passed.

Chief Niehus gave the Police Department report.

A letter was read from the Geauga County Board of Elections thanking the Police Department for securing the ballots.

Correspondence from the Principal of the Chardon Middle School commending Chief Niehus and Patrolman Mc Kenna on their presentation was read.

On the recommendation of the Village Engineers and the Manager Mr. Baptie moved, Mr. Taylor seconded to accept the comprehensive plan as revised. Upon roll call the motion was passed unanimously.

An agreement betweein the Village of Chardon and the Chardon Volunteer Fire Department, Inc. to provide for fire protection was read in full.

Mr. Kenyon moved, Mr. Taylor seconded the Manager be authorized to sign the agreement between the Village of Chardon and the Chardon Volunteer Fire Department, Inc., as amended. Upon roll call the motion was passed unanimously.

Ordinance no. 768, an ordinance amending section 1117.01 relating to zoning districts by describing a change in use district from I to R-3 district was read for the second time.

Ordinance no. 780, an ordinance changing the name of Lake Ave. to Industrial Parkway was read for the first time in full.

Mr. Douglass moved, Mr. Taylor seconded to suspend the rules and read ordinance no. 780 for the second and third time by title only. Results of the roll call vote were:

Yes: Baptie, Carver, Douglass, Eldridge, Kenyon, Taylor.

No : Gahr.

Motion passed.

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October 2, 1980

Mr. Dan Anslinger
Village Administrator
Village of Chardon
108 South Hambden Street
Chardon, Ohio 44024

Dear Mr. Anslinger:

We are pleased to submit herewith 50 copies of The Comprehensive Plan for the Village of Chardon. These documents contain revisions and additions discussed during the review of the preliminary plan. The Comprehensive Plan presents a data base, goal-oriented proposals and recommendations which should provide valuable guidance and a source of reference for village administrators.

The most important aspect of community planning--implementation, now lies before the Village. As the plan is a goal-oriented document, plan implementation is a more specific goal-oriented process. Specific goals must be prioritized and plans of action developed. Implementation is typically a process of long duration, therefore, perseverance and determination are key factors in goal attainment. We would be happy to provide any additional services which might contribute to implementation of plan recommendations.

We have sincerely enjoyed our association with the Village during this study, and we look forward to a continuance of good relations.

In closing, we would like to thank the Council, Planning Commission and Zoning Board of Appeals for their participation during the planning process.

Sincerely,

BURGESS & NIPLE, LIMITED

Larry J. Woodlan

Larry J. Woodlan, P.E.

Larry E. Finch

Larry E. Finch

LJW/LEF:jcl
Enclosures

Founded 1912

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GOALS AND OBJECTIVES

The planning process and the formulation of a comprehensive plan for Chardon will assist the village in identifying a preconceived and somewhat idealized notion of what the public and administrators desire as a place of residence. This idealized conception of the village is a goal toward which future development and the solutions to existing problems are oriented. As such, the entire planning process is a goal oriented process. Specific projects and implementation measures (such as zoning) build on this foundation. Together, goals and objectives represent policies which form the framework for public decision making and convey public desires to private interests (such as developers and industries). Public bodies may utilize these goals and objectives in evaluating specific or alternative proposals. Private entities may utilize goals and objectives as a guide or set of standards by which their proposals will be evaluated.

Goals and objectives consist of general statements defining the character of future development. These statements may also set forth actions necessary to attain the desired future. They set forth a broad framework of action and provide a basis for more detailed development decisions. The policies they represent are connective links between the desired future and specific recommendations contained in the planning document.

Obviously, the perception of what specifically represents an ideal or desirable village differs with people and interest groups. As a result, the policies inferred in Goals and Objectives are of a general nature such that their adoption does not commit the village to definitive action. However, their adoption should commit the village to take actions consistent with their intent, as they represent a set of policy statements.

The formulation of general policies inherent in goals and objectives facilitates public understanding and provides an overall element of consistency for the planning process. Elected officials and overlapping area jurisdictional agencies have been encouraged to provide input to policies formulation and will be responsible for their periodic review and modification.

As previously mentioned, the policies outlined in the statement of Goals and Objectives will guide planning efforts. With these policies as a guide, the plan will produce a number of long-term recommendations, specifying general locations and outlining projects needed for implementation.

Goals and objectives have been formulated for each of the major areas of study within this plan. They are specified by subject area in the following list.

Community Development

Goal: Support the village's share of Geauga County's growth and development

Objectives:

- encourage availability of adequate developable land within the corporate area to accommodate anticipated development
- provide an atmosphere conducive to community expansion and diversification
- encourage expansion of existing industrial, commercial, and service employers through cooperative effort
- assure development in a manner which recognizes capabilities, limitations, and opportunities inherent in the natural environment

Employment and Economy

Goal: Diversify and expand local employment opportunities

Objectives:

- determine sectors of the economy likely to expand and encourage new employers in those sectors

- support existing employers and encourage their expansion

- encourage development of skills to support anticipated industrial requirements

- encourage diversification in the employment and tax base emphasizing those businesses which will not excessively burden existing and proposed utility systems at the public's expense

Land Use

Goal: Develop an integrated land use pattern which achieves a balance of urban and rural character, recognizing capabilities of the land, infrastructure requirements, and heritage preservation

Objectives:

- provide adequate but not excessive land area for each major land use category

- encourage development in accordance with usability and adaptability of the land

- encourage spatial distribution of land uses in a compatible nonconflicting manner

- provide adequate infrastructure to enhance and guide development to desirable areas

- develop and conserve residential areas in a physical environment that is healthy, safe, convenient, and attractive

- encourage and stimulate desirable area revitalization through public facility/utility investment and grant and loan programs where possible

- preserve through regulatory means, purchase, or lease, land areas which for reasons of outstanding historic, aesthetic, or natural features are worthy of preservation

Housing

Goal: Provide safe, sanitary shelter for every resident

Objectives:

- support programs designed to preserve and rehabilitate the existing housing stock
- eliminate poor housing conditions and encourage replacement of poor quality units with standards units
- promote innovative housing and subdivision designs which emphasize natural area characteristics, safety, and energy efficiency
- encourage balanced distribution of housing types at locations and at costs reflective of community income limitations and household sizes
- provide residential areas which are easily accessible relative to centers of employment, shopping, recreation, and culture

Transportation

Goal: Develop an integrated network of transportation facilities capable of providing safe, quick, and economical travel throughout the village and which relates to major county, state, and national transportation networks

Objectives:

- develop a balanced transportation system which complements proposed land uses and integrates with existing systems
- encourage upgrading of all thoroughfares and bridges that are below acceptable standards of right-of-way and pavement width

- eliminate existing traffic flow problems

- reduce the frequency of accidents through improved design and redesign of current high accident locations where necessary

- develop a transportation network that reduces travel time, energy consumption, and vehicle operating costs

- identify needs for alternative transportation facilities such as mass transit, bikeways, etc.

Community Facilities

Goal: Provide an appropriate and accessible system of schools, recreational facilities, public buildings, and utilities for residents

Objectives:

- encourage elementary school sites in close proximity to concentrations of elementary school age children so as to reduce travel time, enhance safety, and provide local educational and recreational opportunities

- encourage a system of middle schools and high schools to develop competence, skills, character, and educational abilities

- encourage optimum use of public school facilities for community and recreational activities

- protect, maintain, and enhance existing park and recreational facilities

- reserve for open space or recreational use those tracts of land which, as a result of significant natural limitations or uniqueness, are either not generally suited for development or are of significant value in the interest of public health and welfare

- provide the types of recreational facilities desired by the public in accessible locations

- expand or develop public utility systems that provide for current requirements and supports desirable community growth

- eliminate sewage and other waste disposal practices which may cause environmental degradation or which threaten public health and welfare

- assure sufficient public building area to adequately support community government, operations, and maintenance, as well as to enhance cultural development, public health, and safety

POPULATION CHARACTERISTICS

Past Rates of Growth

The population of the Village of Chardon has been increasing at a steady rate since the turn of the century, with an average decade increase of about 20 percent. Larger percent increases were experienced in the decades ending in 1950, 1960, and 1970, when decade increases were 23.8, 27.2, and 26.5 percent, respectively.

These periods of rapidly increasing population reflect the "golden age" of the automotive commuter. Transportation was inexpensive when compared to today's rapidly escalating transportation costs. Suburban extensions of urban areas proliferated and attempts were being made to house baby-boom families in suburban developments within reasonable commuting range of major employment centers.

These growth characteristics are also reflected in population trends in Geauga County, particularly in western townships which are in close proximity to the Cleveland urban area. The county has benefited from the ideal of "a home in the country or suburbs" and from the exodus of middle class families from nearby urban areas. Geauga County's population increased by more than 25 percent in the period 1930 to 1940, by more than 37 percent in the decade 1940 to 1950, and by more than 78 percent from 1950 to 1960. By 1970, decade increases slowed somewhat, but still represented gains of more than 32 percent.

Chardon is situated in northwest Geauga County and is surrounded by Chardon, Claridon, Hambden, and Munson Townships. Cleveland suburban and satellite communities encroach upon western county area and have found their way into these four townships. As might be expected, past population increases have followed generally the same trends as the county as a whole, reflecting the same phase of suburbanization as described above. However, these four townships experienced much higher peak decade percent increases in the decades ending in 1960 and 1970 when 93 percent and nearly 40 percent increases occurred, respectively. Obviously, these townships retain their desirability as a place of residence.

Estimates of population in 1980 made by the Northeast Ohio Areawide Coordinating Agency (NOACA) indicate all area growth rates are slowing. The county as a whole is estimated to have increased 22 percent since 1970. Townships surrounding Chardon increased 24 percent, while Chardon increased an estimated 20 percent according to these estimates.

General Characteristics

Characteristics of population of Chardon have been described in reports published by the Bureau of the Census after 1970. Some of those characteristics are described in Table 1.

Table 1
GENERAL POPULATION CHARACTERISTICS
1970
Chardon, Ohio

Number	3,991
Percent Change 1960-1970	+26.5
Percent Negro and Other Races	.6
Percent 65 Years and Older	7.4
Fertility Ratio[1]	400
Number of Households	1,250
Percent Change 1960-1970	33.1
Persons per Household	3.18
Median Age	25.8

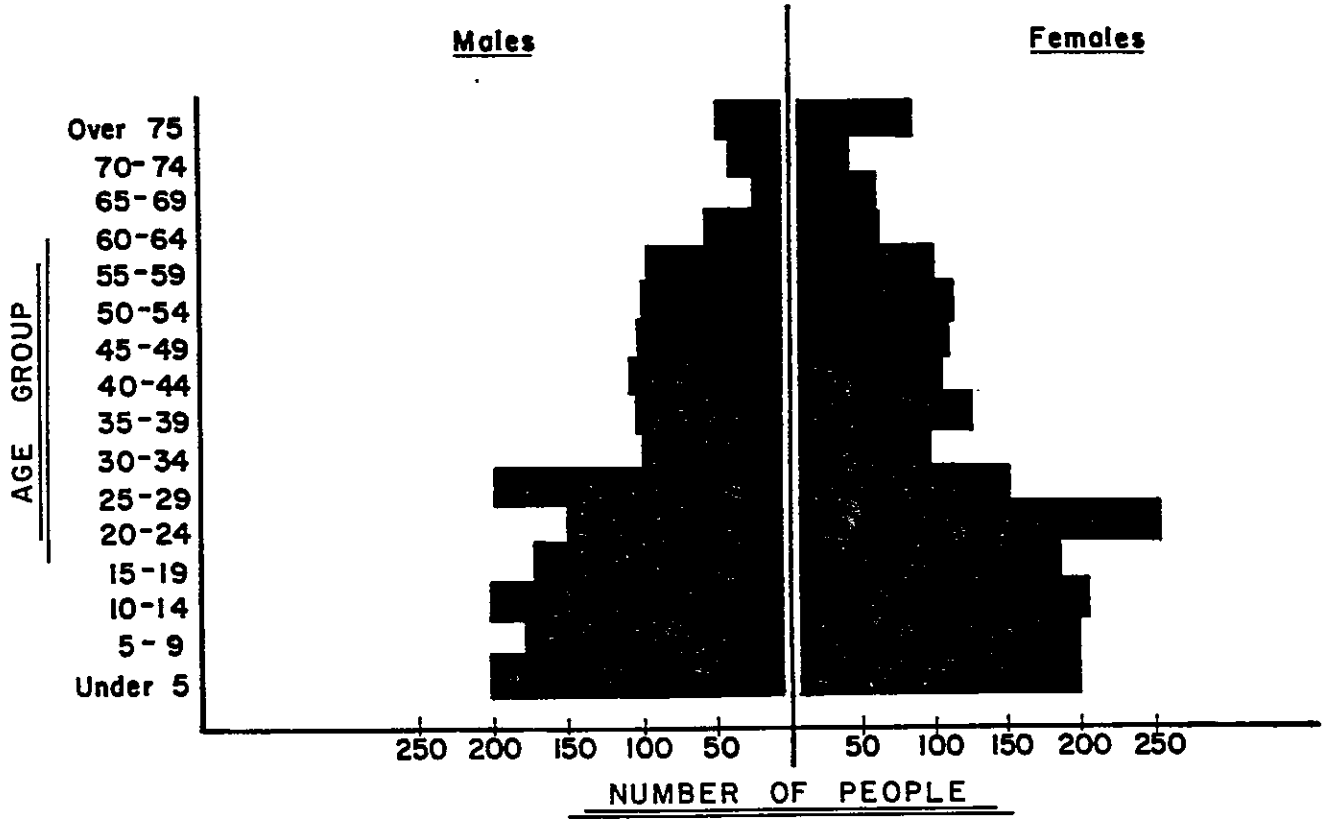
[1]Children under 5 years per 1,000 women 15 to 49 years

Source: U.S. Dept. of the Interior, Bureau of the Census, General Population Characteristics, Ohio

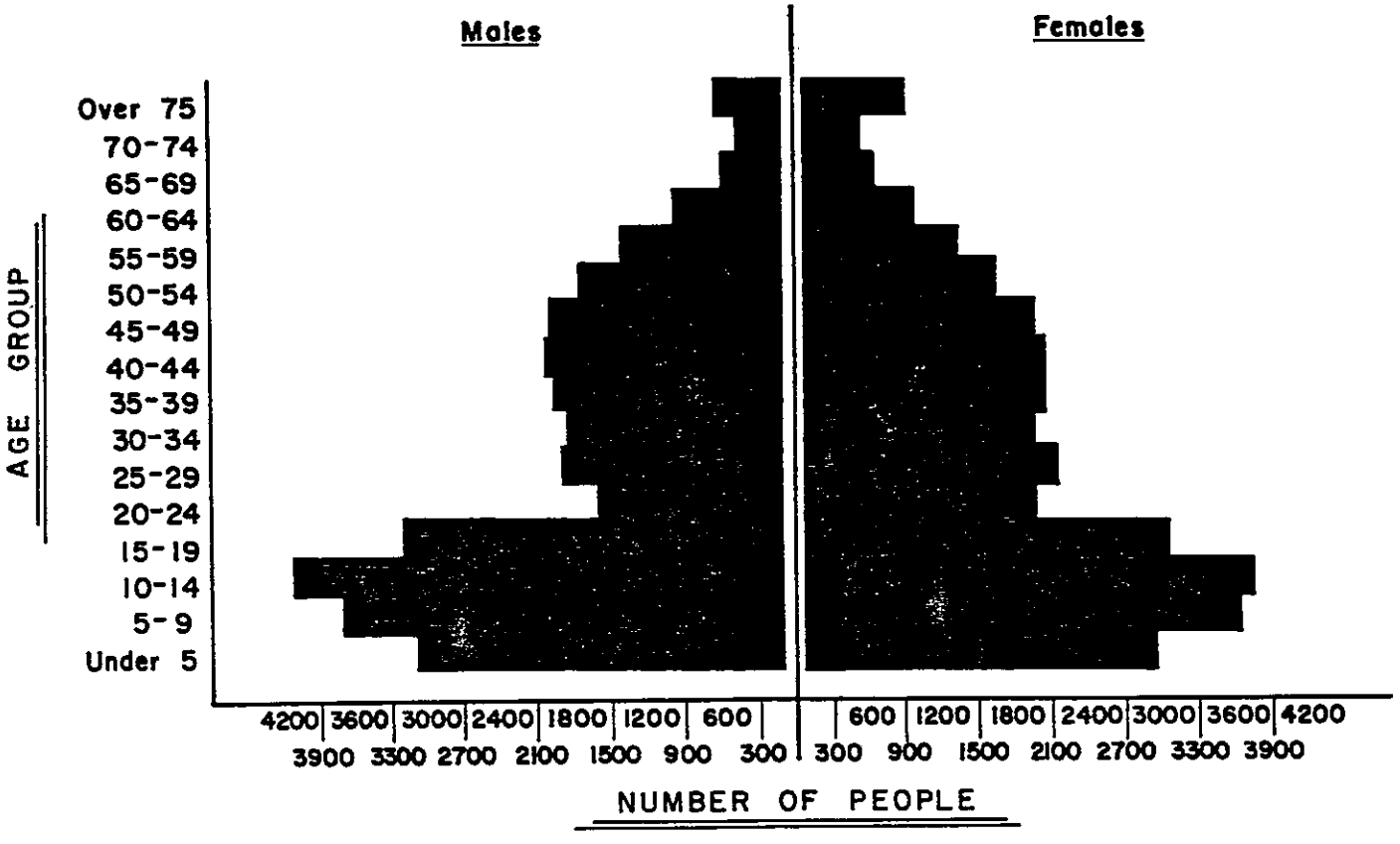
Age-Sex Diagrams, Figure 1, illustrate the distribution of population by age groups and sex within the Village of Chardon and Geauga County. As can be seen by reviewing these age-sex diagrams, dominant concentrations of age

FIGURE 1
AGE-SEX DIAGRAMS
VILLAGE OF CHARDON - GEAUGA COUNTY
1970

CHARDON, OHIO



GEAUGA COUNTY, OHIO



groups at the time of the census were those 30 years and younger in the Village of Chardon and younger than 20 years in Geauga County. The median age in the Village of Chardon was 25.8 and in Geauga County the median age is 25.6.

As these age groups continue to move through time, their dominance will continue to influence requirements for public facilities. These age groups comprise the highest childbearing periods and have the greatest impact on school enrollments. As a result of the relatively young age and typically more active participation of these groups in recreational endeavors, requirements for parks, open space, and community activities may also be affected.

Men and women in these dominant age groups also represent a significant portion of the labor force and are generally more mobile than older persons. These two factors combine to make migration of this younger segment of the labor force an important consideration; one that is dependent upon local economic conditions to some extent. Economic conditions such as employment and retail activity have an influence on mobility of working age populations. Further discussions of employment and income characteristics will follow in later report sections.

Natural Increase

Population changes result from natural increase and migration. Natural increase is the net difference between the numbers of births and deaths occurring in a particular area. Migration, or movement of persons between regions, may result in significant additions or reductions in local population.

Natural increase is influenced by the number of women of childbearing age and their fertility. The other component of natural increase is mortality, or the number of deaths. Mortality is influenced by the availability of health care services, medical advances, and by the age of the population.

Birth rates have had a significant influence nationally and locally on the rate of population increase over the last 25 years. National fertility rates (births per 1,000 adult women) have experienced a steady decline because of the increased use of birth control methods and as a result of social and economic factors which have encouraged smaller family sizes. As this trend

continues, the median age of the total population increases as fewer young are born and as better medical services, diets, and public health programs contribute to longer life expectancies.

As the dominant age groups in the study area reach child rearing ages, numbers of females in the population of childbearing age and fertility ratios (numbers of children under 5 per 1,000 women between the ages of 15 and 49) will determine numbers of children for which special facilities, such as schools, must be provided in the area.

At the time of the 1970 census, relatively high fertility ratios were exhibited in Chardon and the surrounding county compared to the State of Ohio. The state average ratio was 356, while the ratio for Chardon was 400 and Geauga County averaged 394.

According to Bureau of the Census reports[1], the numbers of children under 18 per family has decreased in the period 1960 to 1972, and probably has continued to decrease since that time. In 1960, the national average for all white families was 1.8 children. By 1972, this average declined to 1.18. A number of factors have contributed to this decline including increased use of birth control methods and increased participation of women in the labor force, the postponement of childbearing, and social and economic conditions resulting in a preference for smaller family units.

The Ohio Department of Economic and Community Development (DECD) has prepared a data profile for Ohio which provides general information concerning various population characteristics. This source indicates a declining number of persons per household since 1970. In 1970, the average number of persons per household was 3.2. DECD estimates a statewide average of 2.8 persons per dwelling unit in 1978. As might be expected, this is the result of the declining birth rate and the increasing occurrence of household formation by singles and married couples without children.

While the area exhibited relatively high fertility ratios in 1970, declines in fertility and, therefore, the number of children per family have been responsible for stabilizing or reducing school age populations and family size.

[1]Current Population Reports, Population Characteristics, U.S. Department of Commerce Bureau of the Census, Series P-20 No. 246, Feb. 1973.

Migration

Recent trends in population migration can be gauged generally through the analysis of school enrollments and the numbers of building permits issued. In Chardon, 142 building permits were issued for new housing units since 1970. Assuming three persons occupy each unit, this represents 426 persons or 10.7 percent additional population which may, in part, be attributed to in-migration. If we assume the lower statewide average household size of 2.8 persons per household, then slightly over 300 new residents may have moved to the area in the period 1970 to 1980. This represents a rate of in-migration of about 9.5 percent.

Chardon School District pupil enrollments have been tapering off compared to past enrollments (see Figure 10, page 93). It is difficult to draw accurate conclusions about in-migration utilizing enrollment data, however, due to decreasing birth rates and family sizes and because Chardon District serves parts of townships in addition to Chardon Village. Therefore, migration rates indicated by the above housing data may provide best estimates of in-migration.

Population Projections

Previous discussions centered on past growth rates, population characteristics, and factors influencing growth. The following discussions will review population projections for Chardon which are currently available and will provide age specific cohort survival projections to the year 2000.

NOACA is the A-95 area-wide clearinghouse and the designated management agency for Environmental Protection Agency Section 208 wastewater quality planning. As such, NOACA has been responsible for developing population projections, land use, and other information in support of this activity.

Population projections were prepared for each county within NOACA's area of responsibility. These projections were based upon cohort survival methodology which utilizes age and sex specific survival rates and expected fertility rates to determine numbers of people.

County populations were then disaggregated to cities, villages, and townships after consideration of past growth trends, building site availability, and other factors. The results of this effort are presented in Table 2.

Table 2
NOACA POPULATION PROJECTIONS
Chardon, Ohio

	1970	1975	1980	1985	1990	1995	2000
Geauga County	62,853	70,190	76,758	83,556	90,698	97,187	103,110
Chardon Village	3,991	4,294	4,798	5,268	5,906	6,477	7,015
Chardon Township	3,180	3,539	3,793	4,047	4,301	4,542	4,759
Claridon Township	2,124	2,394	2,599	2,804	3,009	3,190	3,359
Hambden Township	2,494	2,722	2,903	3,084	3,277	3,446	3,603
Munson Township	3,569	4,308	4,791	5,274	5,769	6,216	6,626

If indicated rates of change are compared with past trends, a slower rate of increase becomes obvious. For instance, Geauga County experienced a 78 percent increase in population between 1950 and 1960. From 1960 to 1970, a 32 percent increase was experienced. Population estimates by the Bureau of the Census indicate an 8 percent increase between 1970 and 1975. NOACA projections anticipate a 22 percent increase over the 10 year period 1970 to 1980, which is slightly higher than census estimates. However, subsequent decade increases reflect lower proportions--18 percent from 1980 to 1990, and 14 percent from 1990 to 2000.

Townships surrounding Chardon are also expected to experience lower rates of increase. The four surrounding townships increased by 93 percent from 1950 to 1960, and 40 percent from 1960 to 1970. Increases have been estimated at 24 percent from 1970 to 1980, 16 percent from 1980 to 1990, and 12 percent from 1990 to 2000.

Population increases in Chardon were 27 percent from 1950 to 1960, and 26 percent from 1960 to 1970. NOACA projections indicate decade increases of 20, 23, and 19 percent for decades ending in 1980, 1990, and 2000, respectively.

As NOACA's population projections were developed from county population projections disaggregated to the community level, they reflect overall county trends tempered by consideration of local factors. As such, they may reflect less severe fluctuations and peaks which might occur if only local data were utilized.

For comparison purposes, cohort survival population projections were developed utilizing 1970 Chardon population as the base year, with migration rates held at the current estimated 9.5 percent. Fertility rates in the decade 1970 to 1980 were held at rates indicated in the 1970 census. Subsequent years were estimated consistent with Bureau of the Census Series E birth assumptions. Age cohort projected survival rates were based upon mortality statistics by age and sex, Table A-5 Bureau of the Census, Series P-25 No. 493. Table 3 describes the resulting local population projections by age and sex for the years 1980 to 2000.

As shown in this table, a relatively stable increase in population results, increasing from 5,016 persons in 1980 to 7,642 persons in 2000. It should be emphasized that this projection assumes a constant but modest rate of in-migration to the community, as well as continuation of birth rates characteristic of Bureau of the Census Series E assumptions or an average of 2.1 children per woman of childbearing age. As Chardon is a small community, actual population may be significantly higher or lower if unexpected changes occur in economic activity, birth rates, and migration. Therefore, they reflect a continuation of existing conditions to some extent. These projections will be used as a basis for future planning assumptions. If unexpected local occurrences result in significant change and render current projections unreasonable, projections should be reevaluated.

Figure 2 provides a comparison of projected populations for the village by NOACA and those developed for this study. As can be seen, both indicate similar rates of increase, with NOACA projections indicating a slightly lower estimated population beginning in 1980.

It was necessary to estimate population in 1975 and 1980 as population enumeration in progress in 1980 will not be assimulated and published by the

FIGURE 2

COMPARSION OF POPULATION PROJECTIONS

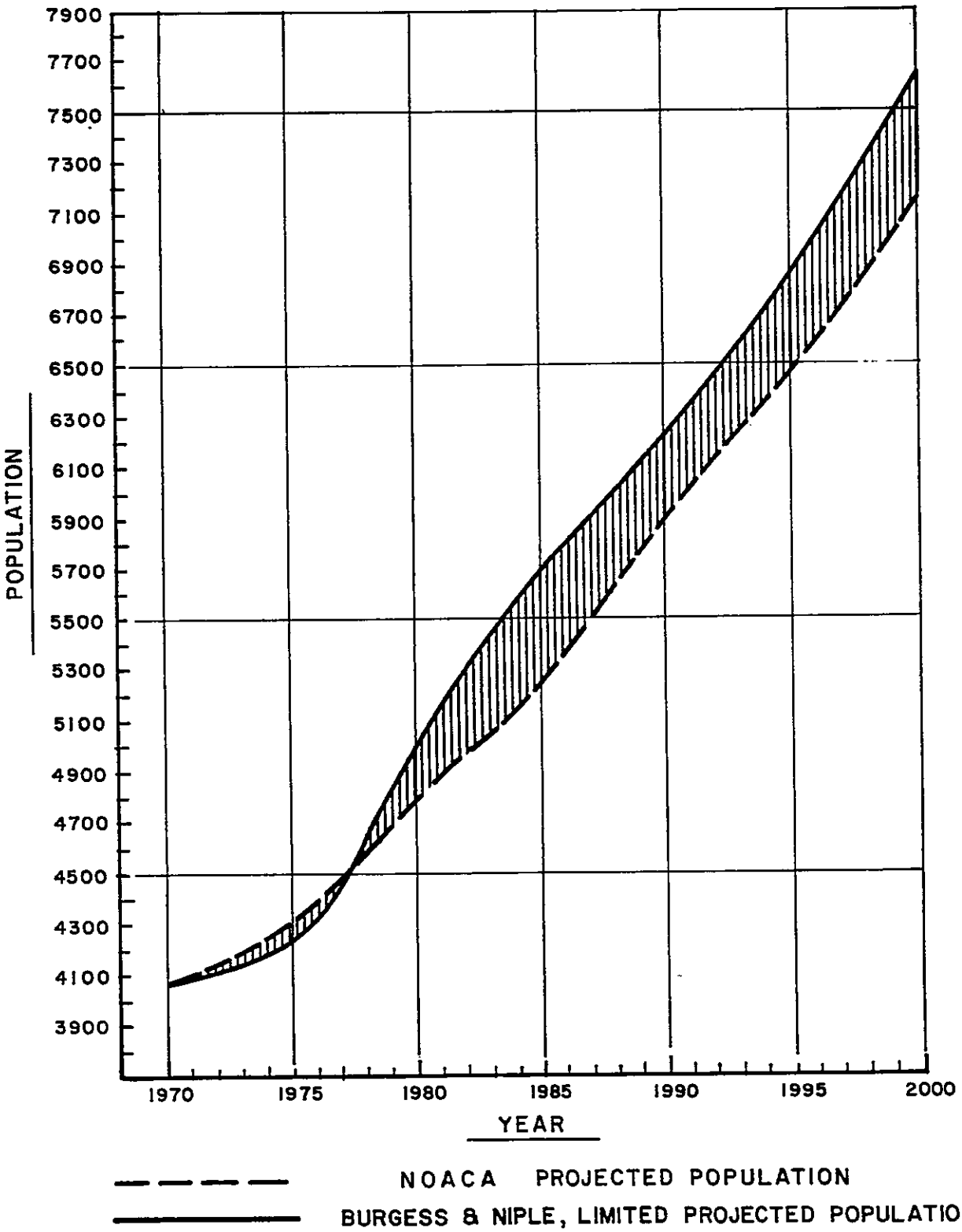


Table 3

POPULATION ESTIMATES AND PROJECTION TO 2000

Chardon, Ohio

Age	1980			1985			1990			1995			2000		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
5	204	205	409	228	230	458	235	236	471	236	238	474	239	242	481
5- 9	239	243	482	226	228	454	252	253	505	259	261	520	262	265	527
10-14	224	223	447	259	264	523	248	250	498	274	276	550	283	286	569
15-19	295	220	515	242	244	486	278	285	563	267	270	537	296	299	595
20-24	221	231	452	313	241	554	263	265	528	299	307	606	290	294	584
25-29	183	200	383	237	249	486	229	260	489	247	284	531	317	326	643
30-34	159	273	432	197	223	420	257	260	517	248	280	528	267	305	572
35-39	210	163	373	177	287	464	216	240	456	273	277	550	266	299	565
40-44	105	105	210	216	171	387	186	295	481	223	249	472	281	286	567
45-49	108	135	243	112	116	228	221	179	400	194	304	498	231	259	490
50-54	116	112	228	114	143	257	118	124	242	224	187	411	197	309	506
55-59	100	113	213	118	119	237	117	149	266	121	131	252	221	192	413
60-64	90	116	206	98	117	215	116	124	240	116	152	268	220	136	356
65-69	84	94	178	85	106	191	93	117	210	109	124	233	110	151	261
70-74	42	57	99	70	89	159	73	99	172	79	108	187	93	115	208
75+	44	102	146	56	117	173	81	146	227	98	172	270	114	191	305
Total	2,424	2,592	5,016	2,748	2,944	5,692	2,983	3,282	6,265	3,267	3,620	6,887	3,687	3,955	~~7,642~~ 5,156

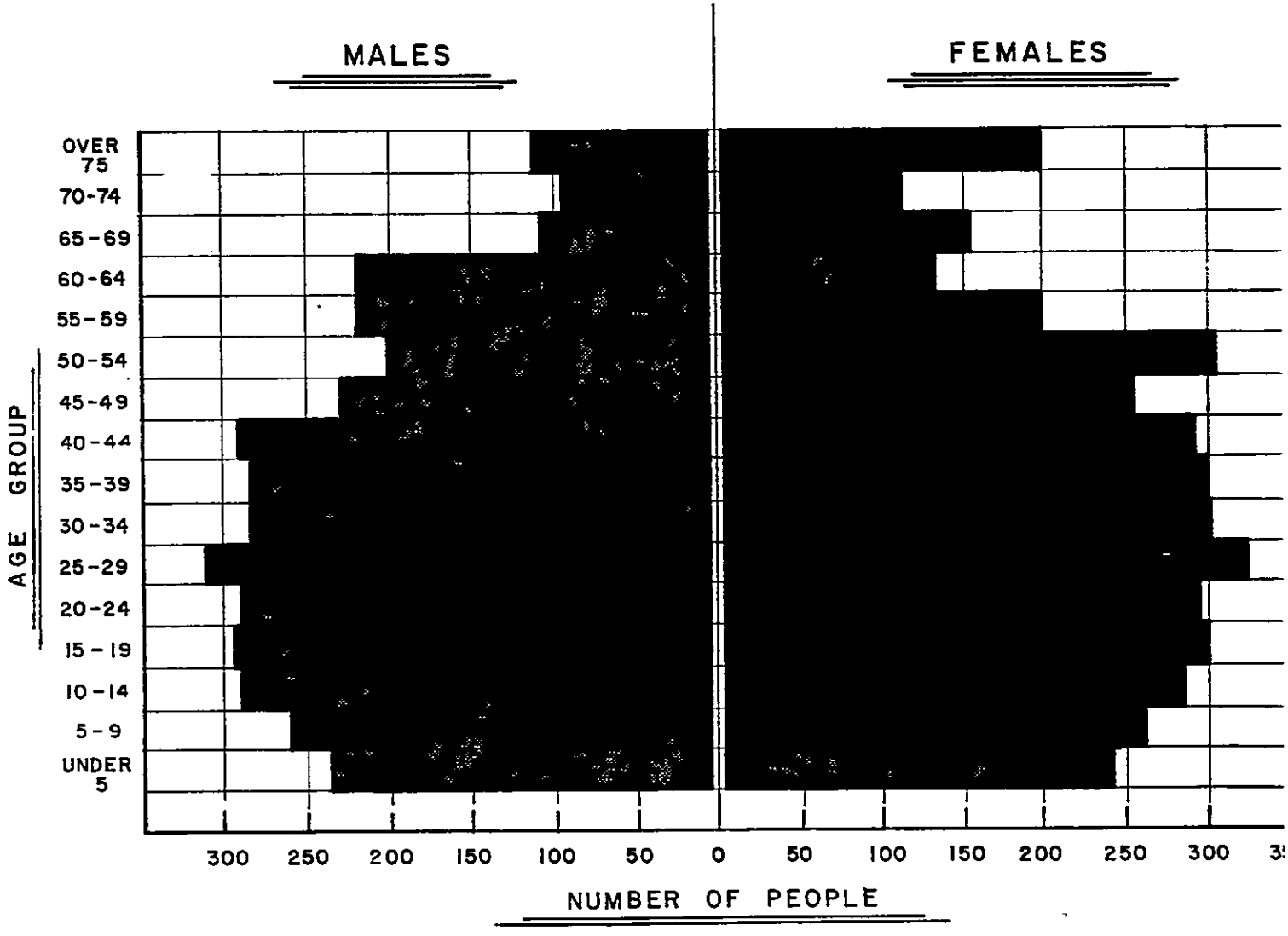
Source: Burgess & Niple, Limited estimates

Bureau of the Census until sometime in 1981. It will not be known until then if the village actually attains a population of 5,000 persons which is required to become eligible for city status.

Figure 3 illustrates the age-sex diagram of the projected population in 2000. As can be seen, the diagram changes configuration somewhat from the triangular configuration illustrated previously on Figure 1, which illustrated the 1970 population. The pear shaped diagram of the projected population in 2000 indicates a lessening number of children ages 14 and younger, a stable and consistent population of ages 15 to 45, and typically decreasing survivorship with increasing age. Of further interest is the larger proportion of females over 65 compared to the male population in the same age group.

FIGURE 3

AGE – SEX DIAGRAM OF ESTIMATED POPULATION IN THE YEAR 2000 VILLAGE OF CHARDON



Source: Burgess and Niple, Limited, Estimates

EMPLOYMENT AND INCOME

General

Local employment and income characteristics provide indicators of community well being and economic vitality, especially when compared to other communities of similar size. Analyses of industrial types and places of employment can indicate the extent or diversity of the economic base of the community and can indicate whether or not the community is overly dependent upon one industrial sector. In such cases, a downturn in that one sector may result in deep declines in local employment and income.

The following discussions will examine employment characteristics such as the number and industry of employed individuals, levels of unemployment, and past trends. Income characteristics such as median family income, per capita income, and disposable income will also be reviewed. Employment and income characteristics examined will provide information affecting future population and land use in the village as employment characteristics influence migration rates and the attendant growth or decline.

Employment

Analyses of employment are provided in these basic parts: (1) labor force and labor force characteristics; (2) employers; and (3) national and local trends. Labor force characteristics indicate types and levels of employment. Employer characteristics provide information about local employer types, locations, and diversity. Future national and local employment trends are also summarized.

Labor Force Characteristics. The most comprehensive data source of local labor force characteristics is the census. Most recent census data are from the 1970 census. According to this data, 87.5 percent of all males in 1970 aged 16 and older were in the labor force, and 1,068 of the 1,088 males in the Chardon civilian labor force were employed. At the same time, 48.1 percent of females over 16 were in the labor force, and 682 of the 711 women in the civilian labor force were employed. Table 4 compares these data with similar data for Geauga County as a whole.

Table 4

COUNTY AND VILLAGE LABOR FORCE, 1970

Chardon, Ohio

	Percent in Labor Force		Civilian Labor Force Percent Unemployed		Worker/ Nonworker Ratio
	Male	Female	Male	Female	
Geauga County	83.9	38.4	1.6	3.4	1.54
Chardon, Village	87.5	48.1	1.8	4.1	1.16

Source: U.S. Dept. of the Interior, Bureau of the Census, General Social and Economic Characteristics, Ohio

As can be seen in Table 4, the labor force in Chardon represents a significantly higher proportion of the total village population than does the labor force in Geauga County. This may reflect generally greater opportunities for labor force participation occur in or nearby the village than occur in most of the county. Higher levels of labor force participation are also indicated by worker/nonworker ratios in the village and county. As is indicated, each worker supports 1.16 nonworking persons in Chardon compared to 1.54 nonworkers in the county.

A larger proportion of the Chardon female population is in the labor force than that of the county. This may be affected to some extent by the village's status as county seat and the opportunities for clerical and similar occupations typically filled by females.

While a significantly larger proportional share of the village population is in the labor force, a slightly higher proportion of the labor force is unemployed in both male and female categories. This slightly higher labor force unemployment may, in fact, be the result of the larger proportion of the population looking for work. Even with this occurring, the village is apparently better able to provide employment for its labor force than the county as a whole.

Recent labor force estimates are available from the Ohio Bureau of Employment Services for counties in Ohio. Currently, no data are available for

smaller political subdivisions such as townships and villages. Available county data may serve as a general indicator of local conditions assuming trends at the local level generally follow state and county trends. Examination of county data for the last 2 years indicates generally higher levels of employment in the county than occur at the state level and similar fluctuations occurring at both the state and county level over the months. That is, when statewide unemployment rises, county unemployment also rises.

Data provided by the Bureau of Employment Services for 1979 indicate an annual average civilian labor force unemployment level of 3.8 percent for Geauga County in 1979. Annual average unemployment for the State of Ohio over the same period averaged 5.9 percent. Obviously, employment opportunities are greater in this area than in many other parts of the state. Only one other county in Ohio--Delaware County with an average 3.7 percent unemployed--had a lower rate of unemployment in Ohio in 1979.

If Chardon employment levels have maintained similar high rates of employment consistent with the county, then the employment picture in the village is bright by general standards.

The following Table 5 illustrates industries of employed in both Geauga County and the Village of Chardon at the time of the last census. As indicated, a larger proportion of Chardon's populace is employed in manufacturing (although fewer are employed in manufacturing of durable goods), communications, professional and related services, and public administration than the proportions employed in these industries in the county. At the same time, a lesser proportion is employed in construction, transportation, wholesale and retail trade, business and finance, and other industries.

Since 1960, larger proportions of Chardon's labor force have become employed in manufacturing and in professional and related services. The manufacturing industry employed 36.5 percent of the labor force in 1960, and 41.3 percent in 1970. Professional services accounted for only 12.7 percent of the labor force in 1960, and 19.3 percent in 1970. It is expected that these industries maintained or increased their share of employment by 1980, and that wholesale and retail trade industries have also increased their share of the total employed.

Table 5

INDUSTRY OF EMPLOYED
CHARDON AND GEAUGA COUNTY, 1970

Chardon, Ohio

	Chardon		Geauga County	
	Number	Percent	Number	Percent
Construction	99	5.7	1,777	7.5
Manufacturing	724	41.3	9,281	39.0
Durable Goods	409	23.4	6,223	26.1
Transportation	27	1.5	708	3.0
Communications	37	2.1	272	1.1
Wholesale and Retail Trade	253	14.5	3,810	16.0
Finance, Insurance, Business, and Repair Services	85	4.9	1,606	6.7
Professional and Related Services	338	19.3	2,268	9.5
Educational Services	182	10.4	1,688	7.1
Public Administration	56	3.2	515	2.2
Other Industry	131	7.5	3,570	15.0
Total	1,750	100.0	23,807	100.0

Source: U.S. Dept. of the Interior, Bureau of the Census, General Social and Economic Characteristics, Ohio

Occupations of those employed at the time of the 1970 census are illustrated in Table 6 for Chardon and Geauga County. More Chardon individuals were employed proportionately as clerical workers, manufacturing operatives, laborers, and service workers at the time of the census than were employed in the same categories in Geauga County. Significantly higher proportions of workers with manufacturing operative occupations generally indicate that greater industrial employment opportunities occur for people in the Chardon area in industrial occupations than in the county. The higher proportions of clerical occupations result from the village's status as county seat.

Table 6

OCCUPATIONS OF EMPLOYED
CHARDON AND GEAUGA COUNTY, 1970

Chardon, Ohio

	Chardon		Geauga County	
	Number	Percent	Number	Percent
Professional, technical, and kindred workers	260	14.8	3,703	15.5
Health workers	35	2.0	426	1.8
Teachers	123	7.0	1,256	5.3
Other Professional	102	5.8	2,021	8.5
Managers and Administrators	151	8.6	2,303	9.6
Salaried	136	7.8	2,026	8.5
Self-employed	10	.6	277	1.1
Sales Workers	99	5.6	1,718	7.2
Retail Trade	69	3.9	763	3.2
Clerical and Kindred	262	15.0	3,224	13.5
Craftsmen, Foremen, and Kindred Workers	283	16.2	4,480	18.8
Mechanics and Repairmen	56	13.2	908	3.8
Construction Craftsmen	60	3.4	1,234	5.1
Operatives except Transport	356	20.3	3,832	16.1
Manufacturing	320	18.3	3,250	13.6
Nonmanufacturing	36	2.0	582	2.4
Transport Equipment Operatives	38	2.1	823	3.4
Laborers except Farm	89	5.0	821	3.4
Farmers and Farm Managers	-		352	1.5
Farm Laborers and Foremen	-		255	1.0
Service Workers	177	10.1	1,958	8.2
Cleaning and Food Services	96	5.5	1,177	4.9
Protective Service Workers	5	.3	157	.6
Personal and Health Services	62	3.5	486	2.0
Private Household Workers	35	2.0	338	1.4
Total	1,750		23,807	

Employers. Major area employers include industries, county government, and service and retail concerns. As illustrated in Table 6, 41.3 percent, or 724 persons, were employed by industry. This is more than twice the second largest category--professional and related services. Obviously, county government provides employment for many people at the county's offices in downtown Chardon.

Nontransport operatives, craftsmen, and foremen account for 36.5 percent of all occupations of employed people in Chardon. Add to this those people with management and administrative, technical, and professional occupations who are employed in industry and it is obvious that industry is the largest single employer of the local labor force.

Table 7 provides a list of major area industrial employers, their Standard Industrial Classification (SIC) group, and the number of people employed in 1980.

In addition to employment provided by industries listed in Table 7, Geauga County employs 188 persons in its administrative offices located in central Chardon. These people are employed in a wide range of professional, clerical, and administrative functions supportive of county government.

An area's economic stability is enhanced by diversification of industrial and nonindustrial employment because it enables the local economy to absorb fluctuations in business cycles. Within the local economy, those industries less susceptible to economic fluctuations are those that provide nondurable goods or services which consumers cannot easily do without and those industries that provide goods and services to a large and extensive consuming base. In addition, a wide scope of industrial and nonindustrial employers are conducive to a stable economic base.

Table 7

CHARDON AREA INDUSTRIAL EMPLOYERS

Chardon, Ohio

Industry	SIC Category	Products	Employees
Walter C. Best, Inc.	3559	Foundry, glass and golf course sand	50
Chardon Metal Products	3451	Screw machine products	50
Chardon Rubber Company	3069	Rubber and plastic products	500
Citgo Inc.	3545	Diamond tools	80
Crystal Systems, Inc.	3679	Quartz crystals	20
Diamond Shamrock Corp.	3699	Anodes, chlorinators	187
	2899	Metal working chemicals	50
Grand River Hardwood	2426	Pallets, crates	25
Lake Geauga Printing Co.	2711	Newspaper	43
Metal Craft Co.	3448	Boat docks, outdoor furniture	15
Ohio Manufacturing Co.	3568	Pulleys	25
Premier Machine Products	3451	Screw machine products	10
B. L. Rhodes Co.	2099	Apple products	19
Richards Maple Products	2065	Maple candy and syrup	6
Sanborn Plastics	3079	Plastics molding	65
Scientific First Inc.	3599	Machine shop	20
Solon Manufacturing Co.	3495	Switches, washers, springs	14
A. M. Stanley	3544	Molds and dies	5
J. C. Stewart Enterprises Inc.	3524	Plow markers	
Structural Fibers Inc.	3541	Fiberglass pressure vessels	450
Townsend Machinery	3544	Dies, jigs, fixtures	6
Vacuum Finishing Co., Inc.	3471	Vacuum metalizing	5
Vi-Con Welding and Fabricating Co.	3441	Fabricated structural steel	75
Weekly Mail-Journal-Messenger	2711	Newspaper	13
Welter Rubber Company	3069	Molded rubber products	
Wheel Trueing Tool Co.	3291	Industrial diamond products	30
Williams Stained Glass Studio	3231	Stained glass products	
General Metals Inc.	3499	Cutting tools	5
Hutter Racing Engines	3599	Automotive machine shop	3
J&C Plastics	3079	Injected molded plastics	5

Source: 1980 Director of Industrial Manufacturers

Chardon enjoys a relatively wide scope of both industrial and nonindustrial employers. However, large proportions of residents are employed in three SIC categories of industry: rubber and plastics manufacturers, machinery manufacturers, and manufacturers of electrical and electronic machinery. Three industries in these categories employ 64 percent of those employed by industry in Chardon. These three industries provide durable and nondurable goods such as anodes, water and wastewater treatment systems, pressure vessels, swimming pool equipment, and rubber and plastics products. Their consuming market is nationwide in all three cases and not related. Therefore, although only three industries supply a majority of local industrial employment, they represent different markets with nationwide market areas and, as a result, provide a good economic base. Adverse market fluctuations in one industry would have significant local repercussions but would not be catastrophic as in a community with a single industry employment base.

National and Local Employment Trends. NOACA has developed estimates and projections of employment growth rates for Geauga County based upon shift-share analyses and regression analysis. Shift-share analyses involve inventorying local employers and an evaluation of the local mix of industries. National industrial growth performance is evaluated and local shares determined. Industrial employment is then trended or projected into the future based upon anticipated growth rates in local industrial categories.

According to NOACA, Geauga County rates of employment growth will result in a 1980 to 2000 period increase of 12,500 jobs or a 71 percent increase. Table 8 illustrates increases by 5 year periods.

In 1970, the labor force in Chardon represented about 7.4 percent of the total county labor force and total employed. Table 9 represents Chardon's share of NOACA's employment projections throughout the planning period, assuming a continuation of this proportion.

Table 8

NOACA GROWTH RATES OF EMPLOYMENT BY COUNTY
1980-2000

Chardon, Ohio

Year	Number	Percent
1975	3,057	28.4
1980	3,666	26.5
1985	3,000	17.1
1990	3,100	15.1
1995	3,300	14.0
2000	3,100	11.5

Source: NOACA Employment/Population Projections, October 1978

Table 9

CHARDON EMPLOYMENT PROJECTIONS

Chardon, Ohio

Year	Projected Increase in Geauga County Employment	Proportion Employed in Chardon	Cumulative Total Employed in Chardon
1975	3,057	7.4	1,976
1980	3,666	7.4	2,247
1985	3,000	7.4	2,469
1990	3,100	7.4	3,329
1995	3,300	7.4	3,573
2000	3,100	7.4	3,802

Note: Estimated assuming constant share of Geauga County employment increase as indicated in NOACA employment/population projections.

The accumulated total of employed in Chardon represents a nonworker to worker ratio of 2.0 by 2000 when compared to previously discussed population projections for Chardon.

In 1974, the U. S. Department of Commerce and the U. S. Department of Agriculture prepared projections of national economic activity. These projections, developed for the U. S. Water Resources Council, are referred to as OBERS projections and provide information on national trends in employment and industrial income. Projections are provided by Bureau of Economic Analysis "economic areas", "standard metropolitan statistical areas", and by "water resource areas". Industrial earnings projections are indicative of projected economic vitality of various industrial groups and provide a basis for comparison with local industry mix. Emphasis will be placed upon those industries which are expected to be relatively more active in the future in drawing conclusions about Chardon's economic base.

In the eight county southern Lake Erie water resource area, which includes Geauga, Lake, Ashtabula, Portage, Cuyahoga, Summit, Medina, and Lorain Counties, total employment is expected to increase by slightly more than 15 percent by the year 2000. Total industrial earnings are expected to increase by about 81 percent and personal income by 105 percent between 1980 and 2000.

During this period, of the industries expected to increase their earnings (total wages, salaries, and proprietors income) most are service industries; finance, insurance, and real estate industries; and government. Government includes those salaries and income derived from federal, local, and state government employment. These industries are expected to increase earnings by 123, 105, and 104 percent, respectively. Local government, which is important to Chardon as the county seat, is expected to increase earnings by about 74 percent over this period. Transportation, communications, and public utility industries are expected to increase earnings by 81 percent; contract construction by 71 percent; wholesale and retail trade by 65 percent; manufacturing by 62 percent; and mining by only 29 percent.

In reviewing Table 7, manufacturing, professional and related services, and wholesale and retail trade employ 41.3, 19.3, and 14.5 percent of Chardon's employed labor force. These industrial categories provide 75 percent of all local employment. It may be anticipated that changes in proportions of employment in these industries will occur throughout the planning period, with some increasing and some decreasing. Local conditions and other factors may contribute to locally higher earnings by existing industry than reflected in national projections. However, with respect to new development, the village

should be especially conscious of those industries projected to experience substantial earnings increases over the planning period. For instance, while manufacturing earnings are expected to increase only 62 percent over the planning period, services earnings are expected to increase by 123 percent. Emphasis on new employment in services industries or other rapidly growing industries could offset relatively slow earnings increases by industry and, therefore, contribute to a stronger and growing tax base.

Within manufacturing industries, significant relative increases (above those expected for manufacturing as a whole) are anticipated in printing and publishing, chemicals and allied products, and electrical machinery and supplies, all of which are presently important in the local economy.

Income Characteristics

Family income in Geauga County and Chardon was slightly higher than the average for the State of Ohio and for the United States. Median family income in the State of Ohio was $10,313 at the time of the 1970 census. Median family income for the United States as a whole was $9,590, while in Chardon median family income was $10,791. Fifty-four families had proverty level incomes. Poverty level family income thresholds are determined by the Bureau of the Census based upon various family characteristics such as persons in the family, regional income variances, type of head of household, etc. In 1970, the poverty level threshold for a nonfarm family of four with a male head of household was $3,745.

Per capita incomes reflected similar comparative rankings. Per capita income in the State of Ohio and for United States metropolitan areas were $3,231 and $3,434, respectively, while Chardon per capita income averaged $3,500. Geauga County per capita incomes were slightly higher at $3,517. Table 10 provides data on Chardon area income at the time of the 1970 census.

Estimates of per capita income by the Bureau of the Census for 1974 indicate continued higher average incomes in Chardon and Geauga County than those for the state. Estimated Ohio per capita incomes were $4,561 as indicated in U. S. Bureau of the Census Population Estimates and Projections, Series P-25 No. 683, May 1977. This same source indicates Geauga County and Chardon per capita incomes of $4,883 and $4,794, respectively.

Table 10

INCOME CHARACTERISTICS

Chardon, Ohio

Income Group	Number of Families	Percent of All Families
Less than $1,000	4	.3
$ 1,000 to $ 1,999	25	2.3
$ 2,000 to $ 2,999	27	2.5
$ 3,000 to $ 3,999	51	4.8
$ 4,000 to $ 4,999	26	2.4
$ 5,000 to $ 5,999	65	6.1
$ 6,000 to $ 6,999	42	3.9
$ 7,000 to $ 7,999	36	3.4
$ 8,000 to $ 8,999	74	6.9
$ 9,000 to $ 9,999	124	11.6
$10,000 to $11,999	158	14.7
$13,000 to $14,999	172	16.1
$15,000 to $23,999	227	21.1
$24,000 to $49,999	37	3.4
$50,000 or more	5	.5

Income Data

Median Family Income	$10,791
Families at Less Than Poverty Income Level	54 (5%)
Per Capita Income	$ 3,497
Low and Moderate Income Familes	362 (33.7%)
Families with a Female Head	130
Mean Income	$ 6,587

Source: U.S. Dept. of Commerce Bureau of the Census, General Social and Economic Characteristics, Ohio, PC(1)-B37 1972

LAND USE

Surrounding Townships

No other factor influences future development patterns as much as the pattern of existing development. Generally, new uses of land are proposed so as to be compatible with existing uses. In addition, there is greater potential for new development in a location surrounded or bounded by existing development. As one of the primary functions of zoning is to preserve property values, zoning codes generally reflect and encourage extensions of existing land uses or gradual transition areas where shifting uses are generally compatible between zones. In residential areas, residential uses are generally perpetrated unless significant benefits for other uses exist.

Figure 4 illustrates general land use in an area within 3 miles of the corporate limits of Chardon, Ohio. As shown on Figure 4, only a small amount of developed land exists within this area. Residential subdivisions are scattered around the village and along county and township roads.

Most recent subdivision activity has occurred in Munson and Claridon Townships where a number of subdivisions have developed since 1970. Three subdivisions have been constructed where land was available and developers were confident of a market for their products which were almost exclusively single family homes on large lots. Lot sizes of 1 acre and larger are common, all of which utilize individual or group septic tanks for wastewater disposal.

This dependence upon on-lot wastewater disposal, and previous dependence upon cheap gasoline, resulted in less emphasis upon proximity of public utilities and short distances to work. However, recent energy and building cost increases are encouraging smaller single family and multifamily unit construction and higher priority to locations close to employment centers.

In the past, subdivisions have been built haphazardly in townships surrounding Chardon. Largest subdivisions occur directly north and west of the village in the vicinity of Ravenna Road and between Kirtland and Thwing Road, in Munson Township around Bass Lake south of Chardon, and in Claridon Township near Aquilla Lake. In addition, all major road frontages have experienced

some subdivision activity. Despite subdivision activity, agricultural and vacant land tracts continue to dominate around Chardon to the extent that its small town atmosphere is preserved.

Where terrain is more severe, west and northwest of Chardon, undeveloped wooded tracts occupy slopes and bottomlands adjacent to area streams. In less severe topography east and south of Chardon, agricultural and vacant tracts remain mixed with residential, commercial, and public areas.

Various small concentrations of commercial uses occur around the area. These are primarily located at major intersections such as State Route 44 and U.S. Route 322, in the small communities of Claridon, Hambden, and Fowlers Mill, and at the east edge of Chardon along U.S. Route 6.

Industrial uses of land are concentrated primarily in Chardon and other area communities with the exception of extractive industries such as quarrying and mining. W.C. Best operates a 300-acre quarry on Ravenna Road 1/2 mile south of the corporate boundary.

Significant tracts of public and semipublic land exist in close proximity of the village. Big Creek State Park occupies 570 acres immediately north of Chardon. Aquilla Lake wildlife area is a 69-acre natural area located about 1 mile southeast of Chardon. Four golf courses are situated within a 3 mile radius of the village. Legend Lakes is an 18-hole golf course on 208 acres near Thwing and Auburn Roads. Chardon Lakes Golf Course occupies 354 acres and provides 18 holes immediately south of Chardon corporate limits. St. Denis Golf Club on U.S. Route 6, 2 miles west of the village, occupies another 140 acres. Berkshire Country Club, occupying 270 acres, is situated at the southwest corner of the planning area adjacent to U.S. Route 322. Additional public and semipublic areas include Chardon Airfield on State Route 44 south of Chardon, All Souls Cemetery west of Chardon on U.S. Route 6, the Holden Arboretum occupying 876 acres west of Chardon near Kirtland Road, and various sportsman's clubs scattered throughout the area.

Chardon Village

Residential. Figure 5 illustrates land use within the Village of Chardon. As shown on this figure, the predominant use of developed land is, as

might be expected, residential. Within this category, single family detached units predominate. Past development in the village has been concentrated east of the Chesapeake and Ohio Railroad on hillsides surrounding the public square and central business district.

Two-family residences are scattered throughout the older village area. These units are, for the most part, single family residences converted for two-family occupancy. The majority of these units are located in older sections of the community in blocks surrounding Chardon Square.

Multifamily dwellings, those in which more than two units are included, are concentrated with one exception west of the Baltimore and Ohio Railraod line in developing portions of the village. Three major multifamily developments occur here. Chardon Hills Apartments and Park Avenue Apartments are situated adjacent to Wilson Mills Road and Park Avenue. Maple Manor is situated on Water Street west of Cherry Avenue. A fourth major complex is situated in the northeast corner of the village on Downing Street. Together these multifamily residential uses of land in the village occupy 27.8 acres, less than 1 percent of the total developed land area.

Commercial. Commercial use of land in Chardon is somewhat confined in that the majority of commercial development has occurred in the vicinity and to the west of the Baltimore and Ohio Railroad. A secondary commercial concentration is located at the square where a number of businesses are situated.

The square was once the commercial and business center of Chardon. Over the years more and more businesses have found it necessary or desirable to relocate to other areas less confining with respect to expansion and parking. The Geauga County Commissioners consolidated offices in remodeled commercial structures at the northwest corner of the square. These offices provide a solid base for other professional and service activities. The remainder of the west part of the square remains in commercial use as does adjacent land north and south of the square. Commercial uses are mixed among semipublic uses east of the square as well.

The square area has become primarily oriented toward county government functions and, as a result, area commercial uses are also in support of county functions or provide personal services to county employees. For example, several title lawyers and title insurance companies have been established in this area. As Chardon is the county seat of Geauga County and as land records are maintained by county offices here, it is logical that supporting legal functions are located close by.

Further analysis of the square as a central business district is provided in later report sections.

The recently developed commercial area at the west end of the village provides large floor areas for retail sales. Convenience stores, services, and general retail outlets are concentrated in this general area. Large vacant land tracts exist adjacent to this area for potential future development.

Industry. As Figure 5 illustrates, industry in Chardon is concentrated, for the most part, in the northwest quadrant of the village in the area north of Water Street and west of North Street.

Approximately 89 acres of the total developed land within the corporate limits is devoted to industrial use. For this study, industry has been inventoried in two different categories, heavy industry and light industry. The heavy industrial category is made up of primary production industries or those industries involved in storage, repair, wholesaling, manufacturing, or assembly which, as a result of noise, odors, vibration, or smoke, are not generally compatible with nonindustrial land uses. Examples of such industries include lumber mills, metal fabricators, rubber fabricators, machine shops, and quarries. The heavy industrial category occupies 38 acres of the total of industrial land. As can be seen on Figure 5, heavy industrial land uses are concentrated adjacent to the railroad that provides inexpensive transportation for resources and products.

The light industrial category in Chardon occupies approximately 51 acres of land within the corporation. Those storage, repair, wholesaling, manufacturing, and assembly operations which are not objectionable for the reasons

indicated above and are generally compatible with other nonindustrial land uses are classified in this category. Examples include such activities as electronics component assembly, warehousing, and large-scale cleaners.

Public and Semipublic. This land use category includes all public uses such as schools and their associated playgrounds; parks; libraries; city buildings, such as village hall and the police department; churches; cemeteries; or other uses provided for the general public, even though the use may have limited membership as in the case of a private golf or country club. Within the corporate limits, approximately 289 acres are devoted to these uses. Most of this area is found in three general locations: north of Chardon Avenue at the square, and in Chardon Lakes Golf Course at the southern edge of the village. Several schools are located in the Chardon Avenue area including Chardon High School, Chardon Middle School, Maple Elementary School, and St. Mary Parochial School. Concentrated at the square are Geauga County offices, village government offices, Park Elementary School, and the library. South of Park Avenue and west of South Street are Chardon Lakes Golf Course and Chardon Cemetery.

Railroads, Streets, and Highways. These categories involve all land devoted to the movement of vehicles or trains in the village. A total of about 189 acres are used for these purposes, 35.4 acres in railroad rights-of-way and 153.2 acres in streets and highways. Areas devoted to parking are not included as they are incorporated in the acreage of their attendant use.

While proportions of total land in these uses vary from community to community, the area devoted to streets and highways in most well developed communities averages around 20 percent of total developed land. This average can provide a general indicator of the intensity of development in a community. By comparing the proportion of land in this use in Chardon to the general average, it can be seen that Chardon's degree of development is much less than the average. Only 12 percent of the total developed area in Chardon is devoted to streets and highways, indicating significantly less intense development.

Lakes and Ponds. Surface water features within the village are limited. A man-made lake located north of Fifth Avenue at Lake Avenue is the largest

water body in the village. This lake and other various small ponds in the corporate area occupy slightly over 4 acres.

Vacant Land. Of the approximate 2,823 acres within the corporate limits, 1,589 are vacant or unused. This represents 56 percent of the total land area of the village. Obviously, utilization of this land area for residential, commercial, or other developed land uses will have significant effects on local population, community facilities, utility systems, and transportation. Redevelopment of older large lots in the community which are underused could also contribute significantly to local facility demands and population levels.

A number of vacant land tracts occur in older portions of the village. These generally occur at the center of blocks where deep lots front on surrounding streets. Some of these lots are 800 to over 1,000 feet deep. Back portions of many of these lots have been neglected or unused. Limited lot frontage and access make utilization difficult. The end result is that significant developable land with the existing utility service grid is not being utilized, is maintained at a low value, and is not contributing taxable income to the village or contributing monies to maintain roads, facilities, and utilities within the corporate area.

Summary. Table 11 summarizes land use by category within the Village of Chardon in 1980. As shown, single family residential uses occupy 42.5 percent of the developed area of the village but only 18.5 percent of the total corporate area. Only 43.6 percent of the village is currently developed.

Public and semipublic uses occupy the second largest proportion of developed land with 22.7 percent of total developed land and 9.9 percent of the corporate area. Parks and public open space which account for 46.8 acres of this total represent 3.8 percent of developed land and 1.7 percent of the community as a whole.

Of the five major land use categories--residential, commercial, industrial, public and semipublic, and roads and highways--the least amount of developed land is occupied by the industrial category, including both light and heavy industries. Combined, these two industrial categories occupy 7.3 percent of the developed land area and 3.1 percent of the corporate area.

Table 11
LAND USE - 1980
Chardon, Ohio

	Area in Acres	Percent of: Developed Land	Percent of: Total Village Area
Single Family Residential	522.1	42.5	18.5
Two-family Residential	14.8	1.2	.5
Multifamily Residential	27.6	0.2	9.8
Commerce	108.6	8.8	3.8
Light Industry	51.1	4.2	1.8
Heavy Industry	37.8	3.1	1.3
Public and Semipublic	278.6	22.7	9.9
Parks and Open Space	46.8	3.8	1.7
Railroad	35.4	2.9	1.3
Roads and Highways	153.2	12.4	5.4
Subtotal Developed Land	1,229.2	100.0	43.6
Lakes and Ponds	4.3	-	.1
Vacant Land	1,589.0	-	56.3
Total Area*	2,822.5	-	100.0

*Corporate area only

Source: Burgess & Niple, Limited Survey

Table 12 illustrates the existing level of development in Chardon relative to the number of people in the village and compares existing data to that of the 1968 comprehensive plan.

As shown, the amount of developed land in the village has increased dramatically since the 1968 plan partly due to annexation of new land into the corporate area. Table 12 also indicates changes in the density of development between these two periods. For example, in 1968 10.5 acres of land were developed for residential use for each 100 persons in the village. By 1980,

residential densities actually decreased. Each 100 persons utilized more land area at the rate of 11.3 acres for every 100 persons. While residential densities decreased, slightly more commercial space was being developed. By 1980, twice as much commercial land area had been developed than was available in 1968.

Table 12

LAND USE ACREAGE PER 100 PERSONS
1968 AND 1980

Chardon, Ohio

Category	Acres in 1968	Acre/100 1968	Acres in 1980	Acre/100 1980
Residential	419.3	10.5	564.5	11.3
Commercial	45.1	1.1	108.6	2.2
Industrial (including railroads)	109.0	2.7	124.3	2.5
Public and Semipublic	149.8	3.7	278.6	5.6
Roads and Highways	115.0	2.9	153.2	3.1
Total Developed Land	838.2	20.9	1,229.2	24.7

Industrial acreage maintained its relationship to people in the community. Roads and highways also remained fairly constant over this period.

The relatively large increase in public and semipublic land area per 100 persons is the result of annexation of Chardon Lakes Golf Course property into the corporate area and is, therefore, somewhat misrepresentative in that new facilities did not result, only corporate boundaries changed.

Overall density of development in the village decreased from 1968. About 24.5 acres of land are developed for each 100 persons in the community in 1980, while only 20.9 acres were developed for the same number of people in 1968. However, much of this change can be attributed to annexation of an additional 512 acres at the southern edge of the village which included a large amount of public and semipublic developed land and relatively few new residents. Actual declining densities did occur in the residential category and significant increases in the amount of land in commercial use per 100 persons did occur.

Somewhat more land is devoted to commercial, industrial, and public and semipublic land uses than occur on the average for communities of similar size. An Ohio Department of Economic and Community Development survey of Housing and Urban Development 701 planning reports indicated 0.7, 1.8, and 3.4 acres developed per 100 persons in these categories in 1970.

Future Land Use Requirements

Amounts of land required for future urban uses will depend not only upon projected population but also trends in various land use categories. As illustrated in previous sections, levels or intensity of development change over time as a result of land availability, land value, construction costs, and manufacturing process development. For example, residential lot sizes in central Chardon are relatively large, many larger than 1 acre. These lots were laid out and developed when land costs were relatively low by today's standards. More recent residential development utilizes much smaller lot sizes as evidenced in the subdivision at South Hambden and Irma Drive in the southeast part of the corporate area (see Figure 5).

Additional land use requirements for residential use in the year 2000 may be estimated by determining the amount of land required to facilitate the number and types of residential units necessary to house anticipated populations. As previously mentioned, population projections for Chardon were developed utilizing cohort/survival methodology with a constant allowance for migration to the village. The projections developed in this study are slightly higher than projections developed by NOACA for 208 water quality planning purposes, and indicate that approximately 2,600 additional persons may be expected to reside in Chardon by the year 2000 than in 1980. These people will require housing, places of employment, areas for shopping, streets, and parks, all of which will consume land area.

The amount of land required for future urban uses will depend upon not only the projected population but also trends in various land use categories. As mentioned previously, residential lot sizes in the older corporate area are very large while lots in newer developments average close to 10,000 square feet. Smaller lot size combined with decreasing average family sizes will result in less land area being utilized to house people than previously.

Commercial enterprises, on the other hand, are trending to larger parcels of land with more open landscaped area in an effort to convey more attractive and receptive impressions to shoppers. Such trends must be taken into account in development of land use projections.

Additional land requirements for residential use in the year 2000 may be estimated by determining the amount of land required to house the anticipated population. As cited previously, population projections for Chardon indicate an increase of 2,600 persons over the 1980 population by the year 2000. Currently, an average of 3.2 persons per household exists in the village. Smaller family sizes projected nationally are expected to influence household sizes, reflecting slightly lower averages of persons per households. If, by the year 2000, the average household size in Chardon consists of 2.8 persons and lot sizes average about 10,000 square feet, approximately 281 acres of land and 1,180 additional housing units will be needed by the end of the planning period for new growth, exclusive of replacement of deteriorating units. Table 13 summarizes additional land area requirements.

Table 13
LAND USE REQUIREMENTS BY DECADE
Chardon, Ohio

	Total Existing 1980	Additional Required 1990	Additional Required 2000	Total Additional Land Required	Year 2000 Total Area Developed
Residential[1]	564.5	133.0	148.0	281.0	845.5
Commercial	108.6	12.5	13.5	26.0	134.6
Industrial	88.9	25.0	27.5	52.5	141.4
Public and Semipublic	278.6	25.0	27.5	52.5	331.1
Parks & Open Space[2]	46.8	11.2	12.4	23.6	70.4
Railroads	35.4	-	-	-	35.4
Streets and Highways	153.2	32.3	35.5	67.8	221.0
Vacant	1,589.0	-	-	-	1,109.2
Total Developed Land	1,229.2			479.8	1,709.0

[1]From land use survey, estimates from Housing section
[2]Estimated as part of total public and semipublic land area

Source: Burgess & Niple, Limited estimates

Currently in Chardon there are 2.2 acres of land devoted to commercial use for every 100 persons. This relationship is much higher than the average 0.7 acre per 100 experienced in communities of similar size, probably because Chardon's retail areas at the west are recent developments emulating trends to single floor establishments with large floor areas. For the purposes of the plan, it is assumed that new commercial activity will develop at a rate of 1 acre per 100 persons increase in population in the village. Using this as a guide, approximately 26 acres of additional commercial development will occur if this relationship is realized.

Industrial development in Chardon has, in the past, been dominated by heavy industries such as Chardon Rubber. The village is fortunate to have readily accessible truck and railroad facilities situated in an advantageous location relative to major transport routes and within relatively short distances from major market centers. Current population to industrial acre relationships include railroad areas. A somewhat smaller area to population relationship may be expected in the future. If 2.0 acres of industrial area are developed per 100 additional persons, then about 52 acres of industrial land should be designated and reserved for that use. Actual area may be significantly different depending upon types of industry developed.

Questionable energy resources, combined with fluctuating national economic conditions, may inhibit at least heavy industrial development from attaining past levels of development relative to population. Trends in industry toward relationships of more land to fewer employees as a result of one floor operations, increased landscaping, and parking and loading areas may result in more land devoted to industry.

Future land requirements for public and semipublic land are expected to reflect lower proportions of developed land area than currently. Averages for similar size communities are about 2 acres per 100 population. Current land area used for schools, churches, cemeteries, and other semipublic uses is generally adequate although deficiencies in some areas of the community exist. Future land requirements in this category are based upon this average. Existing area combined with this estimated new area should provide adequate land

for this purpose. However, particular attention should be given to elimination of deficiencies in various localities, particularly recreational facility access in neighborhoods west of North and South Streets.

Recreational land uses will require about 0.9 acre of new development for every additional 100 persons added to the village's population based upon standards discussed in the Recreation section. As an additional 2,526 persons are anticipated, an additional 23 acres of land should be reserved by the end of the planning period. The village currently provides generally adequate parks and recreational areas--44 acres compared to 45 acres by these standards. An additional 93 acres of open space is owned by the village in the vicinity of the wastewater treatment plant just east of Chardon District Park. Additional open space area should be preserved where scenic or historic factors warrant. Such open space areas may be used for quiet, passive recreational endeavors.

Streets are anticipated to utilize greater proportions of developed land than they do at the present time. Currently, large lot sizes, particularly in older village areas, are reflected in the low proportion of streets and highway area compared to similar size communities. This is further reflected in large underdeveloped tracts of land without access in central Chardon. Streets and highways typically occupy 15 to 20 percent of total developed land area in similar size communities. Assuming that 20 percent of all newly developed land is devoted to roads and highways, approximately 68 acres will be required for this use.

Railroads currently occupy about 35 acres in the village. No additional development of railroads is anticipated during the planning period as sufficient facilities currently exist. Industrial tracts are well served and only short spur lines are anticipated to be required in the future on an as-needed basis.

Land requirements for all developed land uses are estimated at 479.8 acres by the year 2000, as summarized in Table 13. Approximately 1,589 acres within the village were vacant at the time of the land use survey in 1980.

While some of this vacant land area has inherent limitations which may preclude or restrain development, ample area exists within the corporate area to accommodate the additional development required in Table 13.

The comprehensive plan described in later sections of this report allocates land area by land use types. Land uses are designated by considering the inherent capability and suitability of land within the corporate area. Suitability and capability factors are discussed following Existing Environmental Conditions.

HOUSING

General

This portion of the comprehensive plan is designed to assist the village in becoming more actively involved in improving the quality of housing and encouraging construction of the types of housing needed by residents in adequate numbers to satisfy area needs.

Housing is the largest consumer of municipal services and expenditures. The location of housing strongly influences the general development pattern of a community including land use, utilities, transportation facilities, and community facilities.

Housing means many things to many people. It is the largest expenditure the average family makes and can provide a source of wealth for them upon retirement. Elderly and fixed income families often spend a disproportionate amount of their incomes for housing purposes. Because low income families spend a high percentage of their incomes on housing, they are unable to provide themselves with better social and cultural opportunities and, in many cases, are forced to continue in the low income cycle.

Housing is basically shelter, a place to live. Families that live in inadequate housing do not have a suitable living environment. Their poverty prevents them from fully participating in social, educational, and cultural functions, and they are deterred from living normal, healthy lives.

Housing is also a source of income, not only for property owners who have large scale rental holdings, but also for many low and moderate income families who depend upon rental of their own housing units to supplement their income. Housing offers a sense of security to those who are able to afford it, and a sense of insecurity for families who cannot meet monthly mortgage, rental, or utility bills.

Above all, housing is a molder of family life. A sound home in an attractive and functional neighborhood offers a family a sense of well being and self-respect.

Housing is also a source of jobs and an economic return to a community. Approximately one-third of a community's property taxes are derived from residential properties and any deterioration in the housing stock results in a decrease of funds needed to operate the community. Not only does housing affect residents of a community, but the condition of housing in a community presents an image to outsiders. A community with deteriorating housing can discourage new industries and families from locating there. A community of sound, well maintained housing can serve as a positive stimulus for desired growth.

Housing also consists of physical and nonphysical components. The physical component includes things that can be seen such as number, quality, style, and environmental condition of homes and neighborhoods. Nonphysical components include social and racial housing patterns, life styles, family incomes, and financial or lending patterns which govern availability of money to construct or purchase homes. Relationships between a person's home and place of employment, churches, shopping, and other needed facilities that make life worth living are also part of the total housing picture.

Purpose of the Housing Plan

The purpose of this plan is to investigate forces that relate to present and future housing requirements of Chardon and to prepare an action program designed to:

- maximize housing opportunities for all citizens in the city
- provide local officials with a basis for formulating policy to ensure the most desirable growth pattern
- provide local officials with a basis for corrective action to improve existing conditions
- provide local officials with a basis for formulating programs to respond to nonphysical aspects of housing

This study investigates existing housing resources and estimates housing requirements to the year 2000. A housing plan is presented based upon reasonable goals and objectives.

Importance of the Housing Plan

Because of its many functions, housing is an extremely complex social and economic phenomenon. Historically, families have been responsible for providing their own housing and to a large degree they have been successful. Unfortunately, many families are presently unable to house themselves adequately. High land, labor, and material costs prevent increasing numbers of our nation's families from paying for their own housing.

All functional planning programs of the village, including the housing plan, must be integrated because of their heavy dependence upon each other. One plan cannot succeed without satisfactory implementation of the others. The housing settlement pattern is a result of many complex social, economic, and political factors, many of which are in mutual contradiction and competition for use of land. This housing study will provide a factual basis for local officials to make a proper allocation of resources and help shape the most desirable pattern for the future.

Proper coordination of the housing element with other plan elements can reduce operational and capital expenditures for such things as water and sewer facilities and schools, as well as protect the tax base of residential properties and alleviate isolation of lower income and minority groups.

Housing Characteristics

The condition of the existing housing supply in Chardon was determined by survey and evaluation of U.S. Census data. The survey consisted of exterior inspection of all residential structures and was completed in November 1979.

The 1970 census, Detailed Housing Characteristics, indicated a total of 1,229 housing units, five of which are only used for part of the year. Seven hundred twenty-eight of the year-round housing units were owner occupied, 522 were renter occupied, and 34 were vacant. Of those units vacant, 22 were

rental units and 3 were owner units for sale. The remainder were temporarily or seasonally vacant units. All rental units were vacant for less than 6 months.

Table 14 illustrates general housing data as reported in the 1970 census of housing. As shown, vacancy levels at the time of the census were low--0.4 percent for owner occupied units and 4 percent for rental units. This indicates a limited supply of housing and a relatively high demand.

Table 14
GENERAL HOUSING CHARACTERISTICS, 1970
Chardon, Ohio

All Housing Units	1,289
Seasonal and Migratory (vacant)	5
All Year-round Housing Units	1,284
Owner-Occupied	728
Vacant for Sale	3
Renter-Occupied	522
Vacant for Rent	22
Plumbing Facilities	
Lacking some or all plumbing facilities	30
Lacking only hot water	5
With all plumbing facilities	1,254
Without piped-in water	2
Without flush toilet	2
Units in Structure	
1	831
2 or more	450
Mobile homes	3
Rooms	
1 room	12
2 rooms	22
3 rooms	105
4 rooms	278

Table 14 (continued)

Rooms (continued)	
5 rooms	295
6 rooms	213
7 rooms	170
8 rooms or more	189
Median, all units	5.3
Median, owner units	6.2
Median, renter units	4.2
Persons per Unit	
Median, all units	2.9
Median, owner units	3.2
Median, renter units	2.6
Persons per Room	
1.01 or more	70
Median Value of Owner Occupied	$19,900
Utilities	
Water from public system	1,202
Individual water wells	71
Other water supply	9
Public sewer system	1,163
Septic tank or cesspool	111
Other wastewater disposal	8

Source: U.S. Department of Commerce, Bureau of the Census, Housing Characteristics for States, Cities and Counties, Part 37, Ohio

Of all structures, 831, or 65 percent, were single family. The remaining 35 percent were in structures with two or more units in each structure. Only three mobile homes were in the community at this time.

Owner units had an average 6.2 rooms, while renter units averaged 4.2 rooms. The average for all units was 5.3 rooms. Seventy units, or 5.5 percent of all units, had more than one person per room which is generally recognized as the level constituting overcrowding. Average number of people living

in all units was 2.9, and average value of each owner-occupied unit was $19,900.

Most housing units within the corporate area were served by public water and sewer systems. Only 4.7 percent, or 80 units, were not served by the public water system and 111 units, or 8.6 percent, were not served by the public sewer system. Thirty units, or 2.3 percent of all units, were lacking some or all plumbing facilities.

Age and condition of structures in a community can have a significant effect on the types of housing programs that should become part of the overall community development strategy. Table 15 describes the year residential units in Chardon were constructed and the proportion of units constructed in each period.

Table 15
YEAR STRUCTURE BUILT
Chardon, Ohio

Period	Number	Percent
1939 or earlier	618	48.2
1940 to 1949	129	10.0
1950 to 1959	241	18.8
1960 to 1964	120	9.4
1965-March 1970	175	13.6

Source: U.S. Department of Commerce, Bureau of the Census, Housing Characteristics for States, Cities and Counties, Part 37, Ohio

Structures built since 1970 do not appear in this census data. These units are discussed in a later section which explains the findings of the recent survey of houses in Chardon.

As the data in Table 15 indicate, 58.3 percent of all structures in Chardon at the time of the census were built prior to 1949 (48.2 percent

before 1939 and 10.0 percent between 1939 and 1949), and therefore, are more than 30 years old. The average life of residential structures varies--many units in Chardon are more than 100 years old. However, as housing units get older, maintenance requirements increase. If not properly constructed and maintained, units may deteriorate to the point where significant structural rehabilitation may be necessary, even after less than 30 years of use.

By comparing proportions of units built prior to 1949 in Geauga County and the state with the proportion of units in Chardon of this vintage, relative needs for rehabilitation of housing may be perceived. In Geauga County, 41.6 percent of all year-round units at the time of the census were constructed prior to 1949. In the State of Ohio, 58 percent of all year-round units were constructed prior to this year. It can be concluded then that needs for housing rehabilitation may be greater in Chardon than in Geauga County and equally as great as that of the State of Ohio overall.

Additional data on housing conditions defining the need for housing rehabilitation efforts in Chardon is presented following discussions of housing condition surveys conducted for this report.

Housing Condition Survey

The field survey evaluated all residential structures as either recently constructed, standard, deteriorating, or dilapidated. Mobile homes and house trailers were not evaluated since the external structural condition is an inadequate measure of their intrinsic livability. At the time of the survey in November 1979, 1,181 residential structures in Chardon provided 1,549 individual housing units. Following is a definition of the four survey categories:

1. Recently Constructed - Structures built within the last few years which should provide useful service for the next 2 or 3 decades with little or no attention other than adequate maintenance. (Noted to provide information in rapidly developing areas and to determine trends.)

2. Standard - Those structures in satisfactory condition but needing minor repair in order to satisfactorily serve for the next 20 to 25 years.

3. Deteriorating - Buildings needing major repairs but apparently warranting rehabilitation.

4. Dilapidated - Buildings obviously of substandard quality that cannot be economically rehabilitated and are not anticipated to endure the planning period.

Any survey of housing structural conditions can be misleading. It is not difficult to determine whether or not a home needs to be repaired, or is new, or is so dilapidated that its collapse is only a matter of time. The problem occurs when attempting to define "adequate maintenance", "major repairs", and "minor repairs".

What is minor to one person could be major to another. In addition, the same type of repair on two different houses might constitute two different levels of expenditures, and consequently, place the structures in different categories. For example, consider a small one floor brick home which appears in perfect condition except for roof drains which need replacing. This would be considered a minor repair due to the expense required to correct the problem and the home would be rated as good. Another brick home, perhaps a large two and one-half story ten-room mansion in perfect condition except for rotted box gutters, would be evaluated as needing major repair and be rated as fair. The cost of replacing box gutters is extremely high and would take the work out of the minor repair category. Despite the inherent weakness of a subjective structural survey, the results are valuable since they permit comparison between communities and neighborhoods.

Results of the housing survey are displayed in tables for structures and units. Structures are defined as buildings which may contain one or more family living units. Units are living accommodations within a structure for one family.

For the purpose of the housing condition survey, the village was divided into three analysis areas. These three areas are identified as the northeast, southeast, and west areas, and they are further described as follows:

Northeast Area - The incorporated area north of North Hambden Street and east of North Street

Southeast Area - The incorporated area south of North Hambden Street and east of South Street and East Park Street

West Area - All incorporated land west of North Street, Main Street, and South Street

Table 16 presents a tabulation of survey results within each of the above areas by type of dwelling. Figure 6 graphically portrays the results of the housing condition survey explained in the following paragraphs.

Northeast Area. This area contains the smallest number of houses of the three analysis areas; however, the largest number of recently constructed units occurs here. Ten relatively new single family units and four structures with 16 units each have been built in this area in the recent past. Two dilapidated structures and the only mobile home in the community at the time of the survey were inventoried here. Six of the units inventoried in this analysis area were vacant.

Southeast Area. As interpreted by reviewing Table 16 and Figure 6, the largest number of dwelling units are contained in the southeast area. All but ten of the residential structures in this area are single family units. The remaining ten are two-family units. No multifamily units were inventoried in this area and only one recently constructed unit was inventoried. Only one new and one dilapidated structure were inventoried and only one vacant structure was noted.

West Area. While much larger in area covered than any of the other analysis areas, the west area contains the second largest number of dwelling units. Only one recently constructed unit was noted. The largest number of multifamily units exists in this area where 15 of the total 20 multifamily

Table 16

HOUSING CONDITIONS BY ANALYSIS AREA AND TYPE

Chardon, Ohio

Single Family Dwellings

	Recently Constructed	Standard	Deteriorating	Dilapidated	Mobile Homes
Northeast	10 (1v)	192 (2v)	19 (2v)	2 (1v)	1
Southeast	1	496	45 (1v)	1	
West	1	292	62 (3v)	4	
Total	12 (1v)	980 (2v)	126 (6v)	7 (1v)	1

Two-family Dwellings

	Recently Constructed	Standard	Deteriorating	Dilapidated
Northeast	-	15/30	-	-
Southeast	-	7/14	3/ 6	-
West	-	9/18	2/ 4	-
Total	-	31/62	5/10	-

Multifamily Dwellings

	Recently Constructed	Standard	Deteriorating	Dilapidated
Northeast	4/64	1/ 3	-	-
Southeast	-	-	-	-
West	-	15/285	-	-
Total	4/64	16/288	-	-

Total All Structures

	New	Standard	Deteriorating	Dilapidated	Mobile Homes	Total
Total Structures/Units	16/76 (1v)	1,027/1,330 (2v)	131/136 (6v)	7/7 (1v)	1	1,549
Condition as Percent of Structures/Units	1.4/4.9	87/85.9	11.0/8.8	.6/.4		

(v) indicates vacant unit

Note: Where fractions occur such as 31/62, numerator indicates structures, denominator indicates dwelling units

Source: Burgess & Niple, Limited Estimates

structures in the village are located, supplying 285 of the total 352 units in multifamily structures (81 percent). This area contains the largest number and proportion of deteriorating and dilapidated structures of the three analysis areas. While noticeable concentrations of deteriorating units do not occur in other analysis areas, greater frequencies are noted in the west district, particularly in the vicinity of Court Street and Washington Street where a number of structures are in need of major repairs.

Community-wide. Table 17 and Figure 6 illustrate the number of residential structures and individual units in each category of condition and illustrate community-wide housing conditions. Structures appear in Table 17 as the numerator of fractional values while units appear as denominators. Percent values are indicated in the same manner with percentage of all structures appearing as a numerator and percentage of all units appearing as a denominator.

As this table indicates, sixteen structures with 76 family units have been constructed within the last few years. This represents 1.4 percent of all structures and 1.9 percent of all housing units. As was previously noted, the majority of these recently constructed units were built in the northeast area (perhaps indicating this area as more desirable from a development standpoint or that utilities are readily accessible). Eighty-seven percent, or 1,027 structures in Chardon, were in standard condition. These 1,027 structures provided 1,330, or 85.9 percent, of all individual housing units. The southeast analysis area provides the largest number and proportion of standard units with 42.6 percent of all structures and 32.9 percent of all units in the community.

About 131 structures with 136 units were determined to be deteriorating or in need of major repairs or rehabilitation. This is 11 percent of all structures and 8.8 percent of all units. As mentioned previously, the west analysis area contains the greatest concentration of deteriorating structures.

Only seven dilapidated structures were inventoried community-wide. These were all single family units. Dilapidated structures represented 0.6 percent of all structures and 0.4 percent of all units in the community.

Table 17

PERCENT OF ALL STRUCTURES/UNITS IN EACH ANALYSIS AREA BY CONDITION

Chardon, Ohio

	Recently Constructed		Standard		Deteriorating		Dilapidated	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Northeast	14/74	1.2/4.8	208/ 225	17.6/14.5	19/ 19	1.6/1.2	2/2	.1/.1
Southeast	1/ 1	.1/ .1	503/ 510	42.6/32.9	48/ 51	4.1/3.2	1/1	.1/.1
West	1/ 1	.1/ .1	316/ 595	26.8/38.4	64/ 66	5.4/4.3	4/4	.3/.3
Total	16/76	1.4/1.9	1,027/1,330	87.0/85.9	131/136	11.0/8.8	7/7	.6/.4

Source: Burgess & Niple, Limited Survey, November 1979

Housing Needs

One of the basic problems inherent in the preparation of any housing plan is defining housing requirements. This study defines housing requirements as the total of nonresponsive needs, noneffective needs, and effective demand.

Nonresponsive needs are defined as the number of families living in deficient housing but lacking the desire or motivation to avail themselves of adequate housing if it were made available at prices they could afford. It is extremely difficult to estimate nonresponsive needs since the reasons people do not desire to live according to accepted norms are very complex.

Noneffective needs are the number of families that desire to avail themselves of adequate housing although they lack the financial capacity to do so. Noneffective needs are also difficult to estimate accurately since there are no past trends to analyze. In addition, governmental subsidies of some type are required to reduce housing costs to a level these families can afford and it is impossible to accurately estimate the level of governmental funding at any one point in time.

Effective demand is the number of families that can afford and are willing to avail themselves of adequate housing. Effective demand, sometimes called market demand, can generally be accurately estimated from past trends, current economic conditions, and housing costs. This study assumes that nonresponsive and noneffective needs can be converted into effective demand through a combination of code enforcement, public education, family counseling, and financial assistance. The terms "housing requirements" and "housing needs" are used in essentially the same manner in this study.

The difficulty in estimating future housing requirements is readily apparent. There is a cause and effect relationship between the housing market and regional economy, locational preferences, competition from surrounding housing markets, commuting patterns, life styles, and many other factors. The following estimates should be used with these limitations in mind.

Removal of Existing Units. The housing stock in Chardon is relatively old. As indicated in the Housing Characteristics section, 48.2 percent of all

units in Chardon were constructed prior to 1939. Even if an average annual construction rate over the last 9 years of 14 units (average rate 1970-1979) is maintained, 57.8 percent of all units will be over 40 years of age by 2000.

Housing units are removed or destroyed by a number of causes. In order to adequately shelter the anticipated area population, units removed must be replaced and additional units constructed to allow for growth. Those causes for removal of existing units include the following:

1. Deterioration and obsolescence
2. Private action for land use change
3. Fires, disasters, and unforeseen circumstances

Deteriorating housing units may be removed voluntarily or through some type of government pressure such as enforcement of local codes. At the time of the field survey in November 1979, seven structures were dilapidated or beyond rehabilitation. An additional 131 were in need of major repairs. All units categorized as dilapidated will probably be removed prior to the end of the planning period, as will a significant number of those units inventoried as deteriorating.

Fires, disasters, and unforeseen circumstances such as floods, tornadoes, etc., occur less frequently than other removal causes.

The total of structures removed due to deteriorating and obsolescence is expected to result in a 0.5 percent removal rate per year. This annual removal rate will result in approximately 23 units per 5 year period. This rate is calculated using an estimated average number of structures over 50 years old during the planning period resulting in an estimated 92 units by the year 2000.

Structures to be removed by private action for land use change and those to be removed because of fire or disaster occur less frequently than removals due to deterioration and obsolescence. A combined removal rate of .05 percent per year will be used to calculate the approximate number of units to be removed due to these causes. All structures over the life of the plan will be

subject to these causes. As a result, the average number of all units from 1980 to 2000 will be used in the calculation of the anticipated number of units to be removed. A total of four units per 5 year period results from this calculation making a total of 16 units to be removed over the planning period due to these causes. The seven structures in Chardon already in poor condition will probably be removed within the next 20 year period.

Table 18 shows the number of units expected to be removed by 5 year periods during the planning period. Approximately 29 units will be removed each 5 year period with 115 being removed over the planning period.

Table 18
ANTICIPATED REMOVAL OF HOUSING UNITS
Chardon, Ohio

Cause of Removal	Units Subject to Cause	Annual Removal Rate %	Units Removed by 5 Year Period	Total Units Removed by 2000
Deterioration and obsolescence of structures over 50 years old (1)	933	.5	23	92
Private action for land use change, fire, disaster, etc. (2)	1,549	.05	4	16
Removal of units in dilapidated condition	7	5	2	7
Total	2,489		29	115

(1) Estimated 907 structures 50 years of age 1980
958 structures 50 years of age 2000
1,866 ÷ 2 = 933 structures over 50 years of age, 1980-2000

(2) All existing housing units

Source: Burgess & Niple, Limited estimates

Future Number of Households. Table 19 indicates the number of households expected to reside in Chardon in the future based upon previously developed population projections. As was indicated, population is expected to increase from 3,991 persons in 1970 to about 7,600 persons by 2000. At the time of the

1970 census, 99.6 percent of the total population lived in households. This relationship of households to population is expected to remain constant throughout the planning period. Owner occupied units in 1970 represented 58 percent of all units. These owner occupancy rates are expected to decline significantly due to the rapidly rising costs of housing due to inflation, high fuel costs, and higher labor and material costs. The overall effect is that many first time home buyers are eliminated from the market. Fewer individuals are willing or are capable of absorbing the costs of mortgages and maintenance of a single family unit. In addition, an increasing number of rental units are being constructed throughout the village, absorbing households previously occupying individual homes.

Table 19

PROJECTED HOUSEHOLDS
1980-2000

Chardon, Ohio

Year	Population	Percent of Households		Household Size	Number of Households		Total
		Owner	Renter		Owner	Renter	
1970	3,991	58	42	3.2	728	522	1,250
1980	5,016	56	44	3.2	867	682	1,549
1990	6,265	54	46	3.0	1,128	960	2,088
2000	7,642	52	48	2.8	1,419	1,310	2,729

Source: Burgess & Niple, Limited estimates

A rate of decrease in household ownership of 1 percent every 5 years over the planning period has been projected. The proportion of owner occupied households will decrease with rented occupied units increasing as a result. This is anticipated as a result of continually increasing housing costs and because more attractive and desirable rental units are continually entering the local housing market. A telephone survey of local rental complexes indicated that even now waiting lists are used and vacant units are quickly occupied.

Changing household sizes will also have a significant impact on the number of future units. In 1970, the Bureau of the Census reported an average household size in Chardon of 3.18 persons. As indicated in the Population section, statewide average household sizes are estimated by DECD to have decreased from 3.2 persons in 1970 to 2.8 persons in 1978. The housing survey indicates 3.2 persons per household in Chardon in the Winter of 1979. Declines in household size are anticipated locally. For the purpose of developing housing projections, a declining number of persons per household will be used in tabulations of future unit needs resulting in 2.8 persons per household by the year 2000. Using these household sizes, estimates of households expected within the village were determined. A total of 1,180 new households are anticipated from 1980 to the year 2000.

Future Housing Unit Requirements. Table 20 summarizes the number of housing units required to house families in Chardon to the year 2000. Required housing units were estimated utilizing the following methodology:

1. The number of housing units available at the beginning of the first 10 year period (1980) was obtained from the survey of housing conditions.

2. The number of existing housing units expected to be demolished during the period was subtracted from the number available.

3. The number of units available results from subtracting units to be removed from number of units available in Step 1.

4. The number of households at the end of the period was obtained from Table 19.

5. A vacancy rate factor was included. This factor was held at 1 percent (approximate existing level).

6. A total number of housing units needed at the end of the period was obtained by adding the vacancy rate factor to the number of households.

7. The requirement for the period was obtained by subtracting the housing units available at the end of the period from the number of housing units needed at the end of the same period.

8. The number of housing units needed at the end of the period was accepted as the number of housing units available at the beginning of the next period, and the process was completed for each succeeding 10 year period to 2000.

Table 20
HOUSING UNIT REQUIREMENTS - 1980-2000
Chardon, Ohio

	1981-1990	1991-2000
Housing units available	1,549	2,109
Units removed[1]	58	57
Number of units available at end of period	1,491	2,052
Number of households at end of period[2]	2,088	2,729
Required vacancy rate	1%	1%
Total housing units needed	2,109	2,756
Requirement during period	618	704
Accumulated requirement	618	1,322

[1]From Table 18
[2]From Table 19

Source: Burgess & Niple, Limited estimates

As this table indicates, there will be a need for 1,322 housing units to accommodate the projected 2000 population. While community populations are expected to increase by 52 percent over this period, housing needs will increase by 86 percent, or 1,322 units, while household sizes will decrease to the anticipated 2.8 persons per household by 2000. This number of housing units allows 1 percent of all units to be vacant to accommodate a limited amount of interarea migration.

Housing construction rates in Chardon have averaged about 20 structures per year since 1940, providing slightly more than 20 individual housing units each year as some structures constructed in any period may be two-family or multifamily units. In order to accommodate the anticipated housing unit demand, a construction rate of 66 units per year would be required.

Housing construction rates have declined nationally since 1970. This decline is expected to dissipate with construction rates nationally assuming lower levels than previously. In localized growth areas such as northwest Geauga County, construction rates will remain higher than average in order to satisfy local housing demands.

Of the 1,322 units required by the year 2000, 115 would replace units removed due to deterioration, land use change, disasters, etc. The majority of these units (99) would probably be constructed on already occupied land replacing existing structures which are currently dilapidated, or are expected to deteriorate (see Table 18). An estimated 16 units will be displaced by land use change or be destroyed by fire, disasters, etc. Many of these will be replaced by units constructed in previously undeveloped portions of the village.

Approximate land area required to allow for construction of new housing units can be estimated by assuming that all new units will be single family units on an average lot of 10,000 square foot size. This will provide more than adequate land area to accommodate future units. In actuality, the proportion of owner households in single family units is expected to decrease dramatically over the planning period due to inflation and increases in land and construction. Multifamily units require less area per household. Therefore, land areas estimated on the basis of 10,000 square feet per unit will result in somewhat more land area than actually required, assuring an adequate reserve of land area. Applying this 10,000 square foot average lot size to the number of units expected to be constructed in previously undeveloped areas (1,223) results in a land requirement of 281 acres for residential land use.

Elderly Housing Requirements. A significant factor was made evident in the Population section which will influence a particular need in housing,

related plans, and programs. The factor in question is housing for the elderly. Elderly individuals are becoming a larger proportion of the national and local population as a result of increased longevity and declining birth rates. Elderly individuals often have particular housing needs. Many are on fixed and limited incomes. Structures devoted primarily to elderly housing may require certain architectural modifications or considerations to reduce barriers to mobility such as flights of stairs, high curbs, etc. In addition, units designed for elderly people should not inhibit the use of wheelchairs.

Table 3 indicates the number of elderly individuals (65 and over) anticipated to reside in Chardon. The number of people 65 and over in the community is estimated to increase from 423 persons in 1980 to 774 persons in the year 2000. Many of these people will make up single person households with most of these being females, as this gender generally survives longer than their male counterparts.

In order to adequately provide housing for the elderly, encouragement for development of elderly units should be a part of the housing effort of the village. It is important that existing needs of the elderly be met and that steps be taken so that the increasing number of elderly may be adequately housed without imposing undue economic hardship on them or causing a dramatic program supported by public funds when the need becomes overwhelming.

Summary of Housing Problems

The following provides a brief summary of existing housing related problems in the village.

1. Housing units in need of rehabilitation are scattered throughout the village with some concentrated needs in the vicinity of Court Street and Washington Street.

2. The existing housing stock is aging and subject to increased maintenance efforts and costs (58.3 percent built prior to 1949).

3. Recent housing construction has been concentrated in the northeast area of the village with a lack of comparable new construction of residential units in other areas of the village.

4. Existing rental units utilize waiting lists to fill units as demand exceeds existing supply.

5. The proportion of owner occupied units is expected to decrease while renter occupied units will experience proportional increases over the planning period.

6. Past construction rates will not provide adequate number of housing units for expected households; therefore, increased construction activity will be required.

7. Approximately 281 acres of land will be required for construction of residential units over the planning period.

8. An increasing elderly population will require special consideration in future residential unit construction to assure adequate unit availability and accessibility.

EXISTING ENVIRONMENTAL CONDITIONS

Topography

The Chardon study area lies in the physiographic region of the Glaciated Plateau. This region is characterized as an elevated table land. Post glacial erosion has dissected the topography of the study area to low rounded hills, valleys, and open "flats". Relief is moderate ranging from about 1,300 (+) feet above mean sea level to about 850 feet above mean sea level. Chardon is situated on a hill at an elevation of about 1,300 feet above mean sea level. Lower flat areas are generally situated south of Chardon. The relief and slopes are generally greater in areas to the north and west of Chardon. Open glacial "flats" are situated south of Chardon, particularly in the area between Bass Lake and Lake Aquilla. The lowest and most dissected areas are located in the western portion of the study area in the valley of the East Branch Chagrin River (see Figure 7).

Within the corporate limits, topography is dominated by two higher areas separated by a lower valley section. The older and primarily residential portion of the community is situated on and around a very pronounced hill, the summit of which is the public square. A railroad bisects the corporate area in two nearly equal areas, the eastern portion being substantially developed. The railroad is situated in the lower elevation separating the east (older village) area and west developing corporate area. Elevations increase from the railroad to the western corporate limits. The highest elevations in the corporate area (over 1,350 feet) occur in this western corporate area in the vicinity of Parker Court.

Topography can have a significant impact on construction and land use, particularly where great variations occur over short distances. In such areas, slopes become steep, limiting potential use of the land and making construction of buildings and utilities difficult. Figure 7 illustrates slopes within the study area which exceed 15 percent (15 feet of elevational change for every 100 feet of horizontal distance). Slope as a limitation to development is discussed further in the Land Capability section of this report.

Uneven topography also has a significant effect on water and sewer line construction. In hilly areas, it is often not possible to construct utility lines which flow to central treatment facilities by gravity alone. Where lines cannot be constructed with continuous downhill flows, pump stations and force mains are required. Where these are required, construction and operation costs are higher than with gravity flow systems.

Climate

The climate of the Chardon area is continental. Large daily and annual fluctuations in temperature and precipitation are characteristic of this climate type. Weather changes occur frequently as cold and warm fronts with their associated centers of high and low pressure pass through the area. Surface temperatures vary widely where local microclimate is created as a result of topography (hills, valleys, etc.) and other conditions. For example, cooling air generally follows valley and depressional areas as it spills down from higher elevations on cold, clear nights.

Daily ranges in temperature are greatest in late summer and least in winter. The coldest month is January when below freezing temperatures are common and the monthly mean temperature is about 26° F. July's mean temperature is about 71° F. Average growing season is about 167 days.

Heating degree days, which are an accumulation of the average number of degrees during a day that temperatures are below 65° F., are generally used as an indicator of power consumption and fuel costs for heating. In Chardon, the average number of degree days is about 6,400. For comparison, winter degree days in Columbus are 5,600 and 4,400 in Cincinnati. Greatest degree days occur in December, January, and February when the monthly means in Chardon are about 1,100, 1,200, and 1,050, respectively. In the warmest months of June, July, and August, mean degree days are about 60, 10, and 20, respectively.

Precipitation which varies widely on a year-to-year basis is greatest in the Spring. Annual precipitation averages about 44 inches, about 7 inches greater than that of the State of Ohio as a whole. While throughout most of Ohio winter precipitation is dominantly in the form of rain, in Chardon average snowfall exceeds 100 inches. Chardon's location close to Lake Erie and its relative high elevation are contributors to this large average snowfall.

Prevailing wind direction for the year is from the southwest at an average speed of about 10 miles per hour. Heaviest snowfalls occur when wind directions are from the west to north, bringing moisture-laden air off Lake Erie. Damaging winds occur most frequently during the Spring and Summer and are associated with thunderstorms generally migrating through the area from the southwest.

Surface Water Features and Quality

Notable surface waters in the study area include Bass Lake, Aquilla Lake, East Branch Chargin River, Chagrin River, West Branch Cuyahoga River, and Big Creek. Aquilla Lake is a 20-acre kettle lake located about 2 miles southeast of Chardon on Aquilla Road. Bass Lake is situated about 1.5 miles south of Chardon adjacent to Bass Lake Road. Big Creek originates in the Chardon uplands and drains to the north where it ultimately joins the Grand River at Painesville, Ohio. Big Creek receives surface water runoff from the northern half of Chardon and Cutts Creek, a small intermittent drainage course in the northeast region of the study area. The West Branch Cuyahoga River rises in the east central region of the study area. This river flows through Aquilla Lake and south to LaDue Reservoir. Drainage from the southeastern portions of Chardon contribute to the flow of West Branch Cuyahoga River.

Headwaters of the Chagrin River originate in the upland areas south of Chardon. It then flows southwest from Chardon through Bass Lake which was formed by impounding a swampy low lying area. The East Branch Chagrin River rises in the west central region of the study area and drains to the west. The uppermost headwaters for this river are formed from surface runoff from areas immediately west of Chardon.

The quality of waters in Chardon is generally good owing to the headwater characteristic of watersheds in the Chardon area. Surface water pollution problems have been noted by the Geauga County Health Department at Bass Lake, Janda Place, and Aquilla Lake. In all cases, problems in these areas are attributable to failing on-lot septic systems. Most severe problems have been experienced at Aquilla Lake. The Geauga County Department of Development is in the process of assisting Aquilla Lake in obtaining financing for the construction of a package wastewater treatment plant to alleviate local pollution problems.

Grab samples were collected along Big Creek, Aquilla Lake, Cuyahoga River, and Chagrin River during the preparation of this plan. These samples were analyzed for biochemical oxygen demand, nitrate, nitrogen ammonia, pH, and total and fecal coliform. Results of the analysis suggest that each surface water sampled is only mildly polluted.

Big Creek is the receiving stream for the Chardon wastewater treatment plant. The Chardon treatment plant is currently hydraulically overloaded, but does provide a high level of solids and biochemical oxygen demand removal. In addition to Big Creek, Cutts Creek, East Branch Chagrin River, Cuyahoga River, other surface streams in the Chardon area are probably mildly polluted as a result of urban and industrial runoff.

Groundwater Supply and Quality

Groundwater occurs in minute pores and cracks in rocks and between soil particles. The quantity of water available is dependent upon the amount of rainfall received and drainage characteristics, soil permeability, and the number and size of available spaces which might retain water.

As previously mentioned, Chardon is situated at the headwaters of three watersheds: the Chagrin River, Grand River, and Cuyahoga River. Generally, two types of rock aquifers occur in this area: (1) consolidated sedimentary rocks of Devonian, Mississippian, and Pennsylvania age, forming the bedrock of the area, and (2) unconsolidated deposits of Pleistocene age overlying the bedrock. These glacial-laid deposits cover nearly all of the planning area and vary in thickness from a few inches to several feet. These unconsolidated glacial deposits are generally the most important sources of groundwater. Where these materials are thick, adequate farm and domestic water supplies may be developed. Figure 8 illustrates general availability of groundwater in the area.

Groundwater aquifers in the Chardon study area are generally poor, with yields ranging from 5 to 100 gallons per minute. Much of Chardon and areas to the west all draw groundwater from the Sharon conglomerate sandstone bedrock. This aquifer typically has low yields of around 25 to 50 gallons per minute. A narrow land area along the Chagrin River running north-south through eastern

Chardon is underlain by sandstone covered by thin alternating layers of shales and sandstones. Groundwater yields in this area typically range from 25 to 50 gallons per minute. Parallel to the Chagrin River aquifer, south and east of Chardon, is an area that provides the best groundwater yields in the region. Wells in this area draw from sand and gravel glacial lenses overlying bedrock. Up to 100 gallons per minute are obtained from these areas of thick glacial deposition.

The City of Chardon has a municipal water system that serves a population of about 5,000 persons. Six active wells are included in the system with a total dependable pumpage of 1.5 million gallons per day. The average day pumpage is .8 million gallons per day. City wells draw from an average depth of 150 feet in an aquifer of Sharon conglomerate and water quality from these wells is good. Listed below is a range of parameter values for samples analyzed in September 1978, on four of the six city wells:

pH	6.1 - 6.4
Cardon dioxide - CO_2 (ppm)	8 - 28
Sulfates - SO_4	18 - 90
Sulfides - SO_2	.01 - .03
Total alkaline	100 - 140
Total hardness	140 - 180
Nitrates - NO_3	0
Nitrites - NO_2	0
Ammonia - NH_3-N	0
Iron oxide - Fe^{+2}	.005 - .43
Total iron - Fe	.025 - .50

Note: All concentrations are in milligrams per liter except pH which is in standard units.

Source: Village of Chardon water quality records

Soil Characteristics and Limitations

Any discussion of soil characteristics in the study area must first consider its glacial history. The distribution and characteristics of soils

in the area have been primarily influenced by the events of glacial history. While the study area was undoubtedly covered by numerous glaciations, the Wisconsin, which retreated from the area some 15,000 or 16,000 years ago, was the last and most influential on soil conditions. As the glacier advanced and retreated over the study area, it deposited a mixture of old soils, fresh ground rock, and boulders known as glacial till. The deposition of this glacial till leveled out the preglacial topography by first filling the preglacial stream valleys and much of this glacial till material was clay that originated far to the north in Canada. The area around Chardon is covered with a ground moraine of glacial till that ranges in depth over bedrock from 5 to 45 feet. To the north of Chardon is the Defiance End Moraine; one of the largest end moraines in the state. The Defiance End Moraine marks the point of halt or minor readvance of the glacial margin. East of Chardon is an area that is characterized by kames and small eskers. The steep, hummocky topography of this region is the result of deposition in meltway drainage channels, tubes, and pits in the glacier. The Bass Lake lowland area was a region of alluvial deposition.

The most important factors in the formation of soils within the planning area are relief and the nature of parent materials from which the soils were formed. As discussed above, parent materials in the area are glacial in origin and include: till, alluvium, lacustrine sediments, beach ridge deposits, and outwash overlying bedrock. Relief has affected the formation of soils, primarily through its relationship with water. Low lying areas with restricted drainage characteristics do not obtain the same degree of development as well drained areas. Also, in sloping areas, rapidly moving water removes surface soils, inhibiting formation of deep soils.

In addition to parent material and relief, climate, time, and living organisms also influence area soil formation, although to a lesser degree. Vegetation and animal life, in and on the soil, contribute organic material, and thereby influence soil fertility. Climatic influences determine soil wetness, leaching of minerals and organic matter from soil layers, and influence the rate of plant growth which, in turn, impacts soil development. Of course, all these factors take place over significant lengths of time.

In the planning area, numerous soil types have been identified and described by the U.S. Soil Conservation Service and State of Ohio's Division of Lands and Soil. Figure 9 illustrates the general location of these soils. Table 21 provides some basic soils information useful in evaluating soils for development purposes. This soil information is referenced in later sections of this report, particularly in discussions of land capability analysis.

Soils within the corporate area include Mahoning silt loam, Ellsworth silt loam, Wadsworth and Rittman silt loams, and smaller areas of Sebring, Fitchville, and Damascus silt loams; Haskins and Chili loams; and Carlisle muck. All but Chili loam soils possess characteristics which severely restrict their use for septic tank adsorption fields.

Predominant soil types in the village are Mahoning and Ellsworth silt loams which occur in the northern two-thirds of the village and Wadsworth silt loam which occurs in the central village at higher elevations and at the southwest adjacent to Wilson Mills Road. The southern extremity of the village is an area of several soil types including Carlisle muck, Sebring silt loam, and Fitchville silt loam.

Slow permeability in all but Chili loam soils inhibit effective operation of septic tank adsorption fields to the point that sand filters or other special systems must be utilized to provide adequate treatment of septage. Development at urban densities where lot sizes may be too small to effectively utilize special systems will require central sewer facilities.

Flora and Fauna

Floral and faunal communities found within the study area are only suggestive of plant and animal communities found in this area at the time of settlement. Three major forest associations occurred in the Chardon study area in the late 1800's (Gordon, 1969). These included the Beech-Maple, Mixed Mesophytic, and Elm-Ash Swamp Forest Associations. More in-depth studies of the area by Crittenden (1940) and Hawver (1961) provide a more detailed description of the historic and existing plant communities of the area.

Table 21

CHARDON AREA SOILS CHARACTERISTICS

Chardon, Ohio

Soil Series	Depth to Bedrock (ft)	Depth to Water Table (ft)	Shrink-Swell	Corrosion Potential: Steel	Corrosion Potential: Concrete	Suscpt. to Frost Action	Soil Features Affecting: Reservoirs	Soil Features Affecting: Embankment	Soil Features Affecting: Waterways	Limitations Affecting: On-lot Disposal	Limitations Affecting: Building Sites	Limitations Affecting: Landscaping	Limitations Affecting: Streets, Parking	Limitations Affecting: Intensive Play
Holly Silt Loam	more than 6	0-1/2	low	high	mod-high	high	flooding	low seepage, fair compaction & stability	flooding	severe - poorly drained flooding	severe - flooding	severe - poorly drained flooding	severe - poorly drained flooding	severe - poorly drained
Haskins Loam	more than 5	1/2-1 1/2	low-high	high	low-mod	moderate	excessive rate of seepage upper 1 1/2-3'	fair stability, compaction slow permeability, good piping resistance	slight erodibility, nearly level, seasonally wet	severe - slow permeability, seasonal high water table	severe - seasonal high water table	moderate - seasonal high water table	moderate - seasonal high water table	moderate to severe - seasonal high water table, slow permeability
Jimtown Loam	more than 5	more than 1 1/2	low-mod	mod	moderate	moderate	excessive rate of seepage	fair stability, permeability, compaction poor piping resistance	slight erodibility, level, seasonally wet	severe - seasonal high water table	moderate - seasonal high water table	moderate - seasonal high water table	moderate - seasonal high water table	moderate - seasonal high water table
Chili Gravelly	more than 5	more than 6	low	low	mod-high	low	excessive rate of seepage	good stability, moderate permeability, poor compaction and piping resistance	slight erodibility, nearly level	slight - possible groundwater pollution	slight	moderate - low available moisture capacity	slight	slight
Ellsworth Silt Loam	more than 5	2-3	low-mod	high	low-mod	moderate	slow rate of seepage	fair to good stability, slow permeability, fair to good compaction, good resistance to piping	moderate erodibility, nearly level	severe - slow permeability	moderate - seasonal high water table	moderate - slight seasonal high water table	moderate - seasonal high water table	severe - slow permeability

Table 21 (continued)

Soil Series	Depth to Bedrock (ft)	Depth to Water Table (ft)	Shrink-Swell	Corrosion Potential: Steel	Corrosion Potential: Concrete	Suscpt. to Frost Action	Soil Features Affecting: Reservoirs	Soil Features Affecting: Embankment	Soil Features Affecting: Waterways	Limitations Affecting: On-lot Disposal	Limitations Affecting: Building Sites	Limitations Affecting: Landscaping	Limitations Affecting: Streets, Parking	Limitations Affecting: Intensive Play
Platea Silt Loam	more than 5	.5-2.0	low	high	low in substratum, high in upper soil levels	high	favorable, slow permeability	wetness	wetness, erodability	severe - slow permeability	severe - wetness	severe - wetness	severe - wetness, low strength, frost action	severe - wetness
Orrville Silt Loam	more than 6	1.5-4.5	low	high	moderate	high	excessive seepage, flooding	fair compaction, stability, medium compressibility, fair to poor piping resistance	somewhat level, subject to flooding, poorly drained	severe - subject to flooding	severe - subject to flooding	severe - subject to flooding	severe - subject to flooding	severe - somewhat poorly drained, subject to flooding
Rittman Silt Loam	deep	1.5-3	mod	mod	high to low in substratum	moderate	slow seepage, sloping to very steep	fair to poor embankment stability	slopes erodible, rapid runoff, good workability, seepage in places	severe - slow permeability, slope	moderate to severe on slopes over 12%	slight to severe due to slope	moderate to severe due to slope	moderate - slope, slow permeability, seasonal wetness
Sebring Silt Loam	deep	0-.5	low	high	high to low in substratum	high	seasonal high water table, moderately slow seepage	poor stability, wetness, poor bearing value	nearly level, poor drainage, erodible, grade may be difficult to maintain	severe - seasonal high water table, moderately slow permeability	severe - seasonal high water table, unstable material	severe - seasonal high water table	severe - seasonal high water table, unstable, high frost action	severe - seasonal high water table
Sheffield Silt Loam	more than 6	0-.5	low	high	low-mod	high	low seepage potential	fair compaction, stability, low seepage, med. compressibility, fair to poor resistance to piping	nearly level, poorly drained, prolonged wetness	severe - very slow permeability, seasonal high water table, poor drainage	severe - seasonal high water table, poorly drained	severe - poorly drained	severe - poorly drained	severe - poorly drained, very slow permeability

Table 21 (continued)

Soil Series	Depth to Bedrock (ft)	Depth to Water Table (ft)	Shrink-Swell	Corrosion Potential: Steel	Corrosion Potential: Concrete	Suscpt. to Frost Action	Soil Features Affecting: Reservoirs	Soil Features Affecting: Embankment	Soil Features Affecting: Waterways	Limitations Affecting: On-lot Disposal	Limitations Affecting: Building Sites	Limitations Affecting: Land-scaping	Limitations Affecting: Streets, Parking	Limitations Affecting: Intensive Play
Tioga Silt Loam	more than 5	3-6	low	low	mod-low	moderate	excessive seepage	poor piping resistance, wetness, seepage	favorable	severe - subject to flooding	severe - subject to flooding	severe - subject to flooding	severe - subject to flooding, low strength	slight
Bogart Loam	more than 5	3-4	low	mod	mod-low	moderate	excessive rate of seepage	fair to good stability, moderate permeability, fair to good compaction, good piping resistance	moderate erodibility	slight - possible groundwater pollution	slight	slight	slight	slight
Canfield Silt Loam	more than 5	1-2	low	mod	mod to hi	low	excessive rate of seepage	fair to good stability, moderate to high permeability, poor resistance to piping	slow run-off, short slopes, channels are droughty	severe - slow permeability	moderate - seasonal high water table	slight	moderate - seasonal high water table	moderate to severe - slow permeability
Canadice Silt Loam	more than 6	0-.5	mod to high in sub-soils	high	mod to low	mod to high	very slow seepage rate, nearly level	fair to poor compaction & stability, medium to high compressibility, good piping resistance	nearly level	severe - very slow permeability, seasonal high water table	severe - seasonal high water table	severe - seasonal high water table	severe - seasonal high water table	severe - slow permeability, seasonal high water table
Carlisle Muck	more than 6	0	var	high	moderate	high	high water table, organic material, excessive seepage in the muck	unstable organic material, excessive seepage in the muck	nearly level, very poorly drained, high water table	severe - high water table	severe - unstable organic soil, high water table soft & compressible	severe - unstable organic soil, high water table soft & compressible	severe - unstable organic soil, high water table soft & compressible	severe - unstable organic soil, high water table soft & compressible

Table 21 (continued)

Soil Series	Depth to Bedrock (ft)	Depth to Water Table (ft)	Shrink-Swell	Corrosion Potential: Steel	Corrosion Potential: Concrete	Suscpt. to Frost Action	Soil Features Affecting: Reservoirs	Soil Features Affecting: Embankment	Soil Features Affecting: Waterways	Limitations Affecting: On-lot Disposal	Limitations Affecting: Building Sites	Limitations Affecting: Land-scaping	Limitations Affecting: Streets, Parking	Limitations Affecting: Intensive Play
Damascus Loam	more than 6	0-.5	low	high	moderate	high	high seepage rate, seasonal high water table, nearly level	good stability, high seepage rate, subject to piping	poorly drained, nearly level	severe - seasonal high water table	severe - seasonal high water table	severe - seasonal high water table	severe - seasonal high water table	severe - seasonal high water table
Fitchville Silt Loam	more than 6	.5-1.5	low to mod	high	mod to high	high	slow seepage rate, seasonal high water table	fair stability & compaction slow permeability, medium to high comsibility, erodibility on slopes, subject to piping	somewhat poorly drained, erodibility, seasonal wetness	severe - seasonal high water table, mod. slow permeability	severe - soft & compressible when wet, seasonal high water table	moderate - seasonal high water table	severe - seasonal high water table, soft & compressible when wet	severe - seasonal high water table
Lordstown Silt Loam	1.5-2.5	more than 6	low	low	high	moderate	depth to bedrock, seepage	thin soils over bedrock	slope, depth to bedrock	severe - depth to bedrock	severe - depth to bedrock	severe - slope, stoney	severe - low strength, wetness, frost action	severe - wetness
Lordstown Rock Outcrop	1.5-2.5	more than 6	low	low	high	moderate	depth to rock, slope, seepage	thin soils	slope, depth to bedrock	severe - slope, depth to bedrock	severe - slope depth to bedrock	severe - slope	severe - slope	severe - wetness
Loudonville Silt Loam	1.5-3.5	more than 3	low to moderate	mod	moderate	moderate	not applicable	not applicable	moderate erodibility, nearly level to sloping	severe - sandstone at 20-40 inches	severe - sandstone at 20-40 inches	mod. to sandstone at 20-40 inches	severe - sandstone at 20-40 inches	severe - sandstone at 20-40 inches

Table 21 (continued)

Soil Series	Depth to Bedrock (ft)	Depth to Water Table (ft)	Shrink-Swell	Corrosion Potential: Steel	Corrosion Potential: Concrete	Suscpt. to Frost Action	Soil Features Affecting: Reservoirs	Soil Features Affecting: Embankment	Soil Features Affecting: Waterways	Limitations Affecting: On-lot Disposal	Limitations Affecting: Building Sites	Limitations Affecting: Landscaping	Limitations Affecting: Streets, Parking	Limitations Affecting: Intensive Play
Mahoning Silt Loam	less than 1.5	more than 5	low to moderate	high	high to low in subsoils	high	seasonal high water table, shallow rock in some soil units	fair to good stability, slow permeability; fair to good compaction & piping resistance	slight erodibility, seasonally wet, nearly level to gently sloping	severe - seasonal high water table, shallow bedrock in some units	severe - seasonal high water table, shallow bedrock in some units	moderate - seasonal high water table	moderate - seasonal high water table	severe - seasonal high water table, slow permeability

Source: U.S. Dept. of Agriculture Soil Conservation Service - Detailed County Soil Surveys and James O. Evans, Soil Data and Information Useful to Engineers and Developers

The Elm-Ash Swamp Forest Association was generally situated along the open flats adjacent to the Chagrin and East Branch Chagrin Rivers in the southern portion of the study area. White elm, black ash, white ash, silver maple, and red maple were the predominant species in this association. Seasonal flooding and poor drainage in these areas encourage the growth of these and other hydrophilic species. Shrub species found in this association include spice bush, wild gooseberry, arrowwood, black haw, panicled dogwood, and prickly ash. Ground cover includes species of ferns, sedges, and other herbaceous plants.

The mixed mesophytic forest was found to the north and west of Chardon on the slopes and creek bottoms. The arboreal dominants of this association included beech, sugar and red maples, white and red oaks, tulip, magnolia, chestnut, white ash, and black walnut. Less dominant associates included black cherry, basswood, sour gum, and shagbark hickory. The floral composition of the lower canopy of this association is equally diverse containing numerous species of shrubs, ferns, and herbaceous plants.

The Beech-Maple Forest Association was the most extensive forest type in the Chardon area. This association occurred primarily over the Village of Chardon and areas to the east, south, and west of the village.

Agricultural and lumbering activities of the pioneer settlers severely altered the structure and distributions of these forest associations in the Chardon area. The existing forest stands in the study area are generally in stages of secondary succession or have been selectively cut so as to only superifically resemble the original forests of the area. The most extensive forest blocks in the study area are located north of Chardon, particularly in the Big Creek drainage basin, and along the eastern slope west and north of Bass Lake. The original forest cover in these areas was mixed mesophytic forest. Forest cover in these areas today, nevertheless, continue to maintain a rich diversity of arboreal species. Remaining area woodlands were previously illustrated on Figure 7.

A good diversity of wildlife species can be expected in the Chardon study area due to the great variety of habitats. The forest, wetland, and agricultural land areas that occur in the Chardon vicinity provide numerous habitats for avian, mammalian, amphibian, reptilian, and priscine species.

Mammalian game species common in the area include deer, squirrel, raccoon, rabbit, muskrat, and fox. Other common nongame species include marmot, opossum, bats, shrews, moles, and a variety of nonsciurid rodents.

The abundance of wetland habitat is particularly conducive to amphibian and reptilian populations. Literature indicates that at least 14 species of reptiles have been collected in Geauga County (Conant, 1938). While a complete listing of amphibians collected in Geauga County is not available, previous investigators have noted that as many as 37 amphibian species can be found on the Glaciated Allegheny Plateau in which Geauga County is included (Walker, 1937). Though development has destroyed and encroached upon available habitat in the study area, it is likely that many of these species can still be found in the Chardon study area.

Fishery surveys in the study area are limited. Trautman (1951) reports the collection of 18 species from the Cuyahoga River near Aquilla Lake and species from the Chagrin River above Bass Lake. These surveys were completed prior to 1950. Development in the watershed over the last 30 years has undoubtedly affected a degree of habitat degradation since the time of these surveys. Most likely the most sensitive of those species collected have been eliminated and can no longer inhabit these systems.

The diversity of habitat in the study area encourages a variety of avian populations. Summer resident species potentially encountered in the study area may number as high as 100. Habitat exists to support breeding populations representative of 32 Families and 13 Orders.

Review of the list of rare and endangered species in Ohio indicates that the following species might be found in the study area throughout or during some portion of the year:

American peregrine falcon (Falco peregrinus anatum) (migrant)
Sharp-skinned hawk (Accipiter striatus velox) (migrant)
King rail (Rallus elegans elegans) (resident)
Upland sandpiper (Bartramia longicauda) (resident)
Blue-spotted salamander (Ambystoma laterale)
Four-toed salamander (Hemidactylum scutatum)
American brook lamprey (Lampetra lamottei)

Although no records may exist of these species in the study area, their occurrence is possible because of the availability of suitable habitat.

Significant Natural Areas

The Chardon area, like much of the Glaciated Plateau, contains a number of unique and unusual natural areas. While the original vegetation of the area has been largely disturbed by human activities, remnants still remain as evidence of presettlement conditions. These remnants, which are indicative of original vegetative patterns, should be recognized as significant areas deserving some degree of protection as indicators of our natural heritage in northeastern Ohio.

Five major areas are identified in the study area as significant natural features. Two of these features were described by the Natural Heritage Program, Ohio Department of Natural Resources. The Aquilla Lake state wildlife area is a 69-acre site including 40 acres of lake habitat. This lake was formed from a glacial kettle hole and attracts a variety of waterfowl. A threatened plant species, tall manna-grass (Glyceria grandis) and two potentially threatened species, wild red raspberry (Rubus idaeus var. strigosius) and large-leaved pondweed (Potamogeton amplifoluis) are known to occur in the wildlife area. Located just east of Bass Lake Road on the Bestone Quarry property is a natural stone bridge measuring 15 feet long, 31 to 45 inches wide, and 30 to 42 inches deep.

In addition to these sites, three additional areas are identified as significant natural areas through regional field surveys. These areas are the Big Creek, West Branch Cuyahoga River, and Bass Lake sites.

The West Branch Cuyahoga River region includes several hundred acres surrounding the Aquilla Lake wildlife area. Included on the southern half of this site is a wetland which once supported an Elm-Ash Swamp Forest Association. The uniqueness of wetland habitats and the need for their preservation is stated in Presidential Executive Order 119901. The preservation of this additional acreage about the Aquilla wildlife preserve would provide a buffer to the wildlife area ensuring its preservation as well as the wetland.

The Bass Lake region is similar in character to the West Branch Cuyahoga River area. The lowlands around the lake are wetland areas that once supported an Elm-Ash Swamp Forest Association. Along the western edge of Bass Lake is a steep sloped hillside created by a sharp escarpment of sandstone bedrock. Plant growth on this slope supported a Mixed Mesophytic Forest Association. Today, a diverse luxuriant growth primarily to the north of West Bass Lake Village is reminiscent of the primary mixed mesophytic forest of this region. Development of this region should be carefully controlled to maintain the ecological balance and aesthetic appeal of the area.

Big Creek drains the north and northeastern portions of the city. The forest growth along the slopes and valley of this drainage corridor includes a diverse composition of tree species. The existing composition is very similar to the primary Mixed Mesophytic Forest Association that occurred in this area at the time of settlement.

Geology

Bedrock in the Chardon area is of the Mississippian and early Pennsylvanian systems. The older Mississippian bedrock consists of Erie, Bedford, and Cuyahoga shales and Berea sandstone. These shales and sandstones were formed 320 to 345 million years ago from a deposition of silts and other sediments across the floor of a sea that covered Ohio at this time. Bedrock of the Pennsylvanian system is represented by Sharon conglomerate. Sharon conglomerate, the oldest Pennsylvanian rock in Ohio, was formed through the deposition of gravel from uplands to the north and east into the shallow sea covering Ohio approximately 320 million years ago. The Sharon conglomerate overlies the Mississippian shales and outcrops at numerous points in the study area. The Mississippian shales are evident adjacent to area drainage courses, particularly at the western extreme of the study area.

The primary geologic resources of economic importance in the Chardon area is the Berea sandstone and Sharon conglomerate. The Berea sandstone and Sharon conglomerate is particularly valuable for building and grinding stones. Quarries in the region mine this stone for foundry and glass sand, furnace refractories, riprap, and polishing and grinding stone.

Land Suitability for Urban Uses

This section provides an analysis of those factors which may inhibit or restrict development. Development of land for urban uses such as residences and commercial and industrial activities may be inhibited by various natural characteristics such as shallow soils over bedrock, site drainage problems, excessive slope, etc., which make construction of utility services more expensive than normal, or which require special and more costly design to overcome. Development may be restricted in areas prone to flooding or where low bearing strength and organic soils occur.

Identification of those parcels of land which have inherent limiting factors for development allows consideration of alternate sites and densities prior to formulation of a community plan. Through this analysis procedure, sites with few or no limitations to urban development may be identified.

Avoidance of sites with serious limitations can result in benefits to the public in a number of ways. Discouraging development of sites which have limitations such as shallow soils over bedrock will benefit the public economically in that utility construction in such areas requires a much greater expense than areas with deep soils. Their avoidance will result in lower service charges than otherwise. Public safety may be benefited by a plan which discourages residential uses of on-lot septic systems in areas where soils are wet and groundwater tables high, causing septic tank systems to malfunction. In such areas, contamination of surface water by septic tank effluent is very possible.

Factors received in evaluating the suitability of land for development include those which represent limiting factors that may be overcome by design considerations or land improvements such as drainage, central sewers, etc., and those factors which may represent restrictions to development such as flooding, excessive slope, wetlands, and organic soil deposits.

While nearly any factor may be overcome through intensive design, special construction, or extensive site modification, these all require large commitments of funds and energy. The intent of this plan is to provide suitable land areas for development needs throughout the planning period which may be utilized without requiring special or expensive construction techniques, and sites which may be developed with minimum impacts on the natural environment while providing safe and sanitary living conditions for the people of Chardon.

Some factors represent limitations to all types of developed land uses. These factors include flooding, wetlands, organic soil deposits, excessive slope, and bedrock at or near the soil surface. Aquifer recharge areas also deserve special protection from development. In Chardon, flooding is not a significant limiting factor. Chardon's location at the headwaters of the Chagrin and Cuyahoga Rivers is characterized by small watersheds with little drainage area. As a result, flooding occurs adjacent to area streams on a limited scale, seldom resulting in property damage. In southeast Chardon and in surrounding townships, limited flooding does occur adjacent to major waterways such as the Chagrin River, Big Creek, and West Branch Cuyahoga River.

Wetlands and organic soil deposits (Carlisle muck, Sebring silt loam) do occur within the corporate area. A wetland occurs in the southeast community area between South Street and Claridon Road adjacent to which is an associated area of unstable soils. This wetland and unstable soil area is associated with the lowlands of the Chagrin River and continues in a southwesterly direction adjacent to this watercourse through the Bass Lake community.

Excessive slope is considered to occur when more than 15 feet of fall occurs for every 100 feet of horizontal distance. In such areas, road building and utility construction become extremely expensive and often difficult to maintain. Within the corporate area, only isolated sites exceed this general standard. Figure 7 illustrates areas of excessive slope. As can be seen within the corporate limits, three localities experience slopes in excess of 15 percent. They are located at the northeast, southwest, and northwest extremities of the community and are not very extensive in area. Outside the corporate limits, excessive slopes occur adjacent to all major streams.

Shallow soils over bedrock occur in only two small areas within the community. One is located east of East King Street from South Hambden to Moffet Avenue. A second is located at the southwest extreme of the community just east of Wilson Mills (Munson-Center) Road. In these areas, underground utility construction would require rock removal which can result in very high construction costs. They should, therefore, be avoided if possible.

As Chardon is situated in the headwater region of major watersheds, aquifers in this area are dependent entirely upon direct recharge of rainwaters and surface runoff. Chardon's well supply is a valuable and finite resource which deserves protection in the public interest. The well field, located adjacent to Woodiebrook Road, is recharged primarily by waters falling in the southern half of the community within the Chagrin River watershed. Rapidly permeable soils such as Chili loam, Damascus loam, and Carlisle muck, which occur in the vicinity of these wells, allow for regeneration of water in the sand and gravel lenses of the aquifer. Fortunately, Bass Lake Golf Course occupies much of the aquifer recharge area and another large portion east of South Street is not currently developed. Development of these areas at urban densities would cover valuable recharge surface with structures and pavement and ultimately would reduce availability of groundwater. Also, if the recharge areas were to be utilized for residential or other uses with septic tanks, or similar on-lot waste disposal, contamination of the village's groundwater could result. This could occur due to the rapid permeability of these soils and the relatively high water table. Septic tank leachate could find its way into groundwater supplies without sufficient filtering to eliminate contaminants.

Other natural characteristics which may represent significant limitations to development, but which may be corrected through extensive engineering, special construction techniques, or through site improvements such as storm sewers, sanitary sewers, etc., include such things as poor site drainage, low bearing strength soils, or soils which are slowly permeable.

Except for soils in the aquifer recharge area described previously, soil permeability in the community is slow. Wadsworth and Rittman soils occur in

older developed portions of the community and have a dense soil layer or "fragipan" which limits percolation of water through these soils. Mahoning and Ellsworth silt loams occupy most areas of the community. These soils also are slowly permeable and experience seasonal wetness. In such wet and impermeable soils, septic tanks will not function adequately. In such areas, sanitary sewers or specialized on-lot systems must be provided if development is to occur without contaminating surface water resources. No permeable soils occur within the corporate area (except in the previously described aquifer recharge area) which do not have severe limitations for the use of septic tank leach fields. It can, therefore, be concluded that sewer facilities or sophisticated on-lot treatment systems should be provided as development occurs, with sanitary sewer construction required for all but low development densities.

Other features warranting special consideration include the preservation of scenic and significant natural systems. Two scenic areas and one natural system within the community are worthy of mention. Chardon District Park contains an area of heavy tree cover and topography dissected by a small stream. It is anticipated that this area will be maintained as a recreational/ open space area. A second scenic area with similar characteristics exists to the southwest of the community east of Wilson Mills Road. Steep slopes adjacent to a small stream are covered with trees, presenting a tranquil setting. Careful development will be required to preserve this setting.

A relatively large wetland of about 40 acres occurs east of South Street. The area not only provides a diverse habitat but also contributes to the groundwater aquifer from which the village obtains its municipal water supply.

In summary, all the factors discussed either represent limitations warranting discouragement of development in some areas or conditions warranting specific requirements prior to their utilization for development. The figures mentioned in these discussions provide visual displays of their occurrence within the corporate area. Allocations of land uses required to satisfy projected demands will be distributed by area and density in consideration of the limitations and characteristics specified.

COMMUNITY FACILITIES AND PUBLIC UTILITIES

General

Community facilities are those elements of community including schools, parks, libraries, hospitals, and fire departments which make the areas safe and desirable as a place of residence. Community facilities may add to the quality of life in a particular area and their adequacy or inadequacy often contributes to decisions by prospective new industries or employers on whether or not to locate in a particular community.

Public utilities include elements of the community's infrastructure such as water lines, sewers and related treatment plants, and solid waste disposal, all of which are necessary to maintain sanitary conditions in densely settled areas. In this tme of heightened environmental awareness, the quality of treatment provided for water and wastewaters and adequacy of solid waste disposal are receiving much more attention than in previous decades. Facility requirements are often mandated by federal agencies such as the U.S. EPA. The effect may be increased facility costs and operation costs for local facilities and modifications to service areas, the overall intent of which is to improve local water quality.

Community facilities and public utilities contribute to local environmental quality, support local land uses, and are supported primarily by public funds. As such, the public deserves to share equitably in the benefits these facilities provide.

The objective of this section of the plan is to describe these facilities as they exist in the community, to identify existing deficiencies, and make recommendations where deficiencies have been identified.

Schools

The Village of Chardon is within the Chardon Public School District which serves most of Chardon Township, Hambden Township, Munson Township, and a portion of Claridon Township. Four of the six schools in this district serve Chardon Village: Chardon High School, Chardon Middle School, Maple Elementary School, and Park Elementary School.

Table 22 provides general information for schools within the Chardon district.

Table 22
PUBLIC SCHOOLS FACILITIES
Chardon, Ohio

School	Year of Construction	Maximum Enrollment Capacity	Optimum Capacity	1979 Enrollment
Chardon High School	1950	1,300	1,000	990
Chardon Middle School	1966	1,090	796	680
Hambden Elementary School	1923	350	270	267 (K-5)
Maple Elementary School	1958	500	300	273 (K-5)
Munson Elementary School	1956	510	300	392
Park Elementary School	1938	540	300	261

Source: Chardon School District

As Table 22 indicates, some schools in this district were constructed more than 56 years ago, while Chardon Middle School was constructed only 14 years ago. Interviews with school district officials have indicated that despite the age of some of the structures all are in generally acceptable condition, although some such as Maple Elementary and the old high school on East Park Street, currently used for office and storage space, require relatively minor improvements such as roof repairs.

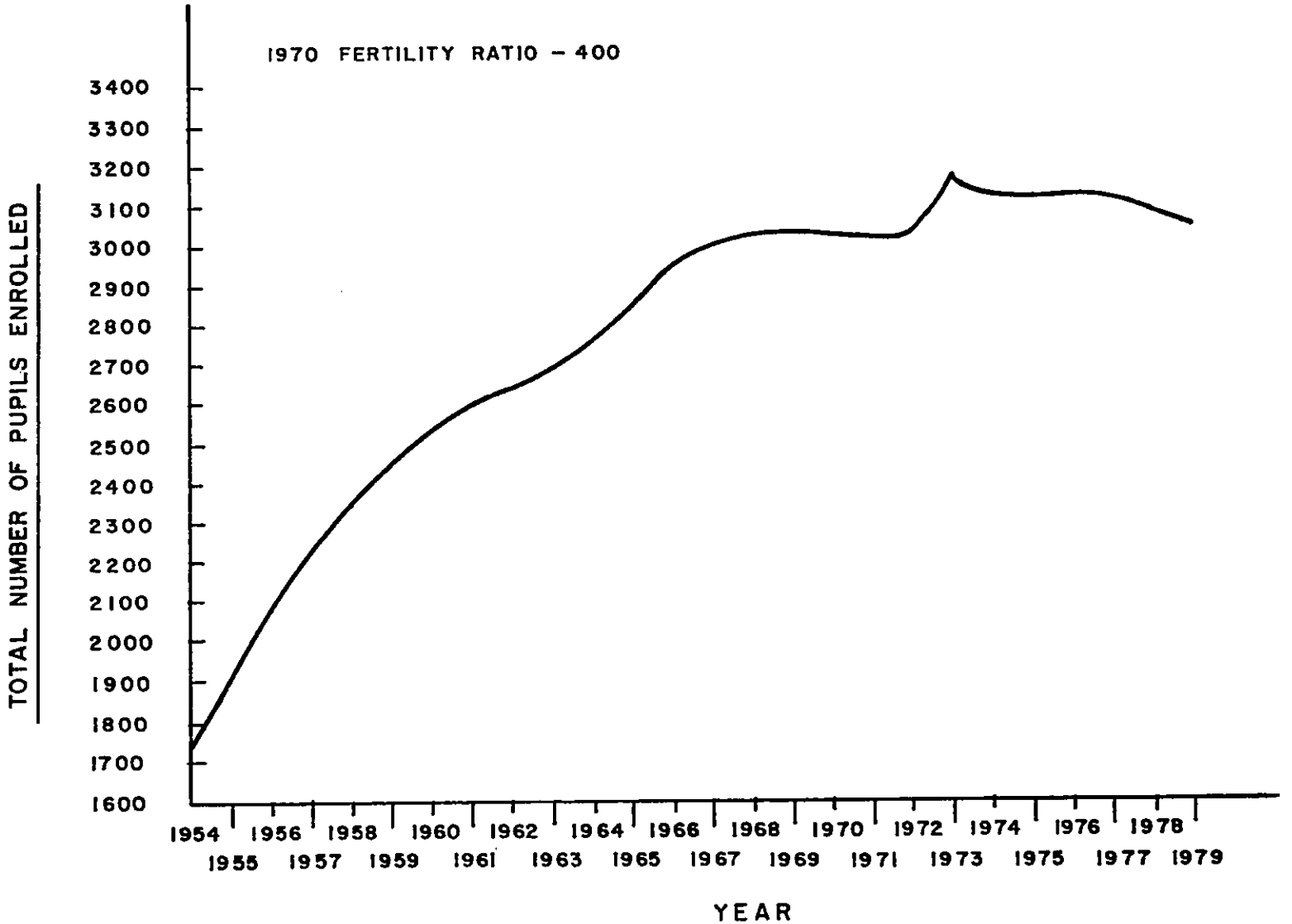
Maximum and optimum capacity of each school is indicated in Table 22, as is the Fall 1979 enrollment. Comparison of these figures indicates current enrollments are well below maximum capacities indicated, and with one exception (Munson Elementary School), are below optimum capacities.

Figure 10 illustrates school district enrollments since 1954. Enrollments maintained a constant plateau from 1968 to 1972, increasing to the highest enrollments ever in 1973. Since 1977, enrollments have leveled off and declined somewhat.

FIGURE 10

CHARDON PUBLIC SCHOOL DISTRICT
TOTAL ENROLLMENT

SEPT, 1954 – SEPT, 1979



Students from within the village participate in vocational educational programs through the Chardon School District and Geauga County Board of Education's Auburn Career Center Joint Vocational School. This vocational school serves five school districts and is located north of Chardon on State Route 44.

A number of special education programs are offered within the Chardon School District including programs for learning disabled, handicapped, mentally retarded, and for academically talented children. Two classes are provided for educable mentally retarded--one at the high school and one at the middle school. Three classes are provided for the learning disabled--one at the high school level and two at the middle school level. A unit is provided at the high school for academically talented children and a class is provided at the middle school for multiple handicapped children.

Population data indicate that in 1970 1,152 persons, or approximately 29 percent of the total village population, was between the ages of 5 and 19. Population projections indicate that the proportion of people of these ages will decline to 22 percent of the total population of the village but increase numerically to 1,691 persons. This assumes, however, that a moderate but constant immigration continues through the planning period. The projected number of students would be within the Park Elementary School, Maple Elementary School, Chardon Middle School, Chardon High School, and St. Mary's Parochial School service areas. This increase would raise elementary school enrollments to near the maximum enrollment capacities indicated but would not exceed them. Chardon Middle School and Chardon High School would also be subjected to increases in enrollments resulting from increased populations in township areas within the existing district boundaries. As a result, these facilities will likely require expansion to provide for additional enrollment capacity before the end of the planning period.

The school board currently holds two pieces of property for future use--one in Chardon Township and one in Hambden Township. In Chardon Township, a 43-acre parcel on the east side of Auburn Road, between Thwing Road and U.S. Route 6, is being held for future use. A 23-acre parcel at the corner of State Route 166 and Bascomb Road, just outside the 3-mile radius of the village, is also being held.

While the school district has no immediate plans for new educational facilities, rehabilitation of the old Chardon school located on East Park Street could prove beneficial to the village and the school district. Chardon Local School District presently has offices in the basement of this building. Space is allocated free of charge to the Chardon Historical Society and leased to various other civic organizations including United Torch and Chardon Maple Festival Board. Built in 1908, this structure needs a number of improvements to become fully functional. Lavatory improvements, site drainage, and roof repairs are current needs. This facility could provide office space for a variety of community or other groups.

The auditorium adjacent to the old school could also be rehabilitated to provide community service functions. This facility was constructed in 1937, and needs improvements in its electrical system, ventilation, and acoustics. Additional parking area would be required if daytime activities were scheduled utilizing this facility.

St. Mary's Parochial School, located on North Street in Chardon Village, has an enrollment of 494 pupils in grades 1 through 8 as listed in Table 23. School personnel indicate maximum enrollment levels would be in the vicinity of current enrollment levels. Although no significant improvements are currently slated for implementation, St. Mary's school is in need of gymnasium facilities. Students currently use an old church on the east side of North Street for these purposes.

Table 23
ST. MARY'S PAROCHIAL SCHOOL
Chardon, Ohio

Grade	Students
1	66
2	59
3	62
4	61
5	65
6	69
7	54
8	58

Parks and Open Space

Planning public parks and open space has become an important phase of the comprehensive plan as a result of intensive demands for outdoor recreation and the growing need for conservation. In cities throughout the nation, there is a noticeable lack of public open space. As growth continues, the public will place increasing demands on the administrative agencies to provide adequate park and recreational facilities. This challenge requires a coordinated development program for acquisition and improvement of parklands.

The purpose of this section of the comprehensive plan is to provide a framework for systematic acquisition of parklands or open space and development of public recreational facilities to serve the needs of residents throughout the community. This program is intended to serve as a general guide for development of these facilities throughout the next 2 decades.

Predicting the ability of future generations to afford time and money for recreational activities is difficult; however, indications are that there will be increasing leisure time in the future. New technological advances and labor saving devices, higher annual incomes, earlier retirement benefits, and smaller families all contribute to increased leisure time. Indications are that, in the future, people will have more time and a greater desire to participate in recreational activities.

The kind of recreation people favor was studied by the Outdoor Recreation Resources Review Commission. Leisure activities, such as watching television, gardening, reading, or visiting with friends, rank high in participation. Nationally, the greatest amount of time outdoors is spent on activities such as pleasure driving, walking, playing games, swimming, and similar activities requiring little preparation or special equipment. Next in order are sightseeing, cycling, fishing, going to sports events, and picnicking. Sports that require special conditions, such as skiing, rank much lower in the frequency of participation.

People on weekend trips and vacations usually patronize private accommodations. Specialized activities, such as resorts, boating, golf clubs, and others, create a market for commercial enterprise. Also, noncommercial

groups, such as the Boy Scouts, Kiwanis, and religious and philanthropic organizations, provide recreation for others. Many industrial organizations provide outdoor recreation for their employees and some make such facilities available to the general public.

However, it is the public's responsibility to preserve, develop, and make available outdoor recreation areas for use by the general public. Four governmental levels--federal, state, county, and village--share this responsibility.

The role of the federal government is to:

- preserve scenic areas, natural wonders, primitive areas, and historic sites of national significance
- manage federal land for the broadest possible recreational benefit
- cooperate with states through technological and financial aid
- promote interstate arrangements
- assume vigorous, cooperative leadership

The state role involves:

- acquisition of land, development of sites, and provision and maintenance of state facilities
- assistance to local governments
- provision of leadership and planning

The county and village role is to acquire, develop, and maintain parks, and administer public programs serving local interests.

The goal of the comprehensive plan is to provide adequate, well diversified recreational facilities for residents in a harmonious arrangement of the neighborhoods. Objectives provide a basis for establishing public policy regarding size, location, and type of recreational facilities which should be provided.

Objectives of this plan are:

- provide a system of neighborhood and community parks with pedestrian access
- protect existing parklands
- provide a diversified series of facilities and programs designed to serve changing needs and preferences
- enhance an aesthetically pleasing park system

Recreation Standards. Standards are established to ensure that reasonable relationships may be achieved and a balanced system provided. Because of their strong interrelationship, general standards for school and parklands are normally established as a part of the comprehensive planning process. Neighborhood parks and elementary schools on adjacent sites provide a convenient center for community activities within the neighborhood. Attempts are generally made to take full advantage of facilities provided at local schools. In Chardon, Park and Maple elementary schools have playground facilities which are utilized after school hours.

Standards for specific development of parklands, other than school facilities, should also be established. Total land area relationships proposed in the standards utilized in this plan are approximately 8.5 acres for each 1,000 persons in the community. These standards, shown in Table 24, indicate ideal and minimum area requirements for each of the various facilities.

Table 24
STANDARD FOR RECREATION AREAS
Chardon, Ohio

Type of Area	Acres per 1,000 Population	Size of Site		Radius of Area Served
		Ideal	Minimum	
Playgrounds	1.5	4 acres	2 acres	0.5 mile
Neighborhood parks	2.0	10 acres	5 acres	0.5 mile
Playfields	1.5	15 acres	10 acres	1.5 miles
Community parks	3.5	100 acres	40 acres	2.0 miles

Source: George Nez, Standards for New Urban Development - The Denver Background, Urban Land, Vol. 20, No. 5, Urban Land Institute, 1200 18th St., N.W., Washington, D.C.

Neighborhood parks are small, usually encompassing 5 to 10 acres of land, and generally should serve an area equivalent to that of an elementary school. This usually means an area within a 1/2 mile radius having a population of 3,000 to 5,000 persons. Facilities should include recreation for all age groups, such as court games, field games, and picnicking. If possible, appropriate areas of special natural interest should also be included.

Playfields are defined as areas which provide facilities for diversified recreational activities for young people and adults. The playfield provides for a variety of uses unlike the specialized athletic fields. They may be open field areas with or without facilities such as baseball backstops, soccer goals, etc.

Community parks usually can serve an entire community on sites ranging from 40 to 100 acres in area. Natural or man-made boundaries are important to a park of this character because of its traffic generating capabilities. Facilities should include tennis courts, ball fields, water sports, areas wholly naturalistic to be used for picnicking, group camping, hiking, nature study, and other special interest areas. The community park provides balance to the entire park and recreation system. Chardon District Park in northeast Chardon is a fine example of such a facility.

Specific facilities provided in each recreational area may vary from one place to another, but facilities provided generally conform to the user group and activities described. While the standards presented in Table 24 provide allocation of area to recreational uses, other standards are utilized as a guide to providing facilities at recreational areas. Table 25 indicates general space requirements for particular facilities and illustrates what is generally considered the ideal size and best location within the park system. More specific standards may be utilized for analysis of individual activities such as tennis courts, picnic tables, horseshoe courts, ball diamonds, and water area for swimming, boating, etc.

Table 25

STANDARDS FOR RECREATIONAL ACTIVITIES

Chardon, Ohio

Activities	Space Required Acres/ Population	Ideal Space for Activity	Best Location for Activity
1 . Playground with apparatus	0.5/1,000	1 acre	SP/PG/NP/CP
2. Field play areas (young children)	1.5/1,000	3 acres	SP/PG/NP/CP
3. Field play areas (adults)	1.5/1,000	10 acres*	PF/CP
4. Court games-tennis, basketball, volleyball, etc.	1.0/5,000	2 acres	SP/PG/NP/CP/PF
5. Swimming-wading and competition size pool	25,000	2 acres*	PF/CP
6. Hiking-camping (natural areas)	5.0/1,000	500 acres*	RP
7. Horseback riding, bicycle paths	1 mile/ 5,000	100 acres*	RP
8. Golfing	1 hole/ 1,000 (9 hole minimum)	150 acres*	CP
Passive Recreation			
1. Picnicking	4.0/1,000	Varies*	All parks
2. Canoeing, rowing, fishing (marina slips or ramp)	0.5/5,000	1 acre*	CP/RP
Other			
1. Parking at recreational areas	1.0/1,000	Varies*	PF/CP/RP
2. Indoor recreation centers	1.0/10,000	1-2 acres*	CP/SA
3. Amphitheaters, band shells	2.0/25,000	5 acres*	CP/SA

*Parking areas required, based upon evaluation of activities and capacity needed to serve facilities

Code for Activity Locations

SP - School Playground
PG - Playground
NP - Neighborhood Park
PF - Playfield
SA - Special Areas
CP - Community Park
RP - Regional Park

Source: Burgess & Niple, Limited

Existing Facilities. Land devoted to park and recreational facilities in Chardon includes public parklands, school playgrounds, and semipublic and private facilities. Public parklands are limited, at present, to Chardon District Park and the public square. However, another park is planned on property owned by the village at the southeast edge of the corporate area. A master plan for this park has been developed and an application has been prepared for submission to the Heritage Conservation and Recreation Service of the U.S. Department of the Interior for development grant funds.

Outside the corporate area are public parklands also utilized by Chardon residents. These include Big Creek Park, Aquilla Lake Wildlife Area, Whitlam Woods, Holden Arboretum, and various other facilities.

An inventory of public and private recreation areas in and around Chardon is presented in Table 26. The public school system provides additional facilities not included in the inventory. Local schools provide playgrounds at Maple and Park elementary schools, and field and court games at Chardon High School and Chardon Middle School. St. Mary's Parochial School has two baseball diamonds and play apparatus.

Table 26
CHARDON AREA RECREATIONAL FACILITIES
Chardon, Ohio

I.D. Number	Name	Size	Facilities Provided
1*	Chardon District Park	43 acres	Swimming pool Little league baseball diamond Tennis courts (3) Horseshoe courts (2) Play apparatus Picnic sites with grills Nature/hiking trails Ice skating pond Interpretive center Field games
2*	Chardon Public Square	2 acres	Picnicking and passive activities

Table 26 (continued)

I.D. Number	Name	Size	Facilities Provided
3*	Fraternal Order of Eagles (F.O.E.)	2 acres	Playground equipment Shelter Picnic tables and shelter Lighted baseball diamond Concession stand
4*	Claridon Road baseball diamond	1 acre	Softball diamond
5	Big Creek Park	570 acres	Picnicking Hiking/nature study Fishing Camping Horseback riding Hunting
6	Aquilla Lake Wildlife Area	69 acres	Hunting Fishing Boating
7	Holden Arboretum	876 acres	Nature study Hiking
8	Whitlam Woods	100 acres	Nature study
9	Bass Lake	354 acres	Golf (18 holes) Field games Fishing Boating
10	St. Denis Golf Course	140 acres	Golf
11	Berkshire Country Club	313 acres	Golf (18 holes) Tennis (3 courts)
12	Croatian Center Inc.	65 acres	Picnicking Baseball
13	Legend Lakes Golf Club Inc.	200 acres	Golf (18 holes)
14	Aquilla ball field	2 acres	Baseball
15	Spring Bank Lake	85 acres	Picnicking Swimming
16	Trout Paradise Lake	40 acres	Fishing
17	Pine Trails Recreation Club	81 acres	Picnicking Swimming

Table 26 (continued)

I.D. Number	Name	Size	Facilities Provided
18	Little Mountain Club	36 acres	Hunting
19	Westlaco Sportsman's Club	173 acres	Hunting
20	Deep Springs Trout Club	63 acres	Fishing Picnicking
21	Little Bohemian Recreation Club	110 acres	Picnicking
22	Kandymanland Trout Farm	10 acres	Picnicking Fishing
23	Winchester Public Shooting Center	115 acres	Camping Shooting
24	Rainbow Trout Lakes	39 acres	Fishing Picnicking

Source: Ohio Department of Natural Resources, Recreation Facilities Inventory for Geauga County, and: A Statewide Plan for Outdoor Recreation in Ohio, 1971-1977

In addition to public facilities, a number of private and fraternal organizations provide additional recreational facilities. Included among these are four golf courses and several nearby sportsman's clubs. Private facilities are also listed in Table 26. Those facilities located within the corporate area are identified with an asterisk(*).

Figure 11 illustrates the general locations of public and private recreational facilities in and around Chardon, keyed by their number in Table 26.

A total of approximately 48 acres of recreational and open space area are provided within the corporate area. Standards recommend 0.9 acre of parks and playfields for each 1,000 population without considering such passive or special activities such as nature study, picnicking, or indoor facilities. This results in a standard for Chardon of 45 acres devoted to recreational areas such as playgrounds, playfields, and neighborhood and community parks.

Currently, playgrounds are provided only at public schools and at Chardon District Park. Total area devoted to these is estimated at about 2 acres. Standards in Table 25 recommend 7.5, or 5.5 more than at the present, and a total of 11.5 acres by the end of the planning period.

Neighborhood parks, at present, are nonexistent in Chardon. Chardon District Park, a community park, functions primarily as a neighborhood park for individuals within walking distance. Parking at this facility is limited and other areas of the community, south and west of the square, have no good access other than by automobile as the park is too distant for pedestrians. It, therefore, cannot function as a neighborhood park for these areas.

Standards call for 10 acres for neighborhood parks. The proposed Chardon Park at the east edge of the community will provide a neighborhood facility on 6 acres immediately, with another 6 acres to be developed in the future.

South and west community areas will continue to require additional neighborhood park area as a result of development and barriers to access to other community parks. By the year 2000, 9.3 acres of neighborhood park area should be developed in addition to the 6 acres currently under funding review. A minimum 5-acre site should be reserved in each neighborhood area as illustrated on Figure 12.

Playfields are currently limited to school facilities, the Claridon Road baseball diamond, and the Fraternal Order of Eagles baseball diamond. Northeast community areas are well served by playfields provided at school facilities. Proposed and existing facilities should also adequately serve southeast corporate areas. However, much of the developing western and southern portions of the corporate area are beyond the recommended service area radius of these facilities, and should therefore be provided with playfields.

Increasing local enthusiasm for field games such as soccer and baseball has lead to a highly developed program for these sports. A total of 82 baseball and softball teams desire playing time on five fields. This situation makes scheduling of games and practice very difficult. The major problem is having available fields for practice. It also makes it impossible for new teams to form. The demand for soccer has been increasing every year. Chardon

now has 738 soccer players and an inadequate number of fields available. Any recreational facilities developed in the near future should take these needs into consideration.

Community park standards recommend 3.5 acres for each 1,000 persons, or about 27 acres by the year 2000. Chardon District Park presently serves this function on 43 acres in the extreme northeast community area.

Figure 12 illustrates general locations and service areas of existing playgrounds in the community and illustrates possible locations for future playgrounds and neighborhood parks. Existing and proposed playfields and community parks are illustrated also; however, their service areas have not been illustrated as they serve an area which encompasses the entire village.

Fire Protection

Chardon Village maintains a volunteer fire department. Approximately 30 volunteers man the fire station located at the south end of the public square in Chardon. Mutual aid agreements have been made with various adjacent fire departments, including those in Painesville, Mentor, and Concord Township.

Existing fire department equipment is composed of modern vehicles, all in excellent condition. Basic firefighting equipment currently maintained includes the following:

- 1973 aerial truck with a 1,500 gallon per minute pump
- 1962 pumper truck with a 1,500 gallon per minute pump
- 1976 pumper truck with a 1,250 gallon per minute pump
- 1966 pumper truck with a 1,000 gallon per minute pump

Interviews indicate that the village will soon require at least a full-time fire chief. This need will become more acute as the community continues to expand during the planning period.

Health Care Facilities

The primary local health care facility is the Geauga Community Hospital located 3 miles south of the southern corporate boundary on State Route 44.

This facility provides normal health care and emergency facilities. Five emergency rooms and a seven-bed special care unit provide assistance to emergency cases and to the seriously ill. Approximately 45 physicians are on the staff.

In addition to the Geauga Community Hospital, the nearby Cleveland area contains several hospitals within a 30 minute drive of the community. Special health care services and clinics of national significance are located there.

Water System

Both water and sewer facilities are strongly influenced by local geographic characteristics, particularly topography, natural drainage, rainfall, and groundwater characteristics.

Topography of the Chardon community is somewhat hilly. Highest elevations of 1,350 feet occur at the west end of the corporate area, while the main community area is developed on another hill to the east with highest elevations of about 1,310 feet. A number of smaller hills and valleys completely dissect the area. As a result of the topographic variation experienced in the community, construction of water distribution systems requires intricate design considerations.

Adequate supplies of groundwater or surface water are obvious prerequisites to any distribution system. Obtaining adequate supplies of high quality waters has been most difficult in the Chardon area. As illustrated on Figure 8, yields of groundwater around Chardon are generally not sufficient to supply adequate quantities of water for municipal systems. Yields generally do not exceed 100 gallons per minute.

The existing municipal water supply is developed in a well field adjacent to Woodiebrook Road. This well field is at the southern corporate boundary in the upper Chagrin River basin. Five operable wells in this area have capacity sufficient to pump 1.6 million gallons per day. The safe yield of the aquifer is estimated at slightly less, 1.5 million gallons per day.

Water quality analyses of water from these wells indicate that additional treatment is desirable to remove iron, as well as to provide additional softening and fluoridation. Fluoridation will be required when the village becomes a city. The only treatment of water currently provided is chlorination.

Table 27 provides results of recent water quality analyses of the existing water supply. Generally accepted standards for public water supplies are .3 parts per million iron, .05 parts per million manganese, 250 parts per million sulfates (as SO_4), and total hardness of 120 parts per million.

Table 27
PUBLIC WATER SYSTEM QUALITY
Chardon, Ohio

Characteristic	Concentrations by Well Number			
	5	11	12	14
pH	6.2	6.4	6.1	6.4
Hardness	140.0	160.0	180.0	160.0
Total Iron	.025	.025	.5	.075
Manganese	0.0	0.0	0.0	0.0
Sulfides	.03	.03	.01	.01
Sulfates	18.0	90.0	50.0	30.0

Note: All concentrations, except pH, are in milligrams per liter.

Source: Water department samples collected in first quarter of 1980

Minimum water treatment, consisting of chlorination and fluoridation, is required for public water systems in cities. As the village currently provides chlorination, only fluoridation would be required in addition. However, elevated hardness and iron indicate treatment for these parameters is highly desirable.

Existing consumption of water in Chardon is at an annual rate of approximately .9 million gallons per day. This converts to a per capita use rate of 180 gallons per day, assuming a served population of 5,000 persons. Current

estimated aquifer yield is 1.5 million gallons per day. Determination of capacity is performed assuming the largest well is out of service. In this manner, some consideration is given to the possible lesser supply in the event of mechanical failures. If this method is used to compute available capacity, .924 million gallons per day are available for consumption. This is only somewhat larger than existing use levels. It can, therefore, be anticipated that greater populations projected in the community over the planning period will require that additional wells be developed to assure adequate water supplies.

Population projections indicate about 2,600 additional persons in Chardon by the year 2000. At current consumption rates, aquifer supplies will be adequate to serve this additional population without exceeding the estimated safe yield. However, an additional 400 gallon per minute well will be required to assure pumping capacity. If new, large water use industries should locate in Chardon, well field safe yield capacity could be exceeded. Therefore, consideration should be given to identifying potential additional sources of water in the event such circumstances would develop.

Water distribution facilities are illustrated on Figure 13. As shown, the existing distribution system serves the entire built-up area. A complete report on the waterworks system was prepared in November 1968. A number of the recommendations contained in this report have been implemented. For example, an elevated storage tank was proposed in the west portion of the village. This facility was constructed on a high point of land near Parker Court. Also, various line reinforcement and line flushing projects have also been implemented, along with a water conservation program. The water conservation program has been very successful, cutting system losses from an estimated 40 percent to 20 percent.

Wastewater System

Chardon's wastewater system consists of approximately 16,000 feet of trunk sewers and 66,000 feet of local service sewers, and a trickling filter wastewater treatment plant. Sewer collection facilities have been constructed since the early 1900's, and expanded as required to the present system. Figure 14 illustrates the existing wastewater system. A complete report on

the sewage collection system was completed in 1975. Information presented herein is a summary of the problems and recommendations identified in that study.

For the purposes of analysis and planning, the report divided the wastewater collection system into five sewer zones. Zone 1 contained the majority of the existing collection system and was roughly bounded by the corporation line to the east; the railroad, Park Avenue, and Water Street to the south; the corporation line to the west; and by Fifth Avenue and North Hambden Streets to the north. Zone 2 contained most of the remaining sewered area north of North Hambden and east of North Street. Zone 3 can be generally described as the developing industrial area on Fifth and Lake Avenues west of the railroad. Zone 4 is the undeveloped area between State Route 6 and Woodiebrook Road. Finally, Zone 5 contains land to the east and southeast of the corporate area, tributary to, and south of, Cutts Creek.

The 1975 study confirmed earlier findings that indicated excessive amounts of clean water enters the collection system through cracks in pipes and pipe and downspout connections. The result of this clean water entering the collection system includes conveyance of flows to the treatment plant far beyond its capacity to treat it, flooding of basements, surcharging, and overflow of wastewaters in the collection system.

It was determined that the existing sewer in Washington Street and existing trunk sewers from Park Avenue to South Street and at Claridon Road were inadequate to handle peak sanitary flows existing at the time of the study. A relief sewer to be constructed along the railroad to Claridon Road was proposed to alleviate this deficiency. This and other recommendations are illustrated on Figure 14.

Other relief sewers were also proposed in this study. One would involve construction of a relief sewer from Chardon Park Estates to the treatment plant where a pump station would also be provided. The pump station would be expandable and designed to handle existing flows plus an allowance for growth. The other proposed relief sewer would provide additional capacity in the area of Water Street west of Cherry Avenue and would tie into the first relief sewer described.

A further proposal involved providing sanitary sewer service to the developing industrial area in the vicinity of Lake and Fifth Avenues. Sewers proposed would allow for additional service area and eliminate two existing pump stations. This sewer would be constructed around the northern periphery of the village to the treatment plant.

The plan for local sewers, as outlined above, would allow for development of nearly all land within the corporate area. However, two areas were highlighted as areas to be watched closely in future years. One is the extreme west portion of the village at Auburn Road that could be served either by the village or Geauga County, depending upon service agreement arrangements. The second area is the westernmost portion of Center Street where, if development occurs, a trunk sewer and parallel sewer section will be required. The trunk sewer noted here is the same one described above which provides sanitary service to Lake and Fifth Avenues.

Chardon's wastewater treatment plant is a trickling filter plant with aerated lagoons providing tertiary treatment. This facility has a design capacity of .8 million gallons per day and currently operates without a NPDES permit. As a result of infiltration and inflow problems in the collection system, the treatment plant experiences wide variations in flow. Flows in excess of 2.2 million gallons per day are bypassed to aerated lagoons. This occurs primarily during the spring when heavy rainfall influences groundwater levels and rates of surface water runoff. Hourly peaks sometime exceed 5.0 million gallons per day as measured by the plant meter.

Treatment plant facilities are listed below in sequence of flow:

Coarse bar screen
Aerated grit chamber
Comminutor
Parshall flume flow meter
Primary settling
Dosing chamber
Trickling filters (2)

Secondary settling tanks (2)
Aerobic digester
Sludge drying bed
Aerated lagoon
Chlorination

Treatment plant effluent is discharged to Big Creek, a tributary of the Grand River. Effluent quality and flow averages for 1979 are indicated below:

Characteristic	Measure
Flow	.978 mgd
BOD_5	6.4 mg/l
Dissolved oxygen	8.7 mg/l
Suspended solids	11.0 mg/l

Source: 1979 Annual Report of the Chardon Wastewater Treatment Plant

Water quality standards that the plant would be expected to meet under permit conditions would probably be those specified for warmwater habitat and primary contact recreation. These standards are detailed in Ohio EPA Water Quality Standards, Chapter 3745-1 of the Administrative Code. Current effluent average concentrations are within these anticipated limits, indicating current operations provide satisfactory treatment. However, flow averages for 1979 indicate the plant is currently operating above its design flow capacity. As discussed earlier, high flows are attributable to a large extent to infiltration and inflow of clean waters which overburden the plant hydraulically. Sewer rehabilitation programs aimed at elimination of collection system problems will significantly improve treatment plant operations and possibly effluent quality. Until such time as infiltration and inflow is eliminated from the system or the treatment plant is expanded hydraulically, new sewer system users will further tax the system.

The Village of Chardon is ranked high enough on the Ohio EPA priority list to be eligible to participate in facilities planning for wastewater management within the next few years. Construction grants are administered by

this agency for 75 percent of the eligible costs of providing adequate wastewater treatment. Participation of the village in the Construction Grants Program could permit the village to make the improvements necessary to enlarge existing facilities. It is doubtful, however, that any improvements would be constructed before 1985, if this grant program is pursued. Population estimates indicate an additional 700 persons may reside in Chardon by this date. It would, therefore, be desirable to eliminate as much infiltration and inflow from the system as possible over the next few years to provide capacity within the existing collection system and to allow for service extensions to developing land within the corporate area.

The Northeast Ohio Areawide Coordinating Agency, the Geauga County Health Department, and the Geauga County Sanitary Engineer have performed preliminary surveys of septic tank problems in and around Chardon. Included in these surveys were subdivisions with less than 2-acre lots which utilize septic tanks and areas where septic tank use has resulted in surface water contamination. While four residential areas with less than 2-acre lots occur in the village, no surface water contamination of adjacent ditches was evident at the time surveys were conducted. However, two subdivisions adjacent to the corporate area were found to have contaminated adjacent surface waters.

Figure 15 is a reproduction of septic tank problem areas occurring in the planning area which were mapped by these agencies.

Other problem areas may exist which were not evident at the time of the survey. These areas may only have problems during high groundwater periods. One such area of possible septic tank related problems identified by the Geauga County Sanitary Engineer which was not identified during the survey is Janda Place in northeast Chardon.

TRANSPORTATION

Introduction

Transportation systems are primarily intended to serve personal travel demands and goods distribution requirements generated by the physical location of population and land use activities. An efficient transporation system must be safe, comfortable, and provide rapid and economic movement of people and goods. The primary transportation routes of a community are its highways and railways. These must be coordinated and integrated to form a complementary framework for the community's benefit.

This section of the comprehensive plan will examine existing transportation conditions, current problems, existing plans and studies, and possible solutions to problems.

Air Transportation

Five general aviation airports are located near Chardon. Facilities range from 5,000 foot paved runways to 2,000 foot turf runways. Facilities at each airport are as follows:

Airport	Location	Runways	Lights
Chardon	Chardon	3 turf, 1,720' to 2,460'	No
Concord	Painesville	1 asphalt, 2,000' & 2 turf	Runway
Casement	Painesville	1 asphalt, 3,800'	Beacon & Runway
Geauga County	Middlefield	1 asphalt, 3,500'	Beacon & Runway
Lost Nation	Willoughby	2 asphalt, 5,000'	Beacon & Runway

Commercial airline accommodations are conveniently obtained at either of the Cleveland airports, i.e., Cleveland Hopkins International Airport, or Burke Lakefront.

Railroad Transportation

Chardon is currently served by the Baltimore & Ohio Railroad Company. The section of railroad running through Chardon begins in Warren, travels

northwesterly through Chardon, and terminates at Painesville. Freight shipments on this section are comparatively light, less than 5 million gross ton miles per year.

Highway System

The highway network in the Chardon planning area consists of federal, state, county, township, and local streets and roads. Major sections of this network are U.S. Routes 6 and 322, and State Routes 44 and 608. U.S. Route 6 and State Route 44 pass through downtown Chardon.

State Route 44 links the Chardon area with Interstate I-90 to the north which connects to other interstates in Cleveland, Ohio and Erie, Pennsylvania.

Chardon area roads and streets radiate from the square. This pattern provides access for outlying locations to downtown Chardon. Traffic volumes on area roads generally increase according to their proximity to the square. Average daily traffic volumes in 1979 are shown on Figure 16.

In the last decade, only two major improvements have been made to the highway system in the Chardon planning area. These improvements were the construction of the new State Route 44, and the improvement to Cherry Avenue between Water and Center Streets. There have been subdivision developments, including construction of new streets to provide local access.

Commercial and Public Transportation

Commercial motor freight service is available in Chardon. The George Rimes Trucking Company has a major facility in the community.

Limited commercial bus services are available from three transit companies in the region, although very few stops are located in the village and commutors must arrange their own transportation to transit stations. In addition, Trailways Bus System and Ashland City bus services are available in Cleveland. Public transit services are provided by the Geauga County Transportation Department.

Commercial transit companies operating in the region are the O. D. Anderson Bus Company, Orwell Cleveland Coachline, and Greyhound Bus Lines.

All three operate on federal highways: Anderson on U.S. Route 6, Orwell on U.S. Route 322, and Greyhound on U.S. Routes 20 and 422. Anderson provides service in Chardon on Mondays only with an in-bound stop to Cleveland at 2:20 p.m., and an outbound stop from Cleveland at 6:30 p.m. Orwell operates on Wednesdays only stopping at 6:25 a.m. at Aquilla on the inbound Cleveland route, and returning to Aquilla at 5:40 p.m. Greyhound's nearest stops in the Chardon area are at Painesville and Auburn Corners. From these locations, nationwide Greyhound bus service can be obtained.

Geauga County provides a Van Transit Program. Originally, the program was almost strictly a social service. At the present time, a limited amount of general transportation is available on a reservation basis. The department can easily handle general transit service if reservations are made 1 week in advance and they attempt to handle calls received within 24 hours. Their current time of operation is from 8:00 a.m. to 4:00 p.m.

Existing and Potential Transportation Problems

Air Transportation. The 2,460 foot turf runway at Chardon Airport is adequate for noncommercial, single engine general aviation use. If industry is interested in airport facilities, they will probably have to use one of the other airfields capable of handling larger aircraft. The existing runways cannot be lengthened due to obstructions at the ends of both. Since runway lighting is not available, flying is limited to daylight hours.

Longer runways and lighting facilities are available in three locations: Lost Nation, Casement, and Geauga County. Facilities at Lost Nation are the most complete, followed by the facilities at Casement, then Geauga County.

Rail Transportation. North of Chardon, the Baltimore & Ohio Railroad Company is located in the heart of an industrially zoned area between State Route 44 and Ravenna Road. Potential for development of this area is enhanced by the present rail line.

In 1974, the U.S. Secretary of Transportation published a report entitled Rail Service in the Midwest and Northeast Region. This report indicated the rail facility in the Chardon area was a potentially excess section of rail

line. Present utilization of the section has apparently been adequate to justify continued maintenance. Future development of the industrialized zone will probably ensure that this rail section continues in existence.

There has been limited conflict between rail and street systems. The greatest problems exist at the Center Street and Water Street crossings. Delays to street traffic occur from time to time and the grade crossings are in need of maintenance.

Highway Transportation. The basic radial framework of streets in Chardon provide good access between the corporate area and outlying regions. Within the corporate area, however, street patterns limit and complicate certain traffic movements. Two types of limited operations are cross-corner movements (from north side to east side, etc.) and cross-town movements (east-west traffic).

The complicated and limited effects of cross-corner movement can best be described by an analogy. Chardon's arterial or major street system resembles the spokes of a wheel radiating out from the square. Between some spokes are minor arterials or collector streets which interconnect to other arterials and permit functional cross-corner movements. Cherry Avenue, Fifth Avenue, Huntington Street, East King Street, and Park Avenue are examples of minor arterials and collector streets.

Existing cross-corner routes provide useful facilities for passenger vehicles and light trucks. Commercial vehicles, however, are restricted to federal and state highways within the community. This restriction requires all commercial vehicles to be a part of traffic volumes in and around the square.

Other arterial streets, or spokes of the wheel, direct all traffic toward the square. For example, no connecting streets exist between Mentor Road and Water Street west of Cherry Avenue, between Water Street and Wilson Mills Road, or between South Street and Claridon Road. While there are some streets between North Street and North Hambden Street, they are local residential streets and it is not desirable to use them as minor arterials or collector

streets. Hence, many cross-corner traffic movements must pass through the square. Add these movements to through traffic on U. S. Route 6 and State Route 44, plus traffic destined for the downtown area, and the result is often traffic congestion and delay.

Some cross-town movements are hampered by the present traffic signal system at the square. Constructed in the early 1970's, this system was designed to increase the efficiency of traffic circulation around the square. It was, therefore, necessary to operate all four streets bordering the square as one-way streets. This one-way street system does not present a problem for north-south movements, but poses problems for east-west movements. For example, motorists heading westbound on South Hambden Street must enter the square, go north one block, and then proceed west on Center Street, or return south one block on Main Street and then west on Water Street. Similar operations are necessary for motorists heading eastbound on Center Street.

Traffic accidents occur predominantly at certain intersections in the community. One nonintersection area of frequent accidents is in front of the bank and post office on South Street. In this area, the parking is at a 90 degree angle to the curb as opposed to the flatter angle parking around the square. While this orientation of parking permits both northbound and southbound vehicles to use the parking spaces, it creates additional confusion and increases accident potential.

On the western end of Center Street, congestion and delays are frequent at two intersections. Both cross streets are controlled by stop signs. At Cherry Avenue, it is difficult for a northbound vehicle to enter the traffic flow on Center Street. At Washington Street all movements, both entering Center Street and crossing Center Street, are at times difficult.

Street widths on most sections of federal and state highways, and a few community streets, are adequate if parking is prohibited. However, many of the older residential streets are narrow and this poses problems for residents who want to park in front of their homes and for traffic using these streets. Residential streets built as dead-ends, courts, or cul-de-sacs with narrow rights-of-way can be problematic, creating difficulties for fire protection and for continuity of traffic patterns within the community.

At many intersections, curb radii are insufficient and make turning movements difficult. Because of this deficiency, vehicles making right turns often have to travel into opposing traffic lanes to complete the maneuver. This is especially true of large trucks along Center and Washington Streets.

Public Transportation. The lack of regularly scheduled local transit service creates problems for those who do not drive or who do not own motor vehicles. Major shopping areas are not centrally located in Chardon and it is difficult for some people to reach retail stores on the west side without privately owned vehicles.

Transportation out of the community is also difficult for those people who do not have their own private vehicle. Transit service is limited to Mondays on the Anderson line, and Wednesdays on the Orwell line. Daily work related transit service is not available in the Chardon area.

Bicycle Transportation. Chardon has no designated bicycle routes and narrow streets produce problems for bicyclists.

Pedestrian Facilities. Located around the square are county offices, some commercial businesses, and an elementary school. Pedestrian volumes are, therefore, significant and conflict does occur between the needs of pedestrians and vehicular traffic flow.

The community has an extensive network of sidewalks. Many of these sidewalks are in a deteriorating physical status., i.e, cracks, joints which do not match, and weathered pavements.

Existing Plans and Studies

The emphasis on planning and design of new transportation facilities decreased during the 1970's. In the 1980's, this trend will probably continue given the restraints of decreasing energy supplies and environmental concerns. During the first-half of the present decade, planning of major facilities will probably not occur. Any studies or design effort will probably be for upgrading and improving the capabilities of existing transportation facilities.

Rail Transportation. The Ohio Department of Transportation (ODOT) is presently upgrading the Ohio Highway - Railway Grade Crossing Accident Probability Report. The new report should be available in 1981. This report will identify, by priority, the need to improve grade crossings.

In 1972, ODOT prepared a similar report. That report evaluated a number of factors and assigned a risk factor rating all crossings in Ohio. A composite of old data from the report and some new data are shown below. The higher the risk factor the greater probability of an accident.

Road Crossing	Risk Factor 1972	1981
Claridon Troy Road	0.4	NA
South Street (S.R. 44)	1.2	1.6
Park Avenue	1.5	1.4
Water Street (U.S. 6)	3.0	2.0
Center Street (S.R. 44)	5.3	NA
Fifth Avenue	0.9	1.2
Hosford Road	0.2	NA
Clark Road	0.3	NA

NA indicates not available

Where comparisons can be made, there is generally little differential. The notable risk change at Water Street is in part due to decreases in the number of trains per day and the number of tracks. In 1973, additional protection (gates and flashing lights) was installed at the Center Street crossing. Such protection will reduce the 1972 risk factor.

ODOT and the Baltimore & Ohio Railroad are continually improving protection of grade crossings on a priority basis. At present, they are improving crossings with a risk factor greater than 3.0. On a systematic basis, Water Street will be the next crossing improved in the Chardon area.

Highway Transportation. NOACA is continually reviewing and appraising the development of transportation plans for its entire region and the Chardon area.

For more than a decade, there have been long-range, highway plan recommendations for a statewide improvement to State Route 44. This improvement would extend from Interstate I-90 to the Canton area and would provide a bypass of Chardon. Similarly, there has been a plan for a reliever or bypass of Chardon for U.S. Route 6 traffic. Both of these routes are still part of the NOACA standing long-range plan for the Chardon area. No route location plans or environmental impacts have been made for either of these projects. The likelihood of development of these projects in the near future is extremely small.

Public Transportation. The Geauga County Transportation Department has proposed a two-fold public transit system to provide work related transportation in the Chardon area. This system would utilize both expanded county and commercial carrier systems.

The county would enlarge its system to provide connections to the existing commercial carriers servicing the area. To expand the county system it would be necessary to purchase five new vans. These vans would be used to pick up and distribute people from their homes to shelters along the commercial carrier routes or to local places of employment. Most of the county operations would be in north-south directions. In addition to the proposed system, the new vans would be utilized to extend and expand existing transit programs after work hour trips.

Commercial carriers would continue to follow their east-west routes to provide connections to the Cleveland metropolitan area. They would tie into the Cleveland Regional Transit Authority system for greater distribution of riders. It would be necessary for commercial carriers to increase the frequency of their service from 1 day a week to 5 days a week during morning and evening periods.

There would probably be charges for the new county system and, of course, a fee for present commercial carriers. The county transportation department feels riders would still receive a significant savings by using the transit system as opposed to driving their vehicles to work.

The proposed work related transportation system would require approximately 12 shelters installed along the commercial carrier routes. These shelters would be used for longer than normal metropolitan waiting periods, and therefore, would be enclosed and contain heating facilities.

Bicycle Transportation. Within its planning area, NOACA has initiated a bikeway planning program to coordinate the efforts of local agencies in their development of bikeway facilities. The first phase was completed in December of 1978. In the second phase of the bikeway plan, the NOACA staff proposes development to encourage greater use of the bicycle as an alternative mode of daily transportation, as well as a means of recreation, sport, and physical fitness. In addition, the second phase will likely focus on providing more complete and conclusive information reflecting the needs, desires, and opportunities within the five-county area.

Transportation and Thoroughfare Plan

Air Transportation. General aviation is important within a community for two reasons. Industries and businesses often make use of local airfields in their daily work. Second, the airfields do provide a form of recreation for residents of the community. General aviation airports must be encouraged and supported for the benefit of both groups. If any of the area airports were to close due to prejudices, pressures, or financial problems, the community would suffer an economic and convenience loss.

Rail Transportation. No new or additional rail facilities are proposed as the Chardon area is fortunate to have a solvent and adequate rail system in the area. Increased utilization of the industrially zoned area north of Chardon should help to perpetuate the services of the Baltimore & Ohio Railroad Company.

Highway Transportation. Since the late 1970's, the United States has experienced a deterioration of its street and road facilities. From 1963, the nation, as a whole, has invested less than half the amount of funds needed to maintain streets and highways in a no growth level. This situation is primarily the result of inflation which has eroded the value of the dollar. To preserve valuable and basic streets and highways, it is necessary to increase maintenance budgets to keep up with inflation.

The four primary highway facilities in the Chardon area are maintained by ODOT. Of these four facilities, all of U.S. Route 6 and State Route 44 are on their first priority system for maintenance. U.S. Route 322 is on the first priority system west of State Route 44. To the east, U.S. Route 322 is on the second priority system. All of State Route 608 is on the third priority system for maintenance. These priority systems are based upon traffic volumes within various areas of the state. Maintenance includes resurfacing, snow removal, and other operations designed to continue the quality of the present facility.

On the outer extremities of the planning area, a few new roads are suggested. These would improve traffic circulation in areas where few cross-country routes exist. Proposed roads located east of Chardon, between U.S. Route 6 and Chardon Windsor Road, are essentially extensions of present development. These roads and others are schematically represented on Figure 17. The intent of the proposed roads is to provide an efficient and complete network of roads and to give direction to present or future development in the vicinity. Locations of the roadways are approximate. Development of long roadways which end in cul-de-sacs are to be avoided.

Traffic circulation needs to be improved in Chardon through development of additional arterial or major streets that will be capable of accommodating cross town and interarea movements without directing traffic through the square. Construction of new streets in built-up areas would be difficult because available physical space is limited. Therefore, the Thoroughfare Plan recommends circumferential roadway systems utilizing new and existing roads. In providing such a system, existing through traffic at the square and on central area streets should be reduced with a coinciding reduction in congestion and delay.

Major aspects of the Thoroughfare Plan include a contiguous circumferential route completely encircling the village, a less extensive circumferential route connecting western developing portions of the community, and various outlying roads providing connections between township, state, and federal routes, and should the rail line running through the village become inactive, a potential central area bypass could be provided utilizing the right-of-way.

The major circumferential arterial road system provides a complete circular route around the periphery of the village. Beginning at North Street and continuing in a clockwise fashion (refer to Figure 17) is a new route which connects North Street, North Hambden, South Hambden, Claridon (Aquilla) Road and State Route 44 (South Street). The intersection of Bass Lake Road and State Route 44 would be improved as would the intersection of Woodiebrook Road and Bass Lake Road. Woodiebrook Road would be paved and upgraded to provide the southern link in this system. The Wilson Mills-Woodiebrook Road intersection would be improved and a new road continued from this point to the intersection of Parker Court and Water Street. Parker Court would be utilized and extended to the northeast where it would intersect with Center Street (State Route 44). Opposite this intersection a new route would be constructed linking Center Street with North Street (Thwing Road). This Center Street to North Street section would cross the Baltimore & Ohio Railroad and would be particularly important to developing industry in this area.

Organizations which develop land near the suggested route should be encouraged to construct successive sections of the arterial system. In industrial areas, the pavement base will need additional strength. Design criteria for major arterials are included in this section.

A less extensive collector system is also proposed which will improve circulation in the near west developing portion of the community. This semicircular route utilizes Fifth Avenue at the north end and Park Avenue at the south end. Both are to be upgraded where indicated and connected by a road which intersects State Route 44, Water Street, and Wilson Mills Road. Two collector streets radiating from this road would provide linkages between this and the more extensive circumferential route.

Both the above described systems could be implemented through enforcement of zoning and subdivision regulations which require general conformance with adopted land use and thoroughfare plans. Their implementation would substantially improve traffic flow in central community areas and around the square by providing alternate through traffic routes.

The Thoroughfare Plan also illustrates proposed roads in township areas surrounding Chardon. The roads illustrated are proposed to enhance efficiency and adequacy of the outlying road systems and to provide linkages between township, county, state, and federal road systems which result in "neighborhood" development parcels.

Improvements at accident prone locations on rural sections of federal and state highways are carried out by ODOT. They maintain records of accidents and make improvements on a priority basis. Within the corporation, Chardon has identified several accident locations. All are located on federal or state routes.

Accident prone locations within Chardon are the responsibility of the village. Accidents at the intersection of Cherry Avenue and Center Street may be reduced with future installation of a traffic signal. At the intersection of Cherry Avenue and Water Street, additional signal changes may help to eliminate accidents also.

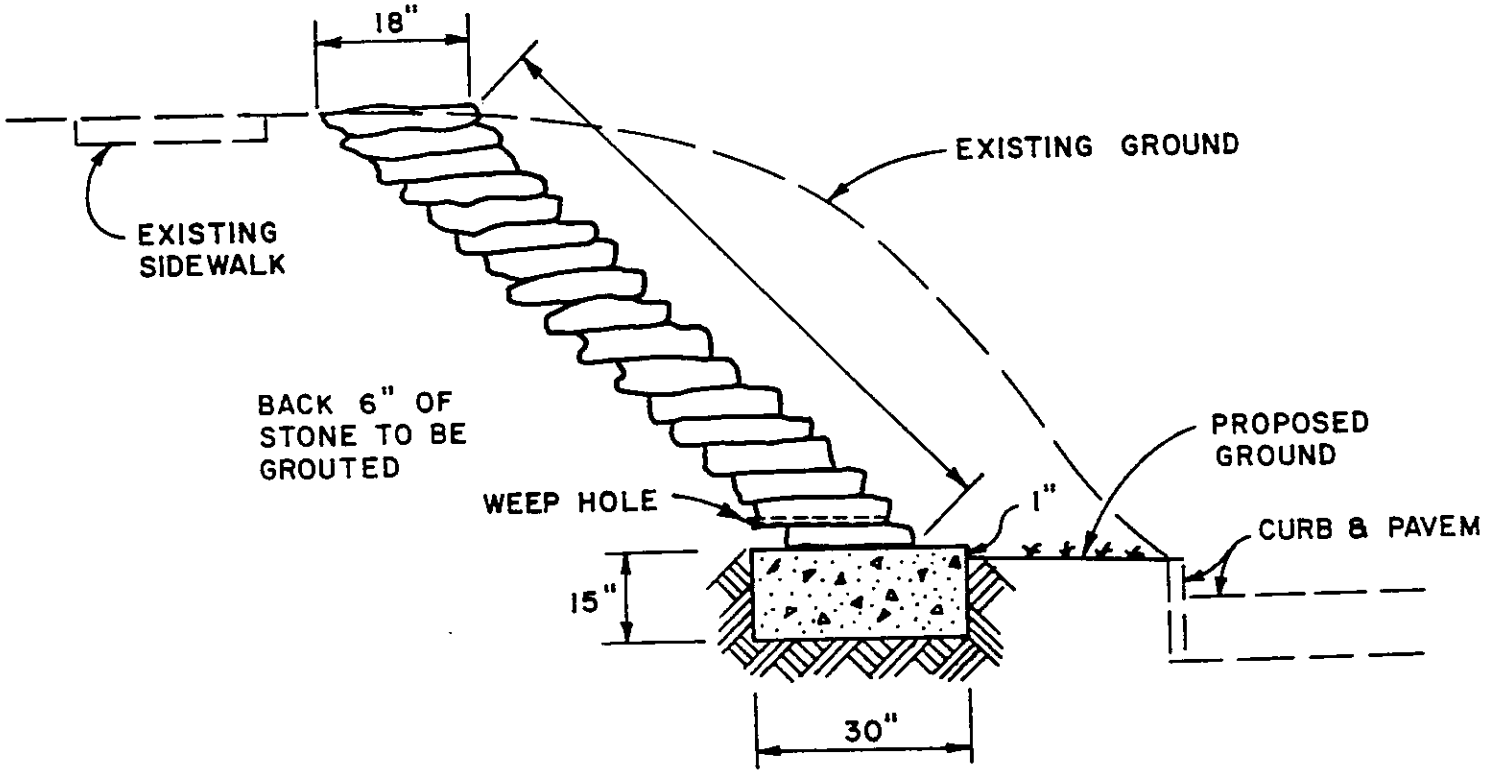
A general review of two accident sites suggests some possible improvements. One site is on South Street in front of the bank and post office. The second site is the intersection of North Hambden Street and Maple Avenue.

The first location presently has 90 degree head-in parking. While this head-in parking is convenient for both northbound and southbound vehicles, it creates conflicts for both movements. Flatter angle parking reduces conflicts since only traffic on one side of the street can use the parking area. Therefore, it may help to change from 90 degree head-in parking to a flatter angle parking usable by only northbound South Street traffic. The Central Business District Plan proposes other revisions to traffic movements in this area.

Some of the accidents at North Hambden Street and Huntington Avenue may be due to poor sight distance. The embankment on the southeast corner of the intersection reduces the visibility motorists stopped on Huntington Avenue have toward the east. A check of accident reports at this intersection could validate the supposed problem. If poor sight distance is found to be a contributing factor, the embankment could be removed to improve visibility and a stone retaining wall constructed as shown on the following sketch.

At several accident locations, utility poles placed near the street create sight distance obstructions. One such location is the Maple Avenue-North Hambden Street intersection. While it is not realistic to relocate an entire utility line, single poles might be moved to provide better visibility in certain circumstances. Detailed accident investigations should be made where more than five accidents occur in 1 year at a given location. Often, through these detailed investigations, corrective means can be identified to reduce the frequency of accidents.

Narrow streets are not easily widened. However, replacing curbs on streets such as Tilden and Ferris Avenues would make it possible to widen the street without removing existing mature sugar maple trees. In like manner, radii at intersections could be increased when curbs are replaced. Table 28 may be used in development of future roadways and to provide a guideline when widening pavements.



HAND LAID STONE RETAINING WALL

The Baltimore and Ohio Railroad line which runs through the village is a low level-of-use facility. There is a possibility that this section of rail line could be abandoned or dropped from active use before the end of the planning period. As noted in previous report sections, the greatest local traffic problem involves circulation in and around the central area. In the event that the Baltimore and Ohio Railroad should drop the local rail line from use, an opportunity would be created to alleviate central area circulation difficulties through utilization of the railroad right-of-way for a central area bypass route. This route would extend from Fifth Street to the existing South Street railroad crossing as illustrated on Figure 17. This bypass would be particularly beneficial in that it would provide for through truck traffic on State Route 44 and provide truck access to the industrial area at Fifth and Lake Avenues.

Public Transportation. Development of the proposed work related transit system by Geauga County will benefit area motorists. Work trips generally comprise 20 to 25 percent of all trip purposes and the proposed system directly addresses that need. A possible further development of the county Van Transit System would be organization of scheduled commuter service for shopping in the Chardon area. This service could be provided during mid-day and would increase the utilization of vans purchased for the work related system.

Bicycle Transportation. Utilization of bicycles in the United States is on the increase. Development of bicycle routes to parks and schools is a natural for the children of the community. These routes could also provide recreational facilities for adults. Depending upon community needs, bike routes can be expanded into shopping and commercial areas. There are many reference materials for developing bike routes, including NOACA's Phase I report. Future roadway improvements within the village should be considerate of providing pavement width or berms capable of accommodating bicyclists.

Pedestrian Facilities. The community's network of sidewalks is an asset to pedestrians. The Transportation Plan recommends all existing sidewalks be inventoried, graded, and a prioritized improvement program developed.

Table 28
STREET DESIGN CRITERIA
Chardon, Ohio

Type of Facility Function and Design Features	Widths R.O.W.	Pavement
Major Arterials Provide unity throughout contiguous urban area. Usually form boundaries for neighborhoods. Minor access control; channelized intersections; parking generally prohibited.	80'-100'	52'-64'
Minor Arterials Main feeder streets. Signals where needed; stop signs on side streets. Occasionally form boundaries for neighborhoods.	80'	48'
Collector Streets Main interior streets. Stop signs on side streets.	70'	40' (2-12' travel lanes; 2-8' parking lanes)
Local Streets Local service streets. Nonconducive to through traffic.	60'	24' medium density development; 30' high density development
Cul-de-sacs Street open at only one end with provision for a turnaround at the other. Maximum length 500'.	60' 68' Radius	24' 50' Radius

Intersection Radius Criteria

Type of Facility	Radius
Major and minor arterials	50' Desirable, 35' Minimum
Other streets	35' Where trucks are frequent 30' Minimum

Source: Burgess & Niple, Limited

CENTRAL BUSINESS DISTRICT

Existing Conditions

Introduction. The central business district in Chardon has been identified for purposes of this study as that area surrounding the public square, and is further described as the area from 500 feet north of the square to 500 feet south of the square, and 700 feet west of Main Street to 700 feet east of Park Street.

This area embraces the historical center of the community and continues to function as the seat of county and local government. It was once the business and retail center of the village as well. This later function has been usurped to a large extent by the recently developed retail center west of the square in the vicinity of Cherry Avenue and Center and Water Streets.

A number of structures within the central business district have historical significance. Included among them are the Geauga County Courthouse, the old Chardon High School, and the entire west side of Main Street adjacent to the square. The area of the square and the adjacent buildings west of Main Street to the alley are currently within a historical district.

The public square provides a focal and activity center for the community. Community programs such as the annual Maple Festival are held here. In addition, it provides an area of open space for casual and passive activities such as reading or relaxing during lunch hour.

The central business district study and plan will focus on existing and future uses in the previously defined area and will make suggestions for increasing its attractiveness, enhancing its status as a center of county-wide importance, and will attempt to utilize and emphasize the open and attractive visual aesthetics of this area while providing pedestrian conveniences and automotive necessities.

Structural Use. Chardon developed somewhat later than most communities in this area of the Western Reserve. Although the area of Geauga County in

which Chardon is located was being settled in 1812, Chardon was not incorporated until 1851. The land for the square was deeded to the village by Peter Chardon Brooks on the conditions that the county seat be located there and that the village bear his middle name.

On July 27, 1868, the "Great Chardon Fire" burned most of the structures surrounding the square. Over the next 2 years, through concentrated efforts on the part of members of the community, the west side of the square was rebuilt. It was rebuilt in two sections: one, the Union Block, containing 12 stores in a two-story building 231 feet long; the other, the Randall Block, containing 7 stores situated south of Short Court Street. Most of these structures remain. Structures of local historical significance have been identified and are illustrated in later sections of this report.

Figure 18 provides an outline of structures within that area defined as the central business district and also illustrates streets and parking lots serving the area and general structural conditions.

Figure 18 has been coded to illustrate current uses of central business district structures. As can be seen by reviewing this figure, uses of structures around the square in the central business district are almost evenly split between commercial and public uses. Public uses dominate east of the square where Chardon School District offices and Park Elementary School are located between Goodrich Court and North Hambden Street. Between Goodrich and South Hambden Street, commercial and public uses are mixed with the public library situated in the middle of this block.

Public uses also dominate southeast of the square adjacent to South Hambden and South Street. Two churches, the fire department, village offices, and the U.S. Post Office are situated in this area.

Southwest of the square, commercial uses predominate. A number of shops, a theater, two gas stations, and the Geauga Times Leader newspaper are located in this area.

Along the west side of the square are two blocks of structures built around 1870 after the "Great Chardon Fire" destroyed essentially all buildings in this area. Between Court and Water Streets these structures are in commercial use. Geauga County government offices occupy the middle portion of the block between Center Street and Court Street. North of these county offices is a church, while buildings on the south end of this block remain in commercial use. Residential uses surround the central business district with some commercial uses mixed with houses along the east side of North Street.

Building Conditions. Building conditions in the central business district are generally good. While many of the commercial structures in this area are over 100 years old, nearly all are in good structural condition. However, many would significantly benefit from renovation, particularly those commercial structures between Court and Water Streets and old Chardon High School. One particular problem which was cited in a previous study and which continues to plague the west side of the square is inadequate maintenance of the "alley side" of these structures. Broken windows, peeled paint, and lack of landscaping all contribute to an unappealing appearance, particularly when viewed from adjacent residences. None of the structures here seem beyond rehabilitation when evaluated from an exterior inspection, and all would benefit by a fix up and beautification program directed at this area.

Residences surrounding the central business district are also in good general condition as can be seen by referring to Figure 6. Some individual structures are deteriorating, however. Where residences are in deteriorating or poor condition, their replacement or removal will provide opportunities for further development of the central business district. As a result of the relatively good overall building conditions in the central business district, only a few opportunities exist for expansion through removal of deteriorated residential structures. Significant growth of the central business district would require land use change.

A pressing need for additional parking and office space exists in the vicinity of Geauga County offices and the west portion of the square. Behind,

or west of, these offices is a deteriorating residence and shed. These structures will likely be razed within the planning period, providing an opportunity for additional parking in this area. East of the square along North Hambden Street are a number of structures in deteriorating condition. These structures will also probably be removed before the end of the planning period, allowing limited expansion of the central business district.

On South Hambden Street, a deteriorating residential unit has recently been converted to church related uses. It is not likely that this structure will provide adequate facilities for a lengthy period and it will probably be replaced with a structure for church use or it will be vacated.

Another deteriorating structure is located on South Street between a church and commercial structures. This building is used for both residential and commercial uses. It is not likely that this structure will remain through the planning period because of its structural condition and increasing development pressures.

A Concept Map illustrating possible central business district functional areas is presented as Figure 19. The extent of various functional areas was developed after consideration of building conditions and existing land use. This "concept" will be further developed into the Central Business District Plan after consideration of other factors.

Traffic Flow and Accidents. Existing traffic flow in the central business district is one way on Main and East Park Streets and two ways on all other streets. Main Street provides southbound lanes while East Park Street provides northbound lanes.

Recent community development occurring over the last decade or so placed an increasing burden on transportation facilities in the central area. Industrial development in the northwest quadrant of the village, commercial development in the west, and residential development of eastern and northeastern sections have resulted in higher volumes of traffic in all areas of the community and particularly in the central area. A large number of vehicle trips

are generated from all areas of the community with destinations in the retail areas between Water and Cherry Streets and employment areas on Fifth and Lake Avenues.

As there are no major thoroughfares connecting the eastern community with that to the west, other than those which pass through the square, much of this traffic is forced through the one-way street system. Those people living in the southeastern part of the community must make nearly a complete circle around the square before they can go west on Center or Water Streets.

Truck traffic is also forced through the square as no circumferential route exists which is capable of handling trucks and providing a bypass of State Route 44 traffic.

As a result of these problems, the square occasionally becomes congested. Its one-way orientation often becomes a nuisance for those who merely want to get from one side of the community to the other.

Traffic accidents occurring in the central business district result primarily from parked cars manuevering into and out of the flow of traffic on Main and Park Streets. The Thoroughfare Plan deals with circulation of traffic in and around the central business district and makes recommendations for problem elimination.

Factors Affecting Development. A few very important factors affect further development of the central business district in Chardon. Among these are topography, space limitations, retail competition, and general area function. Topography of the central business district is more an asset than a limitation to development. The square is situated on top of a hill. This is particularly evident when looking west, where views of the community can be seen from many of the commercial structures on Main Street.

Limitations with regard to available space for commercial expansion is a factor which has significant ramifications. A limited amount of land will likely be made available as older residential and warehouse units adjacent to existing commercial areas are removed. Some of these older, deteriorating

units were discussed previously. However, even with removal and replacement of these deteriorating units, large expanses of developable land within the central business district will not become available. This factor has contributed to the exodus of many retail businesses from the central area to peripheral retail centers and has resulted in a gradual transition of the primary function of the central business district from retail activities to service and professional activities associated with county and village government. As previously mentioned, about one-half of the structures surrounding the square are in public use and about one-half are commercially utilized. About one-half of those commercially utilized are professional services such as lawyers, title insurance, realtors, and other offices which relate directly to the county seat function of the square.

Retail competition from western retail centers have adversely impacted sales in some retail categories such as clothing, hardware, etc. While some retail categories have been adversely affected, others such as specialty shops, restaurants, etc., need not be similarly affected. All retail establishments could regain some of the competitive advantage if improved merchandising and advertising techniques were utilized, perhaps on a group basis.

The changing function of the central business district has the most important impact on future development and use decisions. A number of factors support continuation of this functional transition and other factors which are important to overall welfare of the central area also are worthy of mention.

Service industries are a growing sector of the national economy. They could possibly replace those retail units lured out of the central area. Service industries and business do not generally require large structures, sales space, etc., and therefore, are well suited to Chardon's central area. Offices and most service industries require fewer parking spaces and generate fewer trips than retail stores. For example, an office complex generates approximately 2.3 trips per 1,000 square feet of area during the peak hour and utilize an average of about 1.5 parking spaces for every 1,000 square foot area. In contrast to this, a neighborhood shopping center generates about 15 trips per 1,000 square foot of floor area during the peak hour and department stores utilize about 2.5 spaces per 1,000 square foot of area (Transportation

and Traffic Engineering Handbook, Institute of Traffic Engineers, Prentice Hall International, 1976). These factors make such uses particularly desirable in the central area where space is limited.

Geauga County offices concentrated at the north end of the square are a very important part of the central business district's livelihood. Income taxes from county workers generate $30,000.00 annually. People coming into the central area for county-related business also utilize area commercial establishments. The county auditor's office, assessor's, engineer's, and other property related county offices concentrated here provide a convenient and centralized complex which supports several satellite businesses such as real estate firms, insurance, and law firms, all of which contribute property and income taxes to the village. The concentration of these facilities also provides for energy conservation, to a certain extent, in that related activities may all be carried out in one location.

The Geauga County Commissioners, as well as central area merchants, have complained about insufficient parking and lack of available space in the central area. The county has mentioned the possibility of relocating many of its functions to another area. The ramifications of such a move are obvious. One of the highest priorities of village officials should be to maintain existing county offices and increase parking facilities available to both the county and area merchants. The Central Business District Plan will emphasize these objectives.

Aesthetics. Aesthetics of the central business district are important in that they reflect community values and attitudes and convey these to visitors who enter the area. Aesthetics of the central business district in Chardon are impacted by a number of features, some of which are pleasing and represent opportunities while others detract from the area's visual appeal.

Chardon's central area, and particularly the western blocks facing the square, and the Geauga County courthouse represent architectural styles and features which will never be duplicated. The courthouse, constructed in 1869, has been renovated with the help of federal grants. It remains a dominant focal point in the central business district. The public square, upon which

it is situated, provides a pleasing and inviting open space area. All structures situated around the square benefit from its location and appearance.

Structures on the west side of Main Street have been significantly altered over the years. Previous facade improvements in some cases cover up ornate architectural features. In other instances, original facades have been altered beyond renovation. Despite alterations made to some of these structures, the unity and cohesion of the original architecture is evident, creating the opportunity for renovation of the facades.

The Geauga County Annex has been renovated and altered to perform modern office functions while preserving some of the characteristic architecture of the original structure. Renovation of other buildings in this area is possible and should include provisions for signage, street trees, and furniture.

As previously mentioned, many of the structures on the west side of Main Street have not been adequately maintained on the alley or back side of the building. As these structures are situated higher than adjacent residences to the west, views afforded residences are not particularly pleasing. This factor, combined with the warehouses and storage sheds situated west of the alley, has a detrimental influence on nearby residences which is reflected in lower property values and poor maintenance.

An aspect of the central business district which seems underutilized is the existence of views and vistas both of the public square and from buildings surrounding the square to other areas of the community. Second and third floors of several of the buildings on the west side of the square are underutilized, and many of those which are used do not emphasize possible views. Buildings on the west side of the square have potential views both of the square and to the west as shown on Figure 20. Structures on the northeast of the square have potential views to the northeast, but higher elevations to the southwest limit potential views of the public square.

Utility poles adversely affect buildings surrounding the square, particularly those on the west side which have potential for renovation. This is unnecessary in this area as a utility line runs along the alley at the rear of

these properties which could provide power and telephone line routes. All that is required is relocation of the building service. Building code variances should be investigated to ease the burden on renovators who participate in rehabilitation of these structures.

A lack of sidewalk plantings and pedestrian conveniences also adversely impacts both visual and physical appeal of the Main Street area. Accessibility is particularly difficult for handicapped individuals because of curb heights.

Plan for the Central Business District

Objectives. Objectives of the Central Business District Plan are related to the primary functions of this area. As cited in previous sections, retailing as the primary function of the central business district has been replaced, to a large extent, by local government and related service functions. Some of the reasons for this, outlined previously, included more available space for displays of merchandise and parking in newer developing areas outside of the central business district. While retail functions of the central business district have changed, they continue to be an important part of the central area. Objectives of the Central Business District Plan are threefold: 1) support the existing retail base; 2) provide for expanded local government functions; and 3) encourage expansion of office and service industries. The physical plan for the central business district is designed to support these objectives, and if implemented will alleviate existing area problems. The Central Business District Plan is illustrated on Figure 21.

Commercial Uses in the Central Business District. Retail base in the central business district reflects activities typically found in a secondary center where clothing stores, specialty shops, and restaurants are found here. It is not likely that this area will be the primary retail center of Chardon in the future. However, substantial opportunities exist which would encourage preservation of remaining retail establishments and encourage those which support other central area functions.

Renovation of retail units, particularly those in the south part of Main Street would contribute significantly to the appeal of this area. The facades

of many of these structures have been remodeled and modified, covering much of the original architecture. Existing conditions of these structures are illustrated on Figure 18.

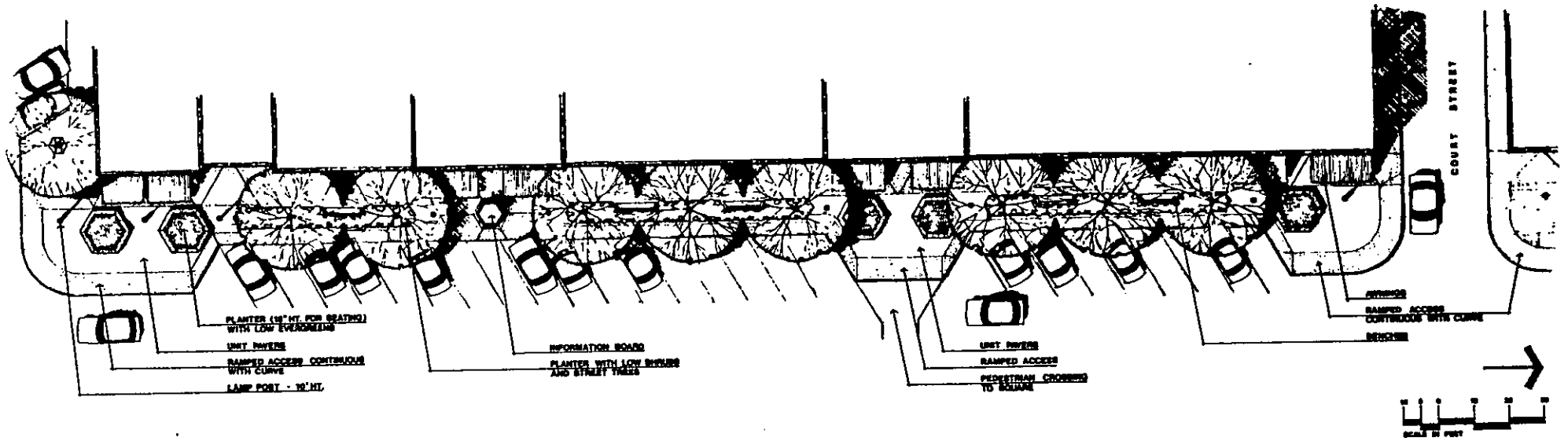
Figure 22 illustrates the potential for renovation of these structures. As shown, sign placement, shading devices, street trees, and sidewalk improvements would significantly improve the overall visual quality of this area. Continuity and visual appeal can be greatly improved in most cases by modest expenditures.

Facade improvements would be accentuated by sidewalk improvements consisting of tree tubs and planters, benches, and improved lighting and street crosswalks. Some of these improvements are illustrated on Figure 22. Relocation of electric and telephone lines from Main Street to the alley at the rear of these structures would also contribute to visual appeal.

The Central Business District Plan recommends streetscape improvements consisting of landscaping and sidewalk improvements around and including the square. Decorative and functional lighting should be an integral part of these improvements.

Pedestrian ways, crosswalks, steps, etc., should be well illuminated. Coordination of lighting to accentuate landscape improvements can result in an attractive and warm atmosphere. Lighting fixtures used to illuminate walkways should be mounted from 10 to 15 feet in the air. These lights may be supplemented by low level lighting and accent lighting concealed in trees, landscaped beds, or sunken units.

Street lights which would be required should be compatible with adjacent architectural styles. Street lights which are generally mounted at heights of 30 feet could be placed around the periphery of the square, providing illumination which would accent adjacent structures and provide lighting of parking areas. Great care should be exercised in this design so as not to create an overpowering effect and to avoid harsh, discolored, and glaring light.



Main Street · Chardon . Ohio

Preliminary Streetscape Plan · South Block

Main Street · Chardon, Ohio

Elevation · South Block

FIGURE 22

PRELIMINARY STREETSCAPE PLAN

Lighting fixtures should be selected in consideration of contributions to the theme or image of the central business district. The design of fixtures should be compatible with landscaping improvements and buildings. In Chardon this would require more traditional posts and luminaires.

While the southwest of Main Street would benefit most from a renovation program, other structures around the square would also benefit from similar activities. Generally, the south end of the square and the old Chardon High School would benefit from structural rehabilitation and similar street and sidewalk improvements could be carried out in these areas.

Addition of parking spaces in key areas would also support retail functions. Expansion of an existing lot on Court Street is proposed for this purpose. More will be said of parking proposals in later discussions.

Local Government. As Chardon is the county seat of Geauga County, local government functions situated here (village as well as county) provide employment and act as an attractor of other related service and professional functions. County offices which are concentrated in the north half of the square are in need of additional parking and office space. The county's options are to relocate some of the existing functions to other county office locations outside the village or to remain in the village and expand. Potential for office and parking facility expansion in the village is currently limited. However, the Village of Chardon could improve this situation by assembling property adjacent to the alley in back of the existing county office complex. By doing so, the village could provide sufficient space to double available parking spaces there. A total of approximately 130 spaces could be provided in a lot which could extend from Court Street to Center Street. To make this possible, a residence and warehouse in this location would have to be purchased and razed. The residence is currently in poor condition and the warehouse is a deteriorating structure. Their removal within the planning period is likely even without the proposed action.

The elevation of the proposed parking lot is about 6 feet below the ground floor elevation of buildings on Main Street. Development of a parking deck here is a possibility as a result of topographic conditions. A parking

deck here could provide about 200 spaces but would be relatively expensive in terms of costs per vehicle space. An option to this is to develop the proposed parking lot which would significantly increase available spaces and allow Geauga County to expand offices over the parking lot. By building to the alley and over the proposed parking lot, as shown on Figure 21, available county office space could be nearly doubled. As an enticement for encouraging Geauga County to keep its offices in Chardon, the air rights over parking lot could be transferred to the county for a token fee. The county would benefit by acquisition of space for construction at no cost, and would preserve its past investments in the rehabilitation of the existing annex and would benefit by keeping county offices in a single location.

Benefits to the village would include maintenance and potential increase of the income tax base and indirect benefits to the property tax base (as other properties would be adversely affected by the absence of county offices).

Local merchants would benefit from increased business related to the increased numbers of employees in the area and by the addition of available parking spaces.

Professional and Service Uses. A significant amount of change in the northeast portion of the central business district is anticipated to occur as a result of existing building conditions and the need to expand service industries and office spaces in the central area. Three of four structures on the corner of East Park and North Hambden Streets are deteriorating. One of these is currently used as a driver license examiners' office; the other two are residences. Redevelopment of this corner could supply a substantial amount of professional office space and augment available parking facilities. Figure 21 illustrates the potential expansion of an existing parking lot in this area and redevelopment for professional and service activities. The proposed parking lot could provide 140 spaces, more than twice the existing available spaces. Elevations at the west edge of this site are 14 feet higher than the east edge. This site could be cut and filled to provide a flat parking surface lying below new structures proposed along East Park Street. Construction of an upper parking deck on this site would provide a total of approximately

220 parking spaces, more than adequate to provide parking facilities for office employees, courthouse workers, school district employees, and customers of establishments in the northeast corner of the square.

New structures proposed along East Park and North Hambden Streets would be developed for commercial office use. Those situated along East Park should relate to the general architectural styles exhibited in adjacent buildings and should take advantage of the public square and courthouse views.

Other Uses. Old Chardon High School, situated south of the above proposed parking lot, has been identified as a local historic structure during an historic features survey conducted by professional historian Jare R. Cardinal. The structure, currently utilized by the Chardon School District, is unique architecturally. This structure should be renovated to provide space for community organizations (a purpose which it currently serves to a limited extent) and to serve as a community center. The adjacent gymnasium should also be renovated for these purposes. Community organizations and community center functions generally occur after normal business hours, and therefore, participants could use parking facilities provided in the proposed parking deck or available spaces on East Park Street.

Few changes are proposed in that area east of East Park Street between Goodrich Court and South Hambden Street. Sidewalk improvements and tree plantings should be provided here to help this area "fit in" with the rest of the square. No architectural improvements are proposed but landscaping in this area would be of great benefit. It is probable that the existing residence here, which has been converted to a real estate office, will be replaced with a commercial structure before the end of the planning period. This has been indicated on Figure 21.

A reorganization of the corner of South Street and South Hambden Street is proposed. Two residential structures here are in deteriorating condition. They will likely be replaced before the end of the planning period. A large amount of the interior of this block is in paved parking lots used by a bank, village offices, two churches, and the post office. Largest parking facilities are those for church and bank use. These are underutilized while

facilities at the post office and those utilized for village employees are inadequate. In addition to these factors, village administrative offices and fire and police facilities located in the village hall will need to be expanded by the end of the planning period.

The two deteriorating residential structures, one of which has been converted for church use, the other to partial commercial use, provide the foundation for reorientation of this area. The commercial/residential structure situated on the east side of South Street should be acquired by the village and removed. In its place should be constructed new village administrative offices and court facilities. Space vacated by these village personnel would be utilized for expanded police and fire department facilities. The village will soon require a full-time fire chief and, as a result of anticipated growth, will require additional safety service personnel. Construction of new administrative offices would provide space for this expansion and would preserve the close physical relationship and communicative links between these village functions. The new administrative office could connect to police and fire offices through construction of an attached wall or hallway.

Through the proposed acquisition, parking facilities for village use could be expanded to provide about 23 spaces in total (including existing facilities behind the fire station). It is likely that more spaces would be required to accommodate the needs of administrative, police, and fire employees. Another 20 to 25 spaces could be provided by acquiring a residence on South Hambden Street adjacent to the church and currently used for a rectory. This parcel would also be instrumental in proposals related to improved circulation and post office functions.

Post office parking is inadequate for current functions and will increase in inadequacy as village population increases. The post office cannot expand existing parking facilities without adversely affecting an adjacent structure of local historic significance. While the post office currently provides limited parking and mail drop facilities on South Street, the use of these facilities sometimes creates hazardous traffic and turning movements on South Street, especially when southbound traffic turns across lanes to use existing parking spaces and backs across lanes when leaving.

Acquisition of a right-of-way in this area would substantially improve post office operations and would alleviate potential traffic hazards. A proposed right-of-way is illustrated on Figure 21. To make this right-of-way possible, it would be necessary to purchase a residential structure on South Hambden Street. It would also be necessary to acquire easements from the bank and churches affected. As mentioned previously, bank parking is underutilized and the bank would suffer little from the right-of-way acquisition. The churches affected would lose a limited number of parking spaces but would gain improved accessibility. The proposed right-of-way would be a one lane facility from South Street to discourage its use as a shortcut for avoiding the square.

A mail drop would be provided at the rear of the current bank parking lot. Existing post office parking would be utilized only by those persons who need to go into the office and for loading and unloading, thus improving the overall efficiency of post office operations and reducing turning, backing, and other related traffic hazards on South Street.

Renovation of village offices and commercial structures on the corner should be carried out along similar lines as that proposed for the southeast square area. Proposed new village offices should be compatible with surrounding architecture and sidewalk and tree plantings should be carried out consistent with the rest of the square.

Finally, the corner of Water Street and South Street should receive similar sidewalk and tree plantings as other areas. The theater and buildings west of it should be renovated as appropriate. The gas station on the corner and the bulk oil dealer and gas station on South Street should be replaced by other commercial or professional uses and parking provided at the sides or behind new structures as illustrated on Figure 21.

Traffic Circulation. Traffic circulation around the square operates as a one-way system. As a result of congestion experienced around the square, alternative movements were analyzed for possible application. A computer analysis of existing flow problems and of two-way traffic movements at each end of the square was undertaken.

The computer analysis of existing conditions indicated definite flow problems and congestion, particularly on East Park Street resulting from inadequacy of lane capacity relative to traffic volume.

Computer analysis of two-way traffic at the north and south ends of the square were analyzed utilizing available traffic counts. This analysis indicated even greater congestion than is currently experienced partially because signal timing required to clear intersections between traffic movements increases, thereby making less time available for traffic to move. In addition, cross-lane turning movements reintroduced by two-way traffic flows create greater potential accident locations than currently exist. It was determined, therefore, that two-way traffic at the north and south sides of the square would substantially aggravate existing congestion and increase accident frequencies, and therefore, could not be recommended. The existing one-way system, while more efficient, requires improvement so as to reduce existing congestion problems.

Additional thoroughfare improvements discussed in the Thoroughfare Plan will alleviate traffic volume through the square once implemented. However, improvements to increase lane capacity at the square should be implemented as soon as possible, particularly at the East Park Street and North Hambden Street intersection. Currently, two northbound lanes of East Park Street carry traffic to this intersection. Greatest volumes of traffic turn left and continue north on North Street or west on Center Street. Remaining traffic continues counterclockwise around the north end of the square.

A significant amount of northbound traffic on East Park Street turns right and continues eastbound on North Hambden Street. This traffic is impeded when both lanes of East Park Street are full with north or westbound traffic. If a right turn lane was added, traffic going east on North Hambden Street would be able to pass through the intersection and the additional through lane would be free from right turn movements at this location, which slows traffic movement.

The center (through) lane and left through lane at this intersection would be striped and signed to make drivers aware that westbound and southbound traffic should be in the left lane while North Street traffic should utilize the center lane. The right lane would be reserved for eastbound traffic only.

Widening of East Park Street would require acquisition of additional right-of-way on the east side of the road. Only a small additional width needs to be acquired and the improvement could be possible utilizing local funds. An alternative to acquiring additional right-of-way is to utilize pavement on the west side of the street which is currently used for parking. As parking in the area is limited, this may not be an acceptable alternative.

Another improvement which might have a significant influence on reducing accidents at Short Court Street intersections is modification of the traffic pattern on Short Court. A barrier would be constructed and traffic lanes reversed from the conventional right side, as illustrated on Figure 21. The barrier should be constructed of solid curbing with a minimum 8-foot wide opening aligned with the existing sidewalks on the square.

Pavement widths are sufficient on Short Court Street to retain parallel parking, allow two traffic movement lanes, and construct a planted barrier of about 6 feet in width. Evergreen plantings would be desirable to reduce headlight glare from opposing traffic. A portion of the curbed barrier should extend sufficiently beyond the east or west end of Short Court Street and be curved to discourage traffic from entering this street from either East Park or Main Street in the conventional manner which, after the improvement, would be the wrong way.

An explicit publicity campaign should precede implementation of the improvement to eliminate confusion. As the traffic flow is unconventional, design becomes a critical factor and sufficient signage should be provided. The planting area should not be constructed until after a trial period has demonstrated that this traffic pattern is publicly acceptable and functional.

Striping of lanes around the square would also aid vehicular circulation, particularly at the south end of Main Street where two 2-lane termini are utilized effectively as a three-lane road permitting a similar situation as is proposed at East Park Street and North Hambden Street. Striping of three lanes at the south end of Main Street would make this function more clear to motorists.

Painting or paving pedestrian crosswalks is also recommended. This improvement would make motorists aware of pedestrian crossing areas and increases the margin of safety for pedestrians. These areas should also be well lighted.

Priorities for Action. Priority of action in the central business district should be directed at increasing the area's economic vitality. In this pursuit, it is necessary to assure that existing visitations or trips to the area are maintained and increased, and that the area employment base is maintained. In this respect, it is absolutely necessary that county employment levels in this area remain or increase. Encouraging the county to remain through creative parking and building expansion packages made possible through joint actions should be the highest priority as its success will influence all activities, retail and professional, which are currently located here.

Once the local employment base has been firmly established, attention should be directed to improving retail and service functions of the central business district. Of greatest importance in this respect is the renovation of the southwest of Main Street and expansion of area parking. Renovation would do much to attract visitors to this area. It could begin at any time, the earlier the better. Renovation could be encouraged if the village would show a commitment to action which would be reflected by implementation of sidewalk improvements and tree planting programs. Other renovations and new construction would be carried out as early as possible.

A third priority, related to the first two, is encouragement of additional development or redevelopment of parts of the central area for professional and service commercial activities. While the central business district will not likely ever reestablish itself as the primary retail center of the

community, it can and should firmly establish itself as the professional and cultural center of Geauga County. Renovation of old Chardon High School for community uses would be a significant contribution toward this objective.

The overall strategy of this Central Business District Plan is contingent upon the actions of Geauga County Commissioners and would be substantially aided by their cooperation in the interest of the community. Every effort should be made by both the Village of Chardon and Geauga County to cooperate to preserve the economic vitality of the Chardon central business district.

HISTORIC RESOURCES

Introduction

In February 1980, the Village of Chardon contracted with the Ohio Historical Society for an historic inventory of the village. This came about after the village was successful in obtaining a grant from the U.S. Department of the Interior's Heritage Conservation and Recreation Service for this purpose. The survey was conducted by professional historian Jare R. Cardinal under the supervision of Mr. Eric Johannsen of the Western Reserve Historical Society. Information resulting from this survey is a great aid to decisions regarding historical preservation, renovation, and historical district designation. The following summarizes the report which resulted from this study. Copies of the report are on file in the village administrator's office.

Early Development

Relatively rugged terrain and poor agricultural potential of area soils combined with climatic conditions which inhibit seasonal travel retarded settlement of the village. While the village was established as the county seat in 1808, by 1820 five other villages in the county had greater populations. The public square was not cleared until 1811 to 1814.

North Street and South Street were extended from the square towards Painesville and towards Ravenna, respectively. This route served as a mail route and earliest homes of the village may be found near the square or along this north-south route.

Center Street and Water Street accessed outlying township farms and mills. North Hambden Street accessed more prosperous Hambden and Center Townships. South Hambden Street and Claridon Road were settled around 1840, at the end of the pioneer period in Chardon and provided accessibility to southeast townships and Warren, Ohio.

The 1870's marked the beginning of a period of land speculation in the village. Several allotments were developed during this period incuding those along East King Street (Jabez King Allotment), Maple Avenue (J. O. Howard

Allotment), Fifth Avenue (William Keeney and Stoughton Allotments), Tilden Avenue (Tilden Allotment), and Court Street to the railroad.

A narrow gauge railroad was laid through Chardon in 1852, and extended to Youngstown in 1872; in 1886 a standard gauge track was laid. Several lumber, grist, and flour mills were built near the tracks, setting in industrial land use pattern of the village.

The C&E Traction Company built an electric railroad in 1898 which linked Chardon with Cleveland providing passenger and freight service. This line was removed in 1925. Some traces of the line remains south of the village in the Bass Lake community area.

Chardon endured several struggles to remain the county seat of Geauga County. Property donated by Peter Chardon Brooks was to become the county seat and bear his name as a condition of donation. The area was, however, virtually wilderness and, as previously stated, development in the area lagged behind the rest of the county. Champion, Ohio was the temporary county seat until 1813, when it was moved to Chardon. Northern townships of Geauga County split off and formed Lake County over a controversy about Painesville being named county seat. Additional disputes arose, particularly between the more populace Burton and Chardon over the county seat issue. To Chardon's benefit, county functions have remained, drawing tradesman and entrepreneurs who might have settled in more profitable areas.

Historic Inventory

The historic inventory began with a literature search of information available from various sources including the Geauga County Historical Society, the Chardon Historical Society, county histories, and the National Register of Historic Places. The west business block and square are presently listed on the National Register of Historic Places and were, therefore, not studied in detail.

Land and property records and assessments were investigated and visual surveys undertaken. Additional information was gathered from local individuals particularly those knowledgeable of local history.

Of 338 properties inventoried, 124 complete inventories were prepared and submitted to the Ohio Preservation Office. Eight of the 124 sites submitted were considered eligible for inclusion in the National Register. They included the Wesley Goodrich house at 214 North Hambden Street; the George Smith house at 209 North Street; the Newton D. Bostwick house at 305 North Street; the M. L. Presley house at 301 Water Street; the Alfred Hedges house at 139 South Street; the Alfred Phelps house at 145 South Street; the Pilgrim/Congregational Church at 204 South Hambden Street; and the Silo P. Warner house at 110 Claridon Road. These structures represent various architectural styles. The village is, however, predominantly a mixture of venacularized post civil war structures.

Historic District

The information assembled in this historical resource inventory provides input to potential historic district designation. Recommended historic district boundaries are indicated on Figure 23 and indicate what might be considered the existing maximum desirable area for a historic district. District boundaries illustrated are based upon consideration of historic factors such as early development patterns, concentrations of early structures, and visual factors such as topographic location, entrances to the community, and vistas to and from potential district areas.

The proposed historic district includes substantial portions of North and South Streets, the first roads and building sites and primary entrances into the community. Preservation of the historic and visual resources along these roads and around the square is particularly important to the community image and cohesiveness of an expanded historical district. Most early development occurred east of the square. North Hambden Street and South Hambden Street were settled at the end of the prioneer stage of Chardon's history, about 1840. Center Street and Water Street were also developed at about this time. Many original structures along these streets remain. It is recommended that portions of these streets be included in an expanded historical district.

Early land speculation resulted in the subdivision of properties along East King Street, Fifth Avenue, Ferris Avenue, and Court Street. Scattered structures remain, with most concentrated near the square. Portions of these

streets are also included in the proposed historical district where visual entrances to the community and concentrations of structures warrant their inclusion.

COMPREHENSIVE PLAN

Introduction

The comprehensive plan embodies the sum of recommendations and needs identified in various sections of this document. It is an attempt to provide adequate land area and related supporting services which are integrated physically and spatially. A summary of factors which influence the amount of area required, its location, and relationship with existing uses is presented in the following pages.

Factors Affecting the Comprehensive Plan

Goals and Objectives. Goals and objectives formulated to provide guidance to the planning process were presented in the first chapter of this document. As explained, the significance of general goals in the planning process is substantial, for it is to these goals that all efforts must be directed and implementation steps guided. They provide a framework for future actions and a basis for decision making.

Population Growth. Population increases must be supported with shelter, sanitary facilities, amenities, and sufficient land area to accommodate all these. As explained in the second section of this report, population within the corporate area of Chardon is anticipated to reach 7,600 persons by 2000. This represents slightly more than a 50 percent increase over the next 20 years.

Obviously, population fluctuations have the greatest impacts on area development, as the purpose of development is to accommodate people, their activities, and their daily needs. Increasing population places greater burdens on existing utility systems, community facilities, and community services such as police and fire protection. Additional housing and commercial facilities are required when existing nominal excess capacities are exceeded and new facilities required. Primary factors contributing to population increases or declines are local economic and employment conditions. Their importance was described in the third section of this report and summarized in the following paragraphs.

Economy and Employment. Chardon's local economy is supported by a relatively diverse employment structure with a good proportion of nondurable and durable industries, and service and government employers. As described in preceding sections, unemployment, which is a good indicator of local economic conditions, has been lower in Geauga County than in all other counties in the state except one.

Chardon is in a favorable situation. Located only a few miles from the interstate highway network and the Cleveland metropolitan area, the community is in a favorable location for industry and related services. The area should continue to benefit from the exodus of people and industry from the Cleveland area.

As existing employment opportunities expand due to new industries and existing industrial expansions, an inflow of people will occur creating increases in population. These increases have been anticipated and are reflected in population projections. Professional and service industries will expand to serve the need of this larger population.

Existing Land Use. As emphasized earlier in this report, one of the most important factors influencing future development patterns is the existing pattern of development. The existing development pattern was illustrated on Figure 5, and was described in the Land Use section.

Existing relationships of land use and population were described and listed in Table 12. These relationships provide basic data for estimating future land use requirements. These data were compared to averages of similar size communities, then adjusted to reflect anticipated trends and estimated future relationships. The adjusted data provided relationships which were utilized in estimates of future land use requirements. Required additional land area needed is summarized by land use type in Table 29.

Table 29

SUMMARY OF LAND USE REQUIREMENTS BY 2000

Chardon, Ohio

Category	Total Additional Land Required
Residential	281.0
Commercial	26.0
Industrial	52.5
Public and Semipublic	52.5
Parks & Open Space[1]	23.6
Railroads	-
Streets and Highways	67.8
Total Developed Land	479.8

[1]Estimated as part of Public and Semipublic land area

It is estimated that the anticipated population increase in the community could be adequately accommodated on about 480 acres, as indicated in this table. Existing land used in the corporate area totaled about 1,230 acres out of a total area within the corporate limits of slightly over 2,800 acres. Obviously a large amount of vacant land within the corporate area is potentially available for future use. At the time of the land use survey, nearly 1,600 acres were vacant.

All vacant land in the community is not necessarily developable. Some tracts have inherent characteristics which restrain or prohibit their use. Other tracts which may be available have limited potential accessibility or are landlocked. Where this occurs, future transfers of ownership or local governmental action may provide opportunities to better utilize such areas. Where land capability is limited and limitations are severe, future development should either be controlled or prohibited.

Land Capability/Suitability. Land capability/suitability refers to the ability of a particular parcel of land to accommodate developed land uses such

as residential and industrial developments, and to determine the most appropriate use of those areas which are not well suited to these uses. Several natural characteristics of the area have been evaluated in this analysis. Factors analyzed and the importance and significance of each was described at the end of the section entitled "Natural Characteristics".

Among the factors reviewed were slope, geology, drainage, flood susceptibility, and various soils characteristics such as bearing strengths, permeability, etc. Through the analysis of these various characteristics, recommendations can be formed regarding the ability of a particular area to accommodate intensive use, whether an area has sufficient limiting characteristics that its use should be reserved for low density or open space uses, or if an area should be preserved in its present state to serve the public interest.

In this manner, a more rational and environmentally compatible land use arrangement may be planned which relates the urban area with natural systems, to the benefit of both. Utility systems such as water and sewer may be encouraged where their existence might prevent harmful effects on the natural environment. Land areas and recommended densities indicated in the comprehensive plan reflect the findings of this analysis.

Existing Utility Systems. Existing major utility systems such as water and sewer have a strong impact on future development, particularly in an area such as Chardon where most soils are generally not adequate for the utilization of on-lot wastewater disposal and where groundwater supplies are limited. Therefore, required additional development land should be situated so as to facilitate extension of service from the existing utility network. The end result is a cost-effective system which provides service where needed, ensuring minimum environmental degradation. Existing water and sewer systems in Chardon are illustrated on Figure 13 and Figure 14.

The Comprehensive Plan

The comprehensive plan for the Village of Chardon is graphicaly portrayed on Figure 24. Supporting rationale for this plan is explained in the following paragraphs by land use category.

Residential. Approximate area requiements for residential land uses are based upon population projections, estimated household sizes, and requirements for replacement and displaced housing units. In the Housing section of this report, various factors affecting housing demands were discussed and projections of unit requirements made. Based upon this analysis, an additional 1,322 housing units will be required by the year 2000.

Single family detached housing units are expected to represent decreasing proportions of the total housing stock over the planning period. Construction costs, labor, and other costs are encouraging the construction of multifamily units, condominiums, and smaller homes.

Average lot sizes will reflect these impacts, becoming smaller over the planning period. Current average residential lot size in Chardon is estimated at about one-third acre, or over 14,000 square feet per unit. It is anticipated that future lot sizes will average less than 10,000 square feet per unit. This results in a need for about 281 acres of residential land by the year 2000. This is a small area requirement compared to the large amount of vacant available land within the community.

Intensifying development within underutilized blocks such as that between North Street and Maple Avenue north of North Hambden could provide about 20 acres of developable land within the village's current utility and transportation networks. There are obvious economic advantages to the village in encouraging development in these areas. Increased property tax incomes resulting from development of these areas would not require as extensive a commitment of public funds for extension, operation, and maintenance of streets and utilities as would be required in the development of peripheral tracts.

There are, however, a number of difficulties in implementing interior lot development. Most significant constraints include lack of access from public streets and, as most of these are made up of several parcels with separate ownership, assembly of individual parcels into developable tracts becomes difficult. The village may acquire properties when they become available on the normal real estate market or the village could invoke the right of eminent

domain to assemble tracts to be utilized in the public interest. In both cases, property owners are compensated at market values for property being acquired by the village. The village must, therefore, have sufficient funds available to purchase these properties when the opportunity presents itself. This often limits the ability of the village to implement acquisition plans.

As the village continues to grow, greater pressure will be exerted in the open market for utilization of these tracts. As their values and desirability of location increase, they may ultimately be redeveloped without public expenditure. As a result of difficulties inherent in acquisition of these tracts and the limited available area, more emphasis is warranted to redevelopment of deteriorating areas to provide additional housing opportunities, to guiding new residential development in desirable locations in the community, and letting the real estate market solve the problem of underutilization of these areas. However, the village should be aware of and purchase parcels which might contribute to parks and open space systems. General areas where recreational facilities should be developed are indicated in the Parks and Open Space sections of this plan.

Proposed major residential growth areas are illustrated on Figure 24. Those areas proposed for residential development represent areas which do not exhibit significant physical limitations and which could be easily serviced with water and sewer extensions. In addition, they relate well to commercial and employment centers requiring short trips to work and to shopping areas. As schools are situated east of the railroad in older community areas, it would be necessary to bus students to schools in those areas. Development of an elementary school at Chardon School District landholdings in Chardon Township near Auburn Road would alleviate this to some extent. However, an elementary school within the corporate area would be preferable to reduce travel distances. An alternate school site is depicted on Figure 24 for this reason.

Over 700 acres of vacant land which might be used for residential development are situated around and predominantly west of the existing built-up village area. As previously mentioned, approximately 281 acres will be required for residential use during the planning period. There will also be

greater development pressure east of the existing corporation line, particularly between North Hambden Street and South Hambden Street. This area should be among the highest priority areas for annexation in the future.

Commercial. Commercial land uses in Chardon have been in a state of change over the last decade. A major new retail center has developed in the Center Street, Cherry Avenue, and Water Street section immediately west of the Baltimore and Ohio Railroad. As vacant developable land remains here, it is probable that similar development will continue to occur. Only 19 acres of vacant land here is zoned for commercial use while another 48 acres adjacent to Water Street is zoned for commercial use in a strip along either side of the road. Additional commercial uses are concentrated adjacent to the east edge of the village just outside the corporation line.

The plan reflects commercial use of an additional 12 acres immediately west of the existing major commercial area west of Cherry Avenue and redevelopment of 4 acres east of Cherry Avenue for commercial use. It is also proposed that the strip area zoned commercial along Water Street be reduced. This would reduce the potential for strip commercial development along Water Street.

Some expansion of service commercial uses are also proposed in the vicinity of the square, particularly the northeast and southwest corners. These proposals are detailed in the Central Business District study.

Other commercial land use recommendations include use of a strip of land between State Route 44 and Ravenna Road for convenience commercial use. This site is narrow and difficult to develop for other uses. Access to the site should be provided only from Ravenna Road and commercial uses permitted here should be developed with adequate parking and landscape features so as to alleviate detrimental visual impacts. No access should be permitted from State Route 44 directly to the site as this would create traffic hazards and congestion.

Industrial. Future industrial development in Chardon is expected to require about 53 acres of additional land during the planning period. Nearly

400 acres are zoned for industrial use. Obviously, existing lands are about seven times overzoned for industrial use. A substantial reduction in industrially zoned land is recommended, freeing land in this category for other uses such as residential, commercial, and open space uses.

The plan reflects the conversion of tracts near the major commercial center south of Center Street from industrial zoning to commercial use. The well established industrial area between the Baltimore and Ohio Railroad and Center Street should continue to be developed as the primary industrial area of the community. Approximately 100 acres are available for future industrial expansion in this area alone.

The industrially zoned tracts east of State Route 44 at the southern extreme of the corporate area should be reorganized to provide alternative choices in residential areas with only a fraction of this area utilized as industrial land as Figure 24 illustrates.

Parks and Open Space. Estimates of space required for parks and open space use call for an additional 53 acres by the end of the planning period. As indicated in discussions of community facilities the village owns, they are attempting to acquire funds to develop a park adjacent to the housing development south of South Hambden Street. The proposed park is just outside the corporate limits and is accessed from South Hambden Street (Chardon-Windsor Road). This facility will provide a much needed neighborhood park serving area residents. A concept plan of this park is presented on Figure 25.

In addition to this facility, and as described in the Community Facilities section of this report, additional facilities should be provided in the west and southwest community areas, which are deficient of any public recreational facilities, expected to be primary future residential development areas. Neighborhood parks are proposed in the south and southwest community areas as illustrated on the plan.

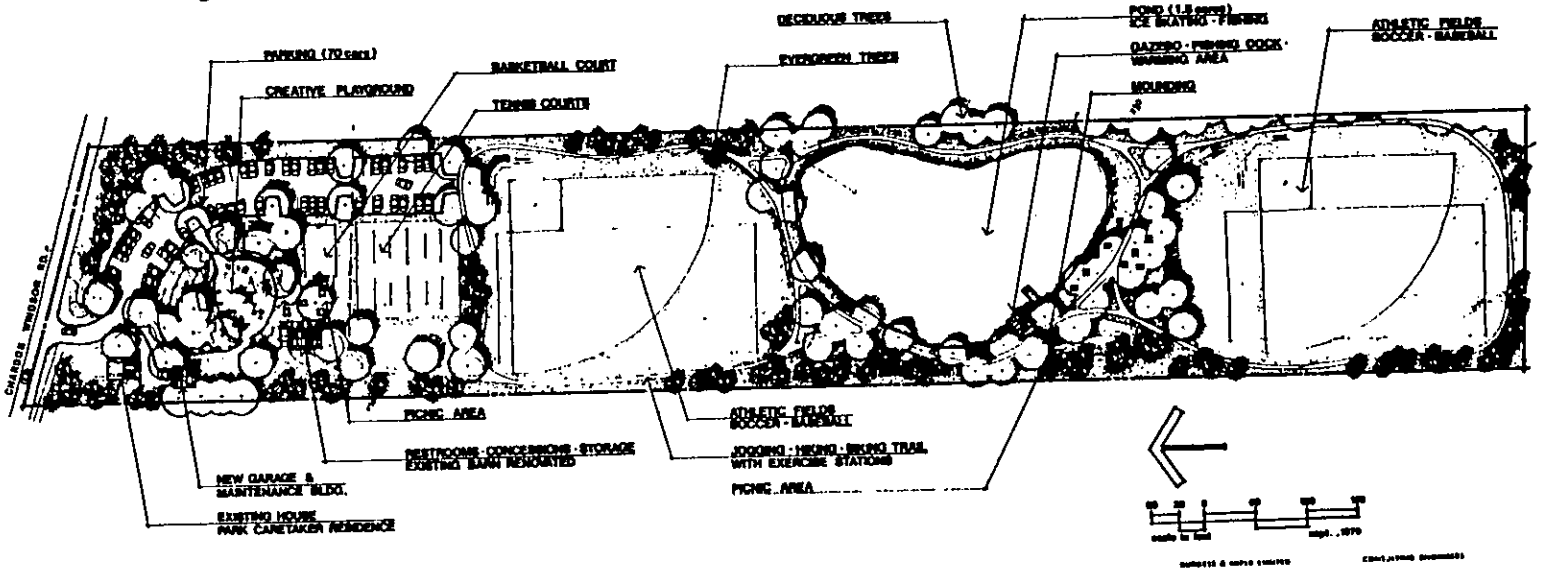
Playfields and playgrounds are generally associated with schools. As schools in Chardon are concentrated in the northeast community area, all other sections of the community are not within an acceptable distance of these

FIGURE 25

Master Plan

A PROPOSED PARK

Village of Chardon , Ohio



facilities. Provision of additional facilities is also required to satisfy the growing demand for baseball and soccer fields which is evidenced by the enthusiasm and degree of development of local organized play in these sports. Recommended locations of playfields and playgrounds which could be developed jointly and their approximate service areas were indicated on Figure 12.

In addition to park and recreational facilities, open space areas have been recommended where, as a result of site limitations and scenic characteristics of significant public benefit, compelling reasons exist for area preservation. Two such areas have been identified: one scenic area southeast of Wilson Mills Road and an aquifer protection area south of the Baltimore & Ohio Railroad east of State Route 44. These areas have also been identified on Figure 24 and previously discussed in the land capability/suitability discussions within the Natural Characteristics section of this report.

Transportation. Plan recommendations with respect to transportation were previously discussed in the Thoroughfare Plan elements which have been incorporated on Figure 24 as they apply to the corporate area. As shown, a circular thoroughfare pattern is expanded into developing areas. This circular pattern accommodates cross-town and interarea trips which are currently forced through the square as a result of the existing street pattern radiating from this point. Such a street pattern could be implemented as individual tracts are developed and would not require that extensive state or federal programs be utilized. However, developers must be required to adhere to the Thoroughfare Plan when proposing development plans. This is the only way a coordinated and functional system can be developed.

Central Business District. Proposals within the central business district were detailed in the Central Business District study and are illustrated on Figure 21. The Central Business District Plan emphasizes governmental, professional, and service functions in this area, along with rehabilitation and renovation of many of the structures surrounding the square. County government functions are expanded in the northwest portion of the square, while village government functions are expanded on South Street. Professional, office, and service activities are proposed at the northeast of the

square along North Hambden Street and retail/commercial enterprises are encouraged at the west and south. Renovation of existing commercial structures are proposed throughout the central business district. Retailers in the central business district would benefit from a collective advertising program which pools local resources to produce more effective advertising and promotions so as to compete more equally with the larger commercial area west of Cherry Avenue. A common theme should be selected (i.e., western reserve, turn-of-the-century, sugar maple industry, etc.) and applied in both renovation activities and promotions of the central business district to establish a specific and desirable central area image.

Historical District. A survey of structures within the corporate area was performed by Jare R. Cardinal for the purpose of identifying structures of local historical or architectural significance. A total of 338 structures were inventoried; 124 were considered locally significant and 8 could be considered for nomination to the National Register of Historic Places. This survey process is described following the central business district discussions.

In consideration of survey information and in evaluation of other factors contributing to viable historical districts, such as natural features, historical development, townscape, and community image, the area indicated on Figure 23 illustrates an historical district in which special consideration and regulation will be extended through zoning, building codes, and subdivision regulations.

The benefits of historical district designation include the preservation of historical and cultural values, redevelopment incentives which protect property values, heightened aesthetic appeal, and increased recognition and beneficial community public relations.

For additional historical district information and the locations of eligible structures, refer to the Historical Survey.

IMPLEMENTATION

Introduction

Prerequisite to the adoption of the Chardon Comprehensive Plan by the Chardon Council and Planning Commission is its acceptance by the public. Towards this goal, sufficient copies of the plan must be available to the public and sufficient opportunity presented for review and debate of its contents.

Every effort has been made to keep proposals and recommendations consistent with community objectives and to keep these realistic in scope, in terms of costs, and implementable with acceptable commitments of resources. The true test of its acceptability and viability comes with public review and debate.

The comprehensive plan represents a collection of actions which support broad community goals and objectives specified in the first chapter of this document. As time and local conditions change, goals and objectives of the plan, along with specific recommended actions should be reviewed and modified if necessary. A mandatory periodic review of these factors and modifications as required should keep the plan up-to-date and realistic in spite of changing conditions.

Actual steps involved in plan implementation are: adoption by the legislative authority (council) after a sufficient public comment period; organization of implementing bodies (community development corporations, citizen action groups, etc.); dissemination of information and guidance to action groups by the planning commission (which may seek technical and financial assistance from several available sources); modification of regulatory documents for compatibility; and implementation of specific proposals (which is largely subject to private enterprise initiative, timing, and availability of public resources).

Implementation of factions of the comprehensive plan by private enterprise may be encouraged through initiatives and enticements presented by local government. These enticements may take the form of tax relief applying to

improvements made, or stronger methods such as code enforcement and condemnation.

The ability of the public body to implement proposals within its realm of responsibility is largely a matter of the capacity of the capital improvements budget, the community's ability to acquire state and federal funding assistance, and its ability to assess benefited property owners.

Individuals and groups within the community can substantially aid the implementation process through donations of time, technical skills, and materials for worthy projects. This can substantially extend the improvements possible with only public funds.

Four areas of the comprehensive plan are distinguishable in scope and implementation requirements. They are the General Plan as illustrated in the Comprehensive Plan Map, the Central Business District Plan illustrated in the section of the same name, the Historic District, and Housing. A discussion of implementation aspects of these subjects follows.

Comprehensive Plan

Indicated on the Comprehensive Plan are recommended land use patterns, thoroughfare improvements, and sites for public parks and open space. These items are implemented through the revision, adoption, and enforcement of a zoning ordinance. After adoption of such a zoning ordinance, it is the zoning board's responsibility to permit only uses compatible with the comprehensive plan.

Implementation of the Thoroughfare Plan, as it applies to the village, is dependent both upon enforcement of the zoning ordinance and the subdivision ordinance of the village. When the village reaches city status, it will have subdivision approval privileges in the area outside of, but within 3 miles of the corporate area. This will further enhance its thoroughfare implementation potential. While Chardon remains a village, it will have subdivision approval privileges for only that area within the corporate boundary, as the Ohio Revised Code grants only such privileges to villages where the county in which it is situated has subdivision regulations in effect. Geauga County does have county subdivision regulations in effect.

Parks and open space recommendations are implemented primarily by subdivision regulations. Chardon's existing subdivision regulations do not require mandatory dedication or fees for the purpose of acquisition of public parks and open space. They do provide that a developer may be requested through resolution by the commission to reserve or offer for sale to the village areas shown in public use on an approved thoroughfare, park and recreation, or comprehensive plan until such time as the village may acquire such land. This method has not proven very effective in enabling the village to acquire potential recreation and open space sites. Mandatory dedication or the payment of fees in lieu of dedication are more effective means which provide funds for assembling land for these purposes.

Payment of fees in lieu of dedication is generally a more equitable method. To implement this procedure, specific authorization should be stipulated in the subdivision regulations. These regulations should specify the creation of a special park fund and a reasonable payment schedule relating to affected subdivisions. Finally, regulations should specify that monies generated are spent to benefit specific areas from which they originated.

Central Business District

The Central Business District Plan suggests renovation activities, land use change, streetscape improvements, as well as other actions. One of the more important actions benefiting the central business district is the continued operation of Geauga County administrative offices in the central area. To this end, a group composed of village officials and downtown merchants and citizens should be formed whose responsibility would be to meet with administrators of the county and investigate ways in which the Central Business District Plan might be implemented to the satisfaction of all parties involved.

The Central Business District Plan suggests increasing available parking facilities in various locations and expansion of county offices over one of these facilities. The plan as presented is modest in scope and very much implementable, providing parties affected can agree in principle on a plan of action specifying responsibilities of each party. County office functions are

an important asset to the existing central business district function; providing a stable base upon which other area enterprises build. It would be to the benefit of both the village and the county if an agreeable plan of action can be formulated in which county functions in the central business district can be preserved and built upon.

Enhancement of retail viability in the central business district and encouragement of expanded professional office functions are major aspects of the central business district, and are, to some degree, dependent upon existing relationships with county office functions. Retail viability will be aided in the plan by the expansion of parking facilities. Other improvements such as the streetscape improvements and renovation activities would substantially benefit the area and convey a better image while offering greater convenience for shoppers. Of particular benefit to local merchants would be participation in group advertising and promotions. Individual merchant costs can be lowered by this method and all merchants benefit by professional promotional techniques which would focus attention to the central area. Restoration activities and the adoption of a theme or image would give the central area greater appeal and heighten area identity.

Streetscape improvements indicated in the plan include sidewalks, crosswalk improvements, and landscaping. Initiation of sidewalk improvements should be carried out by the village to show a definite commitment on the part of the administration to central area improvement. A specific goal oriented procedure should be developed perhaps through the efforts of a citizens advisory committee or the group previously mentioned. The capital improvement program of the village should be coordinated with these goals.

Streetscape improvements could be substantially increased through solicitation of donations of materials and labor from local businesses and community organizations. This would relieve the financial burden on the village, as well as reduce assessments to property owners for improvements.

Renovation of the west side of the square could be encouraged through various tax abatement programs and relaxation of local building codes similar to amendments to the Ohio Basic Building Code applicable to historic districts.

Responsibilities of various entities involved in proposed Central Business District Plan improvements can be generally outlined. The village administration would have definite responsibility for the assembly of properties for parking lot improvements and in the offering of development incentives. Citizen groups would be guided and their efforts coordinated by the village who would act as chief negotiator in arbitration situations. It would also be the village's responsibility to show a commitment to a definite plan of action through capital improvements.

Geauga County administrators have the responsibility of protecting their existing investment in the central business district. The county also has a responsibility to act in the interest of the community which is dedicated to improved city/county relationships. In this light, Geauga County administrators are a partner with a vested interest in the development of the central area.

Local merchants and residents of the central business district also have a vested interest in the area. They can contribute to actual implementation through organizational involvement, project participation, and contributions of time and materials. They will benefit from a more viable and attractive focal point and community image.

Historic District

The historic district recommended in this plan was selected in consideration of a number of factors including concentrations of locally significant structures and sites, natural features, historic development, and community image. Historic district designation can protect property values; control specific threats to the image of the area; and protect local historical, architectural, and cultural resources.

Inclusion and adoption of a historic district section in the Chardon zoning code is the first step toward implementation of an historical district. District requirements are spelled out in the zoning ordinance which stipulates

formation of a review board, procedures for listing eligible properties, requirements for certifications of appropriateness, and criteria for evaluating applicants for certificates of appropriateness. A citizen advisory committee can aid the village in the determination of standards to be applied in the historic district.

Housing

The Housing section of this plan indicated a substantial need for housing rehabilitation efforts within the community. Approximately 9 percent, or 136 housing units within the corporate area, are in need of major repairs. In addition, 66 new housing units will be needed annually to accommodate the growing population.

The Geauga County Housing Department is active in various housing programs throughout the county. Both new housing and housing rehabilitation programs are administered by the county. As one of the criteria for receiving HUD funding for its housing programs, a 3 year goal is established for providing assistance to both urban and rural residents. Specific goals are established for each community including Chardon.

Housing programs, including owner rehabilitation programs, are available to Chardon residents. The most expedient way to implement housing assistance programs within the village is to support and promote those which are desirable to residents of the community.

Some of the many housing rehabilitation programs which could be made available to village residents are listed in the following discussions.

Applicable Grant and Loan Programs

General. A number of federal and state grant and loan programs exist which may be utilized to aid community development. Some of these programs provide grants, others provide loans, while others may provide assistance such as technical advice or loan guarantees. The following is a summary of some of those programs which may be of particular interest in Chardon.

Several housing related assistance programs are available. Agencies such as HUD, Department of the Interior, and the Department of Agriculture administer many of these programs through state and local agencies. Some of these programs are listed in the following paragraphs. Attempts to secure assistance for housing programs should be coordinated with the Geauga County Commissioners who may already be involved in some of these programs within the county.

Community Development Block Grant. This program provides funds for activities designed primarily to assist low and moderate income people. Assistance can be provided in the form of grants, loans, loan subsidies, and loan guarantees. Funds can be used for rehabilitation, weatherization, and code improvements to residential and nonresidential properties. Capital improvements and community services may also be provided under this program.

Section 312 Direct Rehabilitation Loan. This program provides financial assistance directly to property owners in the form of home improvement loans at 3 percent interest. Residential and nonresidential properties may be repaired to meet local code standards and HUD Minimum Design Standards for Rehabilitation.

Title I Property Improvement Loan Insurance. Under this program, HUD provides loan insurance to lenders who make loans available at market rates up to 12 percent. Lenders determine eligibility of borrowers and process unsecured personal loans. HUD insures the leader against loss for up to 90 percent of each loan.

Section 8 Housing Rehabilitation Assistance. HUD's Section 8 program provides a rent subsidy to assist low and moderate income families. Funds are provided directly to the owner of rehabilitated dwellings. A rent subsidy payment is made to the owner to make up the difference between what the lower income tenant can afford and the contract rent established for the unit. Eligible tenants need not pay more than 25 percent of their adjusted income toward rent. Eligible project sponsors may include private owners, profit and nonprofit or cooperative organizations, public housing agencies, and state housing finance agencies.

Section 202 Direct Loans for Housing for the Elderly or Handicapped. Under this program, HUD makes long-term direct loans to private, nonprofit corporations and cooperatives for new or rehabilitated rental or cooperative housing facilities for elderly or handicapped persons. Single and multifamily structures are eligible. Interest rates are set at U.S. Treasury rates for the preceding year. Loans generally do not exceed 90 percent of total development costs.

U.S. Environmental Protection Agency Construction Grants Program. This program provides project grants for the construction of wastewater treatment works to meet state and national water quality standards. Grants are made for 75 percent of eligible costs or 85 percent of eligible costs of innovative or alternative technology projects.

Federal Financing Bank U.S. EPA Loan Guarantee for Construction of Treatment Works. If a community cannot finance the 25 percent local share of a U.S. EPA construction grant project, this program provides a source of last resort whereby loans may be made to finance the initial 25 percent or refinance the outstanding debt.

Ohio Water Development Authority. This authority provides loans to local governments for water and sewer projects. These loans may be used as supplements to grants from the EPA's Construction Grants Program. Interest rates run 0.8 percent above current municipal bond buyers 20 Index for eligible local governments. If required, short-term notes may be obtained to provide adequate cash flow for construction until actual grant monies are received from U.S. EPA.

Heritage Conservation and Recreation Service: Outdoor Recreation - Acquisition, Development, and Planning. This provides for acquisition and development grants for outdoor recreation projects such as picnic areas, parks, tennis courts, hiking trails, outdoor swimming pools, and supporting facilities open to the public.

Other Programs. In addition to the above grant and loan programs, the State of Ohio administers several programs through DECD which may be of substantial aid in rehabilitation activities proposed in this plan. Some of these are explained in the following paragraphs.

Urban Redevelopment Tax Increment Financing is a method whereby municipalities may declare improvements to real property to which the municipality holds title to be exempt from property taxes for up to 30 years. Owners of any structures or improvements on the property may be required to make annual service payments in lieu of taxes to be deposited in the Urban Redevelopment Tax Increment Equivalent Fund. Money deposited in this fund is used for community development purposes authorized in the resolution which establishes the fund. This enables the municipality to control development programs and encourages redevelopment while amortizing the municipality's costs through service payments.

The Urban Land Reutilization Program makes possible the return of nonproductive, tax delinquent lands to revenue generating status or public use. Through this program, a municipality may gain clear title to delinquent lands. The municipality may dispose of lands at fair market value without competitive bidding.

The Community Reinvestment Area Tax Exemption Law allows municipalities to grant tax abatement for any increased property value that might result from improvements made by property owners. The local community may designate the size of area and the number of years of tax abatement within limits. The qualifying criteria are existing housing or structures of historical significance and evidence that repair of facilities has been discouraged for one reason or another. The local community must have a housing officer to administer the program and a housing council to hear appeals and inspect properties in the program.

Community Improvement Corporations (CIC) may be formed for encouraging industrial, economic, and commercial development for an area such as the central business district. A CIC can possess a wide range of powers including financing.

Ohio Development Corporations (ODC) consist of financial institutions formed for the promotion and advancement of industrial and business ventures and for financing such undertakings. An ODC may borrow money, issue bonds, make loans, and acquire and dispose of property.

Various incentives for the rehabilitation of locally historic structures are provided by the Tax Reform Act of 1976 and the Revenue Act of 1978. The Tax Reform Act of 1976 allows property owners of structures on the National Register or in National Register historic districts to amortize costs of rehabilitation over a 5-year period or to depreciate costs of a rehabilitated structure at an accelerated rate.

The Revenue Act of 1978 provides a 10 percent investment tax credit to encourage rehabilitation of older buildings. Buildings which have been in use for 20 years or more and used for industrial or commercial purposes are eligible for the tax credit which is figured as 10 percent of qualified rehabilitation expenses and deducted directly from taxes owed by the taxpayer.

Outline for Implementation

The following is a list of steps which must be initiated to implement the recommendations of the comprehensive plan. These activities are listed in general chronological order.

- review and adoption of the comprehensive plan
- revise zoning code and district map to conform with the comprehensive plan
- amend subdivision regulations to require mandatory dedication or fees in lieu of dedication for public park and open space acquisition
- enforce revised zoning and subdivision regulations
- adopt an historic district and attach historic district regulations to the zoning code

- form an Historic District Review Board

- designate a coordinator/ombudsman within the village administration who would organize public and private actions

- form a community improvement council or similar action agency to pursue recommendations of the Central Business District Plan and assist the coordinator in formulating a goal oriented improvement program

- coordinate an improvement program with the capital improvements budget of the village to allow for central area improvements, a sidewalk improvement program, etc., dealing with prioritized activities and improvement areas

- investigate, organize, and participate in a rehabilitation tax incentive program in the central business district

- assemble properties for expanded parking facilities in the central business district

- investigate grant and loan programs for recommended community improvements (ongoing)

- establish a mandatory periodic review of the comprehensive plan, its objectives, and recommendations

Efforts towards implementation, particularly of central business district projects, may be substantially aided through discussions with communities who have undertaken similar programs successfully. In addition, the DECD offices of local government services offers technical assistance and can direct interested parties to contacts where similar programs have been initiated.

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